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STATE OF CALIFORNIA -- THE RESOURCES AGENCY GRAY DAVIS, *Governor*

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Staff Report: 11/22/02
Hearing Date: 12/11/02
CDP Approved: 11/16/94
Extension Denied: 6/07/99
Previous Hearing: 6/10/02
Staff: MKH
Commission Action:

STAFF REPORT
CHANGED CIRCUMSTANCES and PROJECT AMENDMENTS

Application No. A-4-STB-93-154-CC, and --A2 (ARCO Dos Pueblos Golf Links)

Applicant: CPHPAH Dos Pueblos Associates, LLC; Capital Pacific Holdings, Inc.; Patriot American Hospitality, Inc.; Makar Enterprises, Inc.; Richard W. Hollis, Jr.

Agent: Andriette Culbertson, Culbertson, Adams, Inc.; Steven Kaufmann, Attorney, Richard, Watson & Gershon; Richard W. Hollis, Jr., President, CPHPAH Dos Pueblos Associates, LLC

Project Location: Naples area of Gaviota Coast, approximately 1.5 miles west of U.S. Highway 101/Winchester Canyon Exit (Goleta), seaward of and adjacent to U.S. Highway 101, Route 1, Box 275, unincorporated Santa Barbara County.

Project Description: 18-hole and 9-hole golf courses with clubhouse and associated development, described on page 19, including proposed amendments set forth on page 20.

Purpose of Hearing: Hearing on changed circumstances to evaluate the consistency of the proposed project with the applicable policies and provisions of the certified Santa Barbara County Local Coastal Program (LCP) and with the coastal access and recreation policies of Chapter 3 of the Coastal Act. The hearing also includes proposed amendments to the previously approved project description.

Motion and Resolution: Page 3

Summary of Staff Recommendation: Staff recommends **denial** of the proposed project. Changed circumstances since Commission approval (November 16, 1994) of CDP A-4-STB-93-154 have rendered the proposed development inconsistent with applicable requirements of Santa Barbara County's certified LCP, including policies and provisions protective of environmentally sensitive species and habitats.

The California red-legged frog, tidewater goby, southern tarplant, white-tailed kite, and monarch butterfly have been identified on the subject site in previously unknown locations or populations, or are utilizing the site in ways that they previously did not (for example for nesting by the white-tailed kite). These facts either did not exist or were

not known to the Commission at the time of the Commission's November 16, 1994 approval of former CDP A-4-STB-93-154, or at the time of the Commission's June 7, 1999 hearing on the applicants' request to extend the previous permit. In addition, some of these species have received state or federal protected status, or elevated sensitive species status since Commission approval of the permit.

Other changed circumstances include the discovery of new wetlands after oil and gas facilities were removed from the site in December 1997 and January 1998. An appeal to the Commission of a County-approved final CDP for the proposed project, including changes to the project that were reviewed by the County through a substantial conformity determination, is pending. Most of the changes addressed in the appealed permit have also been proposed by the applicants as amendments to the presently proposed project. A second appeal is also pending regarding remediation of contaminated soils on the site. These appeals will be dealt with at a separate hearing.

Substantive File Documents:

Santa Barbara County certified Local Coastal Program (LCP); Guide to the California Environmental Quality Act, 1999 Edition, Remy, Thomas et al, Solano Press Books; ACOE/NRCS wetland delineation documents for Arco Dos Pueblos site (on file); Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon, viii + 173 pp.

Staff Note: The correspondence received by staff concerning this project is extensive and due to the size of exhibit package distributed with this report, will be distributed separately in the subsequent addendum.

In addition, staff notes that the applicants and the applicants' consultants have worked with staff since the Commission's June 10, 2002 hearing to identify potential solutions to the impacts to sensitive resources on the Arco Dos Pueblos site that have been identified in this report. Staff met several times with the applicants' agents and consultants and attended site visits, including site visits in both Monterey and Santa Barbara County to further evaluate the resources of concern. Staff ultimately concluded, however, despite the best efforts of all parties to explore potential alternatives and mitigation measures, that without a substantial redesign of the golf course the project will have significant, impermissible and potentially irreversible, adverse impacts on Environmentally Sensitive Habitat Area (ESHA) and sensitive species on the Arco Dos Pueblos site. These impacts include the removal of nesting habitat relied on by at least two pairs of white-tailed kites, a raptor afforded specific protections by statute as a California Fully Protected Species. The applicants have stated that they cannot accept a redesign of the golf course to protect the identified nesting habitat in large part because the nesting areas are located in the midst of the blufftop stretch they require for the spectacular vistas that would set apart a "championship" course from the more mundane course that they apparently believe result if the nesting areas were not part of the golf course footprint. Thus, a redesign that would relocate the affected 16th, 17th, and 18th proposed fairways may be feasible,

but would be unacceptable to the applicants. The impacts on ESHA that the project will otherwise have in the professional opinion of the Commission's staff ecologist render the project inconsistent with the policies and provisions of the Coastal Act and with the requirements of the County's certified LCP, specifically with policies and provisions set forth in the LCP that are protective of ESHA. Therefore, while appreciative of the applicants' efforts, staff finds it necessary to recommend that the Commission deny the project as proposed.

SECTION I. MOTION AND RESOLUTION

MOTION: ***I move that the Commission approve Coastal Development Permit No. A-4-STB-93-154-CC-A2 as proposed by the applicants.***

STAFF RECOMMENDATION of APPROVAL:

Staff recommends a **NO** vote. Failure of this motion will result in the denial of the permit, including the applicant's proposed amendments to the permit, and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

RESOLUTION TO DENY THE PERMIT:

The Commission hereby **denies** Coastal Development Permit A-4-STB-93-154-CC, including the amendments to the permit proposed by the applicant pursuant to application A-4-STB-93-154-A2 and adopts the findings set forth below on grounds that the development, including the proposed amendments, does not conform with the policies and provisions of the certified Local Coastal Program of Santa Barbara County or with the public access and recreation policies of Chapter 3 of the Coastal Act. The proposed project and amendments thereto do not comply with the California Environmental Quality Act because there are feasible mitigation measures and/or alternatives that would substantially lessen the significant adverse effects of the development on the environment.

SECTION II. FINDINGS

1.0 BACKGROUND

1.1 Standard of Review

Santa Barbara County's certified Local Coastal Program is the legal standard of review for the Commission's hearing on changed circumstances. The certified LCP is also the standard of review for the amendments to the approved project that the applicants now propose. The project is located between the first public road paralleling the sea and the shoreline, therefore the project must also conform with the public access and recreation

policies of the Coastal Act (Public Resources Code 30603 and 30604) in addition to the policies and provisions of the certified LCP.

1.2 Permit History

The Arco Dos Pueblos project site was originally given a Coastal Dependent Industry (M-CD) land use and zoning designation in the Santa Barbara County Local Coastal Program (LCP).[1] This designation was based upon the existing industrial facilities on the site, and the long-standing use of the site for oil and gas production dating from the mid-1940s.

Arco's petroleum production facilities were deemed non-conforming when the County adopted the South Coast Consolidation Planning Area Policy in 1990. In 1991, the site was redesignated and rezoned Agriculture II (AG-II), 100-acre minimum as part of Major LCP Amendment 3-90 which consolidated oil and gas sites at two locations within the South Coast Consolidation Planning Area. Through these measures the County sought to limit the sprawl of energy facilities along the Gaviota coast.

At the time the Commission certified LCPA 3-90, no specific proposal for a golf course had been developed. Therefore, neither the County nor the Commission had evaluated the specific, relative impacts of a golf course versus agricultural or other recreational land uses, or compared the impacts of a golf course on the site with the impacts of the baseline residential uses authorized for the subject site under the redesignation and rezoning. In certifying the Agricultural land use and zoning designation for the property, the Commission acknowledged the intent of ARCO (Arco Oil and Gas owned the site at the time) to potentially develop a golf course on the site, and specifically indicated that the redesignation of the land as Agriculture, while not authorizing a golf course without further review and approvals, did not preclude the possible future use of the site for a golf facility.

A golf course is a conditionally permitted use in the County's LCP on lands zoned Agriculture II. Other permitted and conditionally permitted uses on lands zoned AG-II are shown in Exhibit 54 (which contains relevant pages from the certified Coastal Land Use Plan and the Coastal Zoning Ordinance).

On October 25, 1991, ARCO applied to Santa Barbara County for a Conditional Use Permit and Coastal Development Permit to construct two golf courses and appurtenant facilities on the site. The Conditional Use Permit (CUP 91-CP-085) was approved by the County in August 1993 and was appealed to the Commission by Surfrider Foundation thereafter.

The Coastal Commission determined that the Surfrider appeal raised a substantial issue with respect to conformity with the County's certified LCP and asserted coastal development permitting jurisdiction over the project (November 17, 1993 hearing). On

[1] The County's LCP was certified in 1982.

April 13, 1994 the Commission conducted a *de novo* public hearing on the merits of the appeal and denied the project. The applicant requested a reconsideration of the Commission's action. On July 3, 1994 the Commission voted to grant reconsideration of the previous denial of the permit. The Commission approved CDPA-STB-93-154 on November 16, 1994, subject to special conditions requiring the consolidation of the antiquated substandard lots (known as a portion of the former Naples Townsite) comprising a portion of the western end of the site and restricting the future redivision of the resultant two large parcels, the provision of vertical and lateral access easements offered by the applicants, and specifically incorporating all of the County's conditions of approval of the previous CUP into the Commission's permit. The Commission adopted revised findings reflecting this decision on February 8, 1995.

Surfrider Foundation petitioned for a writ of mandate in Santa Barbara County Superior Court challenging the Coastal Commission's approval of the permit. The trial court denied Surfrider Foundation's petition and the Court of Appeal upheld that decision on January 27, 1997. The Court of Appeal found that the Commission's findings and decisions regarding the project were legally valid.

During the litigation, the two-year time limit on the original Coastal Development Permit approval for the project was tolled. Consequently, the first term of the permit was extended until January 28, 1999. On January 7, 1999 the applicants submitted a timely request to extend the permit.

In addition, before the expiration of the permit for the golf course, the applicants also processed other permits for various aspects of the oil and gas facility abandonment and removal. The project description for the golf course permit states that separate permits for the abandonment and removal of the former Arco oil and gas production facilities, and the subsequent cleanup afterward, would be processed and issued as separate approvals by the Santa Barbara County Planning Department, Energy Division. Santa Barbara County thereafter approved and issued two Coastal Development Permits for various aspects of the abandonment and removal of oil and gas processing facilities and other structures on the site. The authorized development was completed in December, 1997 and January, 1998. The County approved a third CDP for contaminated soil remediation. The first two of the three permits were for removal of the physical facilities, which was completed in December of 1997 and January of 1998. The third CDP addressed contaminated soils discovered on the site after the removals (ARCO refers to the cleanup as a "Remedial Action Plan"), and was approved in 1998.

The first two permits were not appealed to the Commission. The third CDP, concerning remediation of contaminated soils was approved by County staff in 1998 and timely appealed to the Commission thereafter. Therefore, the CDP for the ARCO Remedial Action Plan was not issued, and the appeal is pending.

ARCO also proposed a number of project modifications to the golf course project description, which the County authorized through a substantial conformity determination in 1998. The County approved a final CDP for the project, including the project

changes that had been processed through substantial conformity determination, on December 3, 1998. This CDP was timely appealed to the Commission, and is also pending. The latter appeal addresses similar project modifications to those the applicants presently propose to the project that was the subject of the previous permit, CDP A-4-STB-93-154.

On November 9, 1998 ARCO submitted an application to the Coastal Commission for amendments to CDP A-4-STB-93-154, encompassing the changes to the project description that were approved by County staff pursuant to the pending appeals. On December 3, 1998 the County approved the final CDP for the proposed project, including the changes that were the subject of the amendment application. The Commission's Ventura District Office received a notice of final action on December 4, 1998, and staff subsequently received a timely appeal. Staff received the administrative record from the County on December 18, 1998.

During this period, according to the applicants' agents, some or all of the present applicants closed escrow with the former permittee, ARCO, for purchase of the Dos Pueblos golf course site. CDP A-4-STB-93-154 was transferred from ARCO to the applicants on March 2, 1999.

1.3 Changed Circumstances

The applicants' representatives have submitted a lengthy and detailed argument that the scope of Commission review is limited in this proceeding. Therefore, the Commission finds that a detailed response is necessary.

The Commission denied the applicant's request for an extension of the subject permit in June 1999. The applicable regulation states:

> ***If three (3) commissioners determine that there are changed circumstances that affect consistency of the development with Chapter 3 policies of the Coastal Act or with a certified LCP if applicable, the extension shall be denied and the development shall be set for a full hearing of the commission pursuant to Subchapter 1 of these regulations. However, the applicant shall not be required to file a new permit application but instead, shall submit any information that the executive director determines is necessary to evaluate the effect of the changed circumstances. (14 Cal. Code of Regulations, Section 13169(d)(1)).***

The "full hearing of the commission" referred to in the regulation is a hearing that addresses whether, in light of changed circumstances since the date of Commission approval of the subject project, the project meets the standards of review set forth in Section 30604 of the Coastal Act. With the exception of the findings of consistency that may be affected by changed circumstances, the Commission's 1995 findings, adopted after the Commission approved the project in November 1994, are final and binding and may not be reconsidered. As discussed below, those findings were challenged in court

by Surfrider Foundation, and were upheld by the Court of Appeal. This is both consistent with the regulation cited above and the common law principles of law of the case and *res judicata*, which direct that an agency may not take an action that conflicts with the Court of Appeal's decisions regarding the same matter, except as expressly authorized by statute. Therefore the Commission's findings regarding consistency with the County LCP policies concerning conversion of agricultural land and preservation of prime agricultural soil, and provisions that require preservation of stable urban boundaries and ensure adequate services for new development, continue to apply.

Notwithstanding those issues for which there are no changed circumstances, the Commission must evaluate the project, including new information regarding the effect of the changed circumstances, to ensure consistency with the certified Santa Barbara LCP. As discussed in detail below, the following changed circumstances have been identified on the project site since approval of CDP A-4-STB-93-154 in November 1994:

- Presence of California Red-legged Frog
- Presence of Tidewater Goby
- Increased population size of Monarch Butterflies
- Increased population size and habitat area of Southern Tarplant
- Nesting habitat of White-tailed Kite
- Previously unidentified wetlands that formed after energy facilities were removed
- Previously unidentified contaminated soil areas (separately addressed in pending appeal)

Applicants' Arguments Regarding Scope of Commission Review

The applicants have made several legal arguments related to the scope of the Commission's jurisdiction to review the golf course project. The Commission does not agree with these arguments, for the reasons briefly discussed below. The Commission finds that it has jurisdiction to evaluate all of the environmental impacts of the project that are addressed in these findings.

The first argument the applicants make is that the Commission may not review or evaluate the impacts of the project that relate to changes in the biological resources on the site that have occurred since the last Commission hearing on the project in June 1999. The applicants argue that the only "changed circumstance" that the Commission may consider is the presence on the site of red-legged frogs, a threatened species under the federal Endangered Species Act (ESA). This is the changed circumstance that was the basis for the Commission's denial of the request for extension of the permit in June 1999. The applicants argue that after a finding of changed circumstances, at the new hearing on the project, the Commission may not consider any additional changed circumstances that have subsequently occurred, in determining whether the project complies with the LCP. The Commission disagrees with this position. Neither

the Coastal Act nor its implementing regulations contain such a limit on the Commission's review of a project in this situation.

In this case, the Commission found that the presence of threatened red-legged frogs was a changed circumstance in June 1999. The applicants then developed a habitat conservation plan that was reviewed and eventually approved by the U.S. Fish and Wildlife Service. Only after obtaining approval of the habitat conservation plan in January 2002, the applicant had the necessary authorization from the U.S. Fish and Wildlife Service to proceed with the project in a manner that would not jeopardize the survival of the threatened red-legged frog. The approved habitat conservation plan embodies the applicants' proposal for addressing the changed circumstance – the red-legged frogs – that was identified at the June 1999 hearing. However, in the course of reviewing the reports prepared by the applicants' consultants after the June 1999 hearing, as well as information obtained by Santa Barbara County, and other information that was obtained after the June 1999 hearing, the Commission has determined that there are additional changed circumstances involving the biological resources at the site and the impacts of the proposed project on those resources that have occurred since the June 1999 denial of the permit extension. In deciding at this time whether to approve the permit, the Commission may properly evaluate the additional changed circumstances on the site that have occurred since the Commission's last hearing on the project in June 1999. There is no restriction that limits the Commission's review to only the changed circumstance that was identified in June 1999 when the Commission denied the permit extension. Rather, under applicable legal principles the Commission must apply the facts and the law as they exist at the time the Commission makes its decision. Thus, the Commission must now decide whether, with project modifications proposed by the applicant, and in light of the changed circumstances relating to coastal resources on the site that have occurred since the last hearing in June 1999, the project complies with the LCP.

The applicants' second argument regarding the scope of the Commission's review is that the Commission already had the opportunity to review the impacts of the project on raptors, including white-tailed kites, and may not address this now. The applicants assert that when the County initially approved the CDP for the project, potential adverse impacts on raptors, including white-tailed kites, were identified and certain mitigation measures were imposed. Therefore, the applicants argue that the fact that white-tailed kites have nested at the site in the last few years does not represent a changed circumstance and the Commission may not evaluate whether the project complies with the LCP standards applicable to nesting kites. The Commission disagrees because at the time of the hearing on the CDP in 1994 and the hearing on the request for extension of the permit in June 1999, there was no evidence that white-tailed kites nested at the site. The administrative record indicated that white-tailed kites were a "potential" species on the site, but that they were not "documented" to be present. Since, according to the information in the administrative record, kites were not nesting at the site, the consistency of the project with the LCP provisions that protect roosting, nesting and foraging habitat of kites was not evaluated. Because there was no evidence that kites nested at the site in 1994 when the Commission approved the CDP,

there was also no basis for the Commission to impose conditions to require compliance with the white-tailed kite development standards in the LCP. Since there was no evidence that kites were nesting at the site at the time of the Commission's previous hearings on the project in 1994 and in June 1999, the fact that kites have nested at the site in the last few years represents a changed circumstance.

The applicants' third argument regarding the Commission's scope of review relates to whether the LCP protections for white-tailed kites are applicable to the ARCO Dos Pueblos site. The County Land Use Plan identifies kite habitat at one location known as More Mesa. However, a review of the LCP as a whole indicates that, although More Mesa may have been the only known kite habitat at the time the LCP was certified, the LCP requires protection of kite habitat that is found at other locations in the future. The local implementation plan included in the LCP is referred to as the "Coastal Zoning Ordinance." This Ordinance contains Section 35-97, which is entitled "ESH Environmentally Sensitive Habitat Area Overlay District." Habitat of the white-tailed kite is one type of environmentally sensitive habitat that is protected by this Ordinance. Section 35-97.14 of the Ordinance is entitled: "Development Standards for White-Tailed Kite Habitats." The applicable development standards are set forth in paragraphs 1 through 4. Paragraphs 1 through 3 apply to all kite roosting and nesting areas. Paragraph 4, while it does refer to "preserving the ravine and plant communities on More Mesa for nesting and roosting sites", also more generally requires that "the maximum feasible area shall be retained in grassland to provide feeding area for the kites." This latter requirement is not limited to More Mesa.

Furthermore, the Ordinance clearly states that any environmentally sensitive habitat that is discovered after certification of the LCP shall be protected by the Ordinance. Section 35-97.3 is entitled: "Identification of Newly Documented Sensitive Habitat Areas" and states:

> *"If a newly documented environmentally sensitive habitat area, which is not included in the ESH Overlay District, is identified by the County on a lot or lots during application review, the provisions of Secs. 35-97.7 – 35-97.19 shall apply."*

This provision makes it clear that the development standards for kite habitats in Sec. 35-97.14 apply to kite habitat in any location where a project is proposed. Therefore, the Commission disagrees with the applicants' argument that the development standards in the LCP that protect white-tailed kites only apply to kites found on More Mesa.

A final argument that applicants have made is that Commission staff improperly delayed issuance of the CDP for the golf course project until the expiration date passed, and therefore the Commission should be estopped from denying the project at this time. The applicants assert that issuance of CDP A-4-STB-93-154 before the expiration date would have allowed the development to commence and ARCO would not have needed a permit extension. Then the Commission could not have addressed

any changed circumstances, including discovery of red-legged frogs, and could not deny the project based on the existence of changed circumstances. The Commission rejects this argument because, as explained below, the Commission staff did not improperly delay issuance of the CDP.

Commission staff did not issue CDP A-4-STB-93-154 prior to the expiration date of January 28, 1999 because there were unresolved issues regarding whether the project, as modified, complied with the prior to issuance conditions of the permit. The County imposed numerous conditions of approval in its Conditional Use Permit (CUP) for the project, which were also incorporated by reference into the Commission's permit, CDP A-4-STB-93-154, on appeal. The litigation challenging the Commission's CDP was finally resolved in March 1997. Pursuant to the tolling provision of the judgment, the applicant had until January 1999 to vest the permit (a period of 22 months). However, it was not until very close to the end of this period, on December 3, 1998, that the County made its determination that all the prior conditions of approval were satisfied and approved Coastal Development Permit No. 98-CDP-274. Issuance of this CDP is the method the County used, pursuant to its LCP, to make a determination that the project as modified complied with the conditions of approval imposed through the CUP. (The County utilizes a two-permit process – its first discretionary permit approval (the CUP) imposes conditions on the project and its second permit approval (the CDP) determines that the conditions have been met. Pursuant to the County's LCP, both permit decisions are appealable to the Commission). The County's approval of Coastal Development Permit No. 98-CDP-274, which determined that the project as modified complies with the conditions of the CUP, which were also incorporated as conditions of the Commission's CDP, was appealed to the Commission on December 18, 1998. The Commission staff determined that it was not appropriate to issue the permit without the Commission having addressed the unresolved issues concerning compliance with the prior to issuance conditions of the CDP (CDP A-4-STB-93-154).

The appeal was received on December 18, 1998, which did not allow sufficient time for Commission staff to evaluate the appeal, prepare a report and recommendation, mail the report and provide the required public notice of the hearing, in time to schedule it for hearing at the next meeting, which was during the week of January 4, 1999. Therefore, the Commission opened and continued the hearing on the appeal on January 5, 1999. The matter was scheduled for the next Commission hearing, on February 4, 1999. However, CDP A-4-STB-93-154 expired on January 28, 1999; therefore, on January 7, 1999, ARCO applied for an extension of the permit. In January 1999, information was raised regarding presence of threatened red-legged frogs at the site. The Commission subsequently denied the request for extension of the permit based on the presence of threatened red-legged frogs, which constituted a changed circumstance. As explained above, it was reasonable for Commission staff not to issue the permit until the appeal that raised issues regarding compliance with the permit conditions was resolved.

In addition, it appears that ARCO did not have authorization from the County to legally commence construction prior to the expiration date of CDP A-4-STB-93-154. The County made its determination that all its conditions of approval were satisfied on

December 3, 1998, through its approval of Coastal Development Permit No. 98-CDP-274. This CDP was appealed to the Coastal Commission on December 18, 1998. Pursuant to the applicable regulations and the County LCP, the County's approval of the project was suspended during the appeal. Therefore, ARCO did not have the necessary local approval to commence the project prior to the January 28, 1999 (the expiration date of CDP A-4-STB-93-154).

Other evidence of changed circumstances exists as well. Data collected between October 2000 and March 2001, and submitted by the applicants at the request of staff confirmed that thousands of monarch butterflies were using the site by that time. A count of 72,208 total monarch butterflies was made by the applicants' consultants, Althouse and Meade as the result of butterfly counts recorded on site on 28 different dates from October 6, 2000 to March 9, 2001. Evidence also showed that the butterflies were aggregating in a 159-tree eucalyptus grove within the proposed Par 3 course adjacent to Eagle Canyon (north of the railroad) - a location that had not been documented previously. The applicants' consulting biologists, writing to the Commission on behalf of the applicants on February 1, 1999, merely noted that "a few" butterflies were seen on the site, and that the stand (of eucalyptus trees) "in Eagle Canyon near the train tracks is dense enough to support roosting." This stand is likely the grove identified as "Grove J" which is newly identified as an aggregation grove for monarch butterflies. The butterflies were not previously documented to use this grove at the time of the Commission's 1994 approval. [2]

As discussed in detail below, reports prepared by the applicants for the USFWS review and information submitted at the request of Commission staff have identified the presence of tidewater gobies; a significantly increased number and usage pattern of monarch butterflies; new populations and significant numbers of southern tarplant—together with information that southern tarplant is now designated as a California Native Plant Society (CNPS) List 1(b) species; and nesting by at least two pairs of white-tailed kites. The white-tailed kites are designated by Fish and Game Code section 3511 as a fully protected species and as such they cannot be taken at any time by permit or otherwise except for scientific research or to protect livestock. In addition, new wetlands have been formally delineated on site in locations where oil and gas facilities were removed in December of 1997 and January of 1998, as has the presence of contaminated soils left from the use of the site for oil and gas production and related activities.

There is also evidence of the existence of some changed circumstances that would potentially have been relevant to the Commission at the June 1999 permit extension request hearing. The record supporting the Commission's 1994 approval of the former permit only identified the butterflies numbering approximately a maximum of 150, and ranked the use of the site by monarch butterflies as minor (1992 EIR). As noted, the

[2] Commission staff notes that monarch butterflies have been observed by staff on site visits in September 2001, March 2002, and November 2002 and appear to be utilizing the site all year.

applicants have recently submitted reports to the Commission that counted thousands of monarch butterflies utilizing the Eagle Canyon area of the site in the years following the 1999 hearing. The counts were only made by consultants on behalf of the applicants after the June 1999 hearing. In one year, the applicants' consultant counted approximately 70,000 monarch butterflies at the site.

In another example of information concerning changed circumstances not known to the Commission in June, 1999, a rare plant was discovered by the applicants in 1998, before the final County CDP was even issued for the golf course project -- in a new location on the site, and in a significantly larger number than had been documented previously. The administrative record supporting the Commission's approval of the former permit in 1994 only contained evidence that the southern tarplant had been identified in the area proposed for the 18th fairway, and in a population numbering only 20 to 30 individual plants. In 1998, however – almost a year before the Commission's June 1999 hearing on the permit extension request—the applicants documented a new population of southern tarplant, in a different location of the site, numbering approximately 4,500 individual plants. This population would be eliminated by the proposed development.

This information would have identified a changed circumstance concerning the plant had it been made available on or before the date of the Commission's June 1999 hearing. However, this information was not made available to the Commission staff until March of 2002.

In 2002, a Santa Barbara County environmental compliance monitor informed Commission staff that in 1998 he discovered a large population of southern tarplants (later numbered at approximately 4,500) on the site where the clubhouse/parking lot and a portion of the Par 3 course are now proposed. The Commission staff had requested that the applicant prepare an updated vegetation map for the purpose of performing the changed circumstances review. The applicants submitted a map dated November 2001 that did not show southern tarplant growing anywhere on the site. Subsequently, after further consultation, the applicants submitted an updated map to Commission staff in April 2002 that included the 1998 population of the southern tarplant. This map documents nine different locations of southern tarplant on the site, including the location where approximately 4,500 southern tarplants were observed in 1998, and is reproduced in reduced for in Exhibit 3 (Biological Resources Map, dated May 5, 2002, prepared by Dudek & Associates).

The administrative record supporting the Commission's November, 1994 approval of the previous permit, listed southern tarplant as a California Native Plant Society[3] List 3

[3] The California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants of California (Inventory)* is widely accepted as the premier scientific reference on rarity in California flora. The *Inventory* currently includes distribution, ecology, and legal status information on over 2,000 rare taxa. The *Inventory* is the result of decades of investigation by CNPS in close collaboration with professionals in the California

species as described in the CNPS *Inventory of Rare and Endangered Plants of California (Inventory)* (List 3 status means that CNPS requests more information about the plant to establish whether it is rare, threatened or endangered – List 3 constitutes a "need more information" list). The only analysis of the plant's location on the site established in the administrative record up until November 1994 was that contained in the 1992 Environmental Impact Report (EIR) prepared for the proposed project. The final EIR, certified by the County Board of Supervisors in 1993, stated that 20 to 30 of the plants were located in an area proposed for development as the 18th fairway of the golf course, that the plant was designated CNPS List 3, and that loss of the population could be mitigated elsewhere on site with no residual adverse impacts to the southern tarplant. The EIR incorporated this analysis by reference from documents prepared by the applicant's consulting biologists (Interface Planning). In fact, the southern tarplant was officially upgraded from CNPS List 3 to List 1(b) by the time the Commission acted on the former permit in November of 1994 (and was known by the applicant to be slated for such change as early as May 1992 (Exhibit 28), before the EIR for the proposed project, listing the plant as CNPS List 3, was certified. This information was not provided to the Commission when it acted on CDP A-4-STB-93-154 in 1994 or provided to the Commission at the June 1999 hearing on the request for extension of the permit.

There is a significant difference between the way a List 3 plant (a list indicating that more information is needed to determine the accurate status of the species) and a List 1(b) plant (rare, threatened or endangered California native plant) are considered. This is particularly true when determining whether it is appropriate to change a project to avoid impacts (List 1(b) status indicates this according to the CNPS and the CDFG) or whether allowing the impact, with mitigation, to occur. (See CNPS-related documents, including statement of CNPS policy in opposition to transplanting rare, threatened, or endangered plants, Exhibit 36).

Department of Fish and Game, Bureau of Land Management, National Park Service, U.S. Fish & Wildlife Service, U.S. Forest Service, University of California, California State Universities, and other private and public institutions. Both the USFS and CDFG have signed memoranda of understanding with CNPS regarding information sharing for the *Inventory*. Academic researchers use the *Inventory* as a source for scientific information on the rarity and distribution of, and threats to, rare California plant species. Agencies such as CDFG, USFS, and BLM use the *Inventory* to develop their sensitive plant lists, to prioritize protection for endangered taxa, and to assist them in identifying potential rare plant impacts for individual projects. The *Inventory* has been maintained by CNPS since 1968 and is currently in its sixth edition. The CNPS Rare Plant Scientific Advisory Committee (RPSAC), composed of eminent botanists from throughout California, supervises development of the *Inventory*. Decisions on inclusion are based on an impartial scientific evaluation of information derived from all available sources following a set of formal criteria. CNPS botanical staff, RPSAC, and a network of over 400 professional botanists throughout the state continuously and rigorously review the *Inventory* for accuracy and completeness.

It is notable that elevation from List 3 to List 1(b) status qualifies a plant as a *de facto* candidate for state, and possibly federal, listing as threatened or endangered pursuant to the state and federal Endangered Species Acts. List 1(a) status, the only rank higher than 1(b) in the *Inventory* indicates that a plant is considered to be extinct. Of more importance to the Commission is the implication of the change in status, combined with the significant population numbers noted in 1998, for evaluation of the proposed project's consistency with the certified LCP. This is discussed in more detail in the relevant section of the findings.

There is some debate about whether List 3 status confers status as a rare or endangered species on a plant so listed, in terms of the interpretation of the applicable provisions in the County's certified LCP. Classification as a List 1(b) plant establishes that the plant's habitat is ESHA and must be protected pursuant to the ESHA protection policies of the LCP (including but not limited to LUP Policy 9-36 and Coastal Zoning Ordinance sections 35-97.1, .3, .7, and .18). Therefore, there are changed circumstances with regard to the southern tarplant.

1.4 Staff Review of Changed Circumstances

At the June 7, 1999 hearing, the Commission denied the applicant's request for an extension of Coastal Development Permit A-4-STB-93-154. The Commission denied the extension of the permit in light of new information, confirmed by the U.S. Fish and Wildlife Service, that credible reports had identified the federally threatened California red-legged frog within Eagle Canyon, on the eastern edge of the site.

The applicants' then-pending amendment request was rendered moot by the Commission's denial of the extension, and the pending appeals were continued until the red-legged frog matter could be addressed (the applicants' attorney testified at the June, 1999 hearing that Permit Streamlining Act timelines did not apply to the appeals). The applicants indicated to the Commission that necessary reviews by U.S. Fish and Wildlife Service (USFWS) would be completed before a further Commission hearing on changed circumstances. Although it was not anticipated at the June 1999 hearing, this review took almost three years to complete, ending in January of 2002.

In anticipation of the forthcoming completion of the USFWS review, the applicants contacted Commission staff during the summer of 2001 to arrange meetings and project updates. The applicants had occasionally updated the Commission staff since the June 1999 hearing on the progress of the USFWS review. The applicants informed Commission staff at that time that the USFWS was progressing in its administrative review of a Habitat Conservation Plan for the California red-legged frog and tidewater goby.

Staff visited the site in September, 2001 at the applicants' invitation. The Commission staff sighted white-tailed kites foraging on the site during the site visit, and noted

significant stands of native bunchgrasses. After the site visit, staff requested an updated biological resources survey of the subject site, including specifically an updated vegetation map. The applicants subsequently submitted surveys undertaken by Dudek, Inc., which included a report summarizing raptor use of the site, and a vegetation map, both dated November 2001.

During this period of time, Commission staff additionally submitted comments to the USFWS concerning the potential impacts of the proposed project on the California red-legged frog. The final HCP prepared by the applicants, and associated documents, including the Section 10(a) incidental take permit were authorized by USFWS in January, 2002 and submitted to Commission staff thereafter by the applicants.

The applicants had previously informed Commission staff during the fall of 2001 that the Commission hearing on changed circumstances should preferably be scheduled after the USFWS had made final determinations concerning the applicants' HCP and the Section 10(a) permit for the proposed project. The applicants further concurred with the staff recommendation that given the relatively short time then remaining until the Commission's scheduled April 2002 hearing in Santa Barbara, the item should be placed on that agenda. The applicants supported this tentative schedule.

Representatives of interested parties (Surfrider Foundation, Sierra Club) discussed the proposed project with Commission staff during a conference call they had requested, in February 2002. The Surfrider and Sierra Club representatives stated during the conference call that among other impacts posed by the project, they were concerned that the project would adversely affect a rare plant, southern tarplant.

Staff subsequently researched the opponents' claims concerning the southern tarplant, and determined that the sensitivity status of this plant is California Native Plant Society (CNPS) List 1(b), a designation that shows that the plant is considered rare, threatened or endangered and is therefore a *de facto* candidate for listing as threatened or endangered under the California Endangered Species Act. (CNPS List 1(a) status - the only higher ranking under the state's Natural Diversity Database classification system--indicates that a plant is extinct). The CNPS rankings are available in the California Natural Diversity Database maintained jointly by the CNPS and the California Department of Fish and Game.

Staff additionally reviewed the administrative record and the most recent vegetation map submitted by the applicants (the November 2001 map prepared by Dudek, Inc., and submitted at the request of staff). The map did not show southern tarplant in <u>any</u> location on the subject site, nor was the plant mentioned in the updated biological resources report prepared by Dudek and Associates concerning the subject site in November 2001 and submitted by the applicants.

The staff also reviewed the HCP related materials prepared by the applicant for USFWS and discovered brief references to the plant, but no mapping of the plant. Staff reviewed the project EIR (prepared in 1992, certified by Santa Barbara County Board of

Supervisors in 1993) and found that southern tarplant had been documented growing in a single location of 20 to 30 individual plants in the midst of the proposed 18th Fairway. The EIR indicated that the status of the plant was CNPS List 3, however, which does not denote the degree of rarity that CNPS List 1(b) status confers upon a plant so listed.

In early March, 2002, Commission staff requested that the applicants clarify the occurrence of southern tarplant on the subject site. Initially the applicants responded that the southern tarplant grew "under the (proposed) clubhouse where it always has been." The applicants subsequently indicated that in fact the population of southern tarplant at the proposed 18th Fairway location that is identified in the EIR was the only population that had ever been identified in the administrative records supporting previous Commission actions concerning the subject project.

Staff contacted the Santa Barbara County Energy Division staff, which further referred questions about the plant's occurrence on the subject site to the County's contract environmental compliance monitor for the Arco Dos Pueblos project, John Storrer. Mr. Storrer reported that he had identified an extensive population of Southern Tarplant during the summer of 1998, after abandonment of old oil and gas facilities had exposed the soils beneath the site of the old ARCO warehouse and loading racks. The southern tarplant seeds dormant in the soil had germinated under the ideal conditions of site abandonment (possibly including soil disturbance, availability of light and warmth, lack of competition from other plants, and perhaps other unknown factors). County staff were unable to locate specific reports prepared by the applicants to assess the Southern Tarplant population discovered in 1998, but referred Commission staff to Jaqueline Bowland,[4] a consulting botanist who had evaluated the population.

On request Ms. Bowland stated to Commission staff that in 1998 she performed a field investigation of the population discovered by Mr. Storrer and numbered the Southern Tarplant population at approximately 4,500 individual plants. This was a significant find -- a Southern Tarplant population of this size is known to occur in only a handful of other locations in the state.

[4] Ms. Bowland was the senior biologist for Interface Planning when that firm performed the first biological surveys of the site on behalf of Arco Oil and Gas Company, commencing in 1990/1991. Ms. Bowland documented the population of Southern Tarplant on the proposed 18th Fairway, and noted that the discovery was thought to be a northerly range extension for the Southern Tarplant, which had not been documented any further north than the Arco Dos Pueblos site at that time, in California. Interface Planning was purchased by Dudek, Inc., the firm that presently provides consulting services to the applicants. Ms. Bowland is now an independent botanical consultant, and in that capacity performed a survey of the new Southern Tarplant population discovered by Mr. Storrer. Ms. Bowland estimated the population of Southern Tarplant in the location Mr. Storrer had discovered as numbering approximately 4,500 plants in 1998.

Ms. Bowland further stated that she could not find any maps she may have made in 1998 of the Southern Tarplant population location (although Mr. Storrer was able to locate the area of the population spatially) and noted that she had informed the applicants' consultant, Dudek, Inc., of her conclusions regarding the 4,500 southern tarplants, in 1998.

On March 14, 2002, Commission staff visited the subject site with applicant/agent Richard W. Hollis, Jr., then-County Energy Division Planner Kristen Gettler, Mr. Storrer, and Klaus Radkte, Ph.D., and John Thomas, Ph.D., of GeoSafety, Inc. No germination of Southern Tarplant was evident in the old warehouse/loading rack location that was the site of the 1998 population bloom. Skeletal remains of the previous years plants (the plant is a late summer blooming annual that dies in the fall) were visible, however and at least fifty of the dried plants were flagged and an estimate made that at least several hundred could be identified.

Subsequently, the applicants provided on Commission staff request a number of documents, including other surveys by Dudek, Inc., that memorialized the presence of Southern Tarplant in approximately nine locations on site. This information concerning the Southern Tarplant indicates that the increase in numbers and locations of Southern Tarplant on the subject site is a changed circumstance.

Information also came to light during this period that the applicant proposes to remove the soil and seedbank in the area of the newest large Southern Tarplant population described above when the contaminated soils in that area are excavated. This had not been disclosed previously to the County staff. Thus the County staffs' approval of a CDP finding the project in substantial conformity with the previously imposed conditions (with an appeal to the Commission presently pending) was processed without an understanding of the impacts the proposed project or amendments thereto would have on this rare plant.

The applicants realized in late March, 2002 that they would be unable to adequately address the questions raised by Commission staffs' discovery of the Southern Tarplant information in time for staff to prepare an adequate recommendation for the Commission's April hearing. In addition, as explained below, a raptor nesting survey was underway during the month of May, and therefore a June hearing was scheduled for this item.

As noted previously, Commission staff (then-staff ecologist Jon Allen, Ph.D.) observed white-tailed kites foraging on the subject site during a site visit in early September 2001. Subsequently, the applicants' consultant, Dudek, Inc., prepared a report concerning raptor use on the subject site, and an associated map. The Dudek report and map indicated that white-tailed kites were present on the subject site, albeit outside of nesting season, and noted the presence of white-tailed kite nests on the subject site. However, the applicant subsequently asserted that the Dudek, Inc. report dated November of 2001 had incorrectly identified kite nests on the subject site because the nests had been noted outside of nesting season and were not in active use. (White-

tailed kite nesting season lasts from approximately April through August). Therefore, the reports and maps prepared by Dudek, Inc. were revised to delete reference to presence of white-tailed kite nests and substitute the phrase: "accumulation of sticks and debris."

As nesting season had almost arrived, Commission staff requested that the applicants verify their position that there were no white-tailed kites nesting on site by doing a followup survey undertaken *during* nesting season, which was about to commence. The applicants complied and retained a biological consulting firm (Pacific Southwest Biological Services to perform the site visit.

During this time, Commission staff also received anecdotal reports from County staff that white-tailed kites had regularly been seen foraging on the Arco Dos Pueblos site and that reports of white-tailed kites nesting on the site had also been received. Commission staff requested that the County staff ask Mr. Storrer, who had long monitored the Arco Dos Pueblos site and is a respected naturalist with extensive environmental impact analysis experience in Santa Barbara County, to address the possibility of white-tailed kite nesting on the site. In response, Mr. Storrer reviewed his site monitoring field notes, which recorded his observations of kite nest building activity in March 2000. Mr. Storrer also suggested that Commission staff contact Mark Holmgren, who is the curator of the vertebrate collection at the University of California, Santa Barbara, Museum of Systematics and Ecology. Mr. Holmgren is a well known wildlife expert with special expertise in raptor ecology. According to Mr. Storrer, Mr. Holmgren had also supervised a number of systematic surveys of white-tailed kites in the Santa Barbara County area.

Conferring further with the Commission's senior staff ecologist regarding white-tailed kite nesting on site, learned that the Commission's technical services staff had developed specific study protocols for winter roosting or nesting season evaluation of raptors. The protocols were developed in consultation with several noted raptor experts who provided independent review of the raptor habitat issues associated with the Bolsa Chica project.

Staff immediately provided the nesting season survey protocols to the applicants, and requested that the applicants implement the survey in accordance with the established protocols, to the extent feasible given the time remaining before the then-scheduled June 2002 Commission hearing.

PSBS commenced the protocol nesting surveys in May 2002 on behalf of the applicants. John Storrer accompanied the PSBS surveyors as the County's representative, at the request of Commission staff. Through almost the end of May 2002, the PSBS survey only documented one pair of kites on the subject site. The survey eventually documented two pairs of nesting white-tailed kites on the subject site when UCSB biologists provided detailed instructions to PSBS on where to locate the second pair. After the second nest was confirmed, PSBS terminated the study one week early at the applicants' request.

At the request of Commission staff, Mr. Holmgren and his research associate, Morgan Ball, also conducted a survey of white-tailed kite use of the Arco Dos Pueblos site area, in conjunction with the applicants' consultants' survey. Commission staff accompanied Mr. Holmgren and Mr. Ball for one morning survey in mid-May 2002. Using spotting scopes and binoculars, and positioned at an elevation-appropriate vantage point, the group was able to identify and track the movements of two pairs of white-tailed kites utilizing the subject site. Mr. Holmgren and Mr. Ball also noted behavioral evidence that the westernmost pair already had chicks in the nest. The results of field surveys performed by Mr. Holmgren and Mr. Ball were provided in written form to Commission staff, accompanied by annotated aerial photographs, in June 2002.

Subsequently, it was verified to the satisfaction of the applicants and Commission staff that a) two pairs of white-tailed kites nested on the subject site in 2002, and b) the westernmost pair not only had chicks in the nest, but successfully fledged five white-tailed kites from that nest. The reproductive success of the easternmost pair was not documented because the applicants terminated the study after egg laying had likely occurred but before nesting success was known.

The raptor nesting survey was terminated by the applicant on May 30, 2002 when the applicant's consultant, and the County of Santa Barbara's environmental monitoring contractor confirmed the UCSB biologists' observations that two pairs of White-tailed Kites were nesting on the site (one pair had five fledglings by the time the survey ended). Commission staff received the applicant's nesting report conclusions on June 7, 2002. The project was scheduled to be heard by the Commission on the following Monday. Consequently, the staff report published on May 31, 2002 only contained a recommendation based on the one confirmed Kite nest (within the proposed 18th Fairway of the course).

Because staff and others did not have time to adequately evaluate the implications of the second confirmed White-tailed Kite nest, the Commission opened the public hearing on June 10, 2002, took preliminary staff, applicant, and public testimony, and then continued the hearing. The Commission requested that staff and the applicant confer further regarding outstanding issues, and that staff evaluate the site's habitat value for species subject to changed circumstances. The Commission also requested that staff clarify whether recommendations for revised plans, if such recommendations were made by staff, specifically indicate whether a golf course project would still be feasible.

In accordance with the Commission's direction, staff and the applicants' representatives met on July 3, 2002 in the Ventura District office. Subsequently, the applicants retained a new consultant, Jeffrey B. Froke (Ph.D. in geography, UCLA, M.S. in ornithology, wildlife studies, Humboldt State University, Principal, California Wildlife Ecology, former principal of Golfauna Consulting). Dr. Froke and Dr. Dixon met in San Francisco in September 2002 to discuss the project. According to Dr. Dixon, Dr. Froke provided anecdotal observations of Monterey County and other golf courses he lived near or had

consulted on, where white-tailed kites used some portion of the sites. The applicants' agents suggested that the October Commission hearing proposed by staff be postponed to allow Dr. Dixon to visit the Monterey County golf courses familiar to Dr. Froke. Dr. Dixon and Dr. Froke subsequently attended site visits to the Monterey County golf courses arranged by Dr. Froke.

On Tuesday, October 8, the applicants' agents and Commission staff met again in the Ventura District office, with Dr. Dixon and Dr. Froke attending via conference telephone. The applicants' agents proposed the submittal of a report and recommendations by Dr. Froke to Dr. Dixon for consideration by October 9 (the next day). Staff and the applicants agreed that the matter would be placed on the Commission's November agenda if possible, but with the understanding that staff must have time to adequately consider and respond to the applicants' pending proposal.

On November 4, 2002, Commission staff, including Dr. Dixon, met with Dr. Froke and Mr. Storrer on the subject site. The purpose of the visit was for Dr. Dixon to observe the white-tailed kite habitat on site. Dr. Dixon's memorandum report concerning his observations and his professional opinion as the senior Commission staff ecologist are attached as Exhibit 13, and a map, Exhibit 1A, illustrates his conclusions regarding environmentally sensitive habitat of white-tailed kites on the subject site. In short, report finds that the project as proposed would not be consistent with the protection of the roosting, nesting and foraging habitat of the white-tailed kite on site, as discussed further below.

2.0 PROJECT DESCRIPTION and SETTING

2.1 Proposed Project

The proposed project includes construction of a public 18-hole golf course (approximately 100 acres) to operate 360 days/year and serve approximately 60,000 rounds of golf (1-4 golfers per round); 9-hole executive golf course (approximately 8 acres) to serve approximately 20,000 rounds per year; driving range and putting green (approximately 12 acres); turf farm (up to 3 acres); approximately 9,300 sq. ft. of clubhouse (restaurant/bar with 130 seats, banquet facilities, pro-shop, meeting rooms, administrative facilities, lockers); 8,012 sq. ft. cart barn; 7,974 sq. ft. maintenance and office building; approximately 15,000 sq. ft. maintenance yard (including wash-off area and fueling island/gasoline tanks, service yard); approximately 5,000 sq. ft. enclosed chemical and trash storage area including 800 sq. ft. chemical storage building; approximately 300 paved parking spaces, including 15 public coastal access parking spaces (clubhouse, cart facilities, parking cover approximately 8 acres, total), 700 sq. ft. halfway house (including snackbar, restrooms, starter station), other restroom facilities and three shelters; two 100 ft. long, 14 ft. high x 14 ft. wide tunnel undercrossings of the railroad tracks (to route golf carts paths through a zigzag course layout -- both undercrossings are located within riparian corridors; approximately 310,000 cu. yds. of grading (155,000 cu. yds. of cut; 155,000 cu. yds. of fill, including a maximum elevation change of 25 feet from existing to finished grade, with grading estimated to impact 125

acres); installation of 5,200 linear feet of 8" reclaimed water line from Goleta to site; construction of 4 acre-foot reclaimed water storage lake (8 ft. deep, 30,000 sq. ft. surface area), private on-site septic disposal system reliant on three (3) drywell pits for effluent disposal; dedication, construction, operation and maintenance of various public coastal access improvements; landscaping; installation of acceleration and deceleration lanes in Caltrans right-of-way; merger of all 23 existing lots (including 21 substandard-sized lots) into two parcels totaling 202 acres and applicant's proposal to restrict the resultant parcels from future subdivision; and development setbacks of a minimum of 55 feet from the bluff edge for all permanent, structural developments, and except for public coastal access trails, development setbacks of a minimum of 30 feet from top-of-bluff seaward edge for all other non-structural development (such as greens, fairways, tee boxes, cart paths, landscaping).

2.2 Proposed Amendments

The applicant proposes to amend the previously approved project in accordance with the revised project description dated February 28, 2002, and as clarified on June 4, 2002 . The applicants have also provided additional amendments on November 20, 2002 incorporating recommendations concerning the white-tailed kite. As part of the proposed project, the applicant proposes to waive any future right to request approval for the installation of shoreline protective devices, pursuant to the attached letter dated April 5, 2002. (See Exhibits 8 and 9) The applicants also submitted additional amendments in the form of a proposed white-tailed kite habitat enhancement plan prepared October 10, 2002 by Dr. Jeffrey Froke, and attached in the set of documents submitted for collation with this report by the applicants (the packet of documents supplied by the applicants is attached at the end of the Exhibit packet for this report).

The applicants clarified on November 20, 2002 that certain additional recommendations made by Dr. Froke in a draft plan dated September 10, 2002, which Dr. Froke had previously provided as a conceptual document to Commission staff ecologist John Dixon, Ph.D., which were not carried forward into Dr. Froke's October 10, 2002 final report, are also proposed by the applicants. Dr. Froke's September 10, 2002 memorandum, as well as his consideration of issues concerning the California red-legged frog and the reclaimed water storage lake are also included in the attachment. The applicants' agent advised staff on November 21, 2002 (telephone conversation Andriette Culbertson to Melanie Hale) that Dr. Froke and Mark Jennings, Ph.D., an expert on the California red-legged frog who had provided comments concerning the advisability of providing an uncovered water reservoir and of using chemicals throughout the proposed golf course, were conferring further and that possibly a joint update of their recommendations concerning the placement and best design of the reservoir could be forthcoming (it would be included in an addendum if so).

The changes proposed by the applicant are generally described as: modification of the golf course layout, relocation of vehicular access, changes to location and layout of the tunnel undercrossings of the railroad tracks, and the slight relocation and significant redesign of reclaimed water storage lake, including an increase in depth from the 8 feet

previously approved to at least 15 feet in depth, with a volumetric increase in stored water from approximately 4 acre-ft. to 5.4 acre-ft. of storage capacity, with surface area remaining approximately the same - 30,000 sq. ft. In addition, the sides of the lake will slope to approximately the 4 ft. mark, with the sides extending vertically the remainder of the way to the bottom. The applicant also proposes modifications to the architectural design of buildings, changes to drainage and erosion control features and design (including a water quality management program that will divert up to the two-year storm volume of water on the proposed Par 3 course away from Eagle Canyon), installation of a future horse tie-up/bicycle rack; and an increase in the number and location of bridges. The applicant proposes changes to the location and design of public vertical accessways, addition of one previously excluded inholding parcel, and the merger of the resultant 24 total lots into two lots including the applicant's proposal to restrict the resultant 208 acres/two (2) parcels from future redivision. The applicant proposes to add an approximately 700 sq. ft. pumphouse and padmounted electrical transformer for pumping of reclaimed water, and additionally proposes revised Agricultural Turf Management Plan, Integrated Pest Management Plan, and Water Quality Plan.

The applicant has also submitted a technical water quality plan review (a full copy is included in the applicants' attachment appended at the end of the exhibit package). The new plan applies primarily to grading and best management practices added to improve protection of the Par 3 golf course area drainage. The plan incorporates elements that prevent up to approximately the two-year storm from running into Eagle Canyon Creek. Analyses by Commission water quality unit staff are contained in Exhibits 49 and 50.

2.3 Pending Appeal/Contaminated Soils

An appeal filed in 1998 is pending concerning a County approval of ARCO's plan to address contaminated soils remaining on the subject site. Petroleum hydrocarbons, heavy metals, and other contaminants were detected in various areas of the site that were formerly used for oil and gas production since the 1940s.

According to the present applicants, the resolution of the contamination is the sole responsibility of the former site owner and initial golf course permittee, ARCO (Atlantic Richfield, a subsidiary of British Petroleum). ARCO obtained County administrative-level approval for a "Remedial Action Plan" (RAP). ARCO's proposal generally allows all but the worst contaminated soils to remain in place--only highly contaminated surface soils would be excavated and removed from the site. The remaining contaminated soils would be entombed on site after either being regraded and mixed with clean soils to dilute contaminant levels and to form the desired golf course contours (then capped with two feet of clean soils), or simply left undisturbed where the contaminants were originally detected. ARCO has indicated that groundwater monitoring wells are unnecessary on the subject site, although some concentrations of certain contaminants are reportedly high enough to continue subsurface migration.

Changed circumstances affecting the physical environment within which the RAP would be implemented have arisen as stated above. Although the Commission staff prepared a preliminary recommendation in 1999 of "no substantial issue" concerning the grounds for the appeal concerning the RAP, staff did not know at that time, for example, that southern tarplant, a CNPS List 1(b) sensitive native plant species now grows in an area proposed for contaminant excavation and offsite disposal. In addition, the final grading and drainage plans for the golf course project do not address the locations of contaminated soils in the manner the RAP anticipated. The grading plans do not show the locations of existing (baseline) or post-grading contaminated soils, even though the most recent grading and drainage plans, executed by both applicant and County representatives after the RAP was locally approved could have included this information (but do not).

Thus, the Commission cannot fully consider the changed circumstances and appealed project associated with the cleanup without first considering the applicants proposal for the golf course. Otherwise the staff would have to recommend that the Commission find "substantial issue" with regard to the RAP appeal. Therefore, after acting on the golf course permit vis-à-vis the changed circumstances review, the Commission will consider the RAP appeal at a subsequent Commission hearing.

2.4 Physical Setting

The project site is located on a coastal marine terrace immediately east of the Naples area, approximately 1.5 miles west of the intersection of Winchester Canyon and U.S. Highway 101, on the Gaviota Coast of Santa Barbara County. The site is bounded on the north by Highway 101, and along the south by steep coastal bluffs facing the Pacific Ocean. Undeveloped open space and grazing lands border the property on the upcoast (west) and downcoast (east). The Baccara Resort (formerly the Hyatt) is located approximately one mile downcoast, toward Goleta, on the south side of Highway 101. The lands north of Highway 101 are presently open space/agricultural land ascending into the Santa Ynez Mountains of the Los Padres National Forest.

Most of the site is comprised of two large parcels bisected by the Union Pacific Railroad tracks. Since the Commission approved former CDP A-4STB-93-154, the applicants have also purchased a 4-acre lot that was previously an inholding owned by a separate party. Twenty-one of the old Township of Naples substandard, antiquated lots are located at the westernmost end of the site. The development potential of these substandard sized lots has not been determined, but the Commission certified an LCP amendment in April 2002 that authorizes the owners of the Naples lots to seek development agreements concerning the lots with Santa Barbara County. The County is presently negotiating a Memorandum of Understanding concerning potential development plans for Naples lots on the lands adjacent to the subject site.

Slopes on the terraced portions of the site are generally less than 10 percent, but nine coastal drainages incise the site, descending at slopes often greater than 30 percent

into riparian canyons below. The coastal bluffs at the southern edge of the terraces descend almost vertically to the beach below.

Eagle Canyon marks the eastern parcel boundary, and Tomate Canyon extends north-south in the western portion of the site. Seven smaller unnamed drainages exist on the site, all flowing generally from north to south, toward the Pacific Ocean.

Soils on the site are primarily of the Diablo Series. This high clay soil series is characterized by slow permeability, high shrink-swell potential. In some areas, where former energy facility abandonment has occurred, excavation and compaction of the typical clay soils on site has resulted in the formation of new wetlands (one of the changed circumstances addressed in this report). In some areas of the site, the soils are comprised of deep beds of old alluvial soils, which are highly permeable.

The local climate is marine dominated, with mild winter and summer temperatures, consistent onshore winds, and periodic summer fog. Average rainfall along this portion of the coast is approximately 17 inches per year. As is characteristic of the Mediterranean climate pattern of Southern California, most of the annual rain falls between November and March.

The most predominant vegetation on the site consists of large expanses of ruderal (non-native) grasslands interspersed with patches of native grasslands. Numerous specimen non-native trees, such as cypress, pine, and eucalyptus dot the site, forming informal windrows in some locations and groves in others (particularly in Eagle Canyon). Some eucalyptus groves in or adjacent to Eagle Canyon have become increasingly important as fall and winter monarch butterfly aggregation and overwintering sites.

The mature specimen trees south of the railroad tracks have attracted a relatively rare raptor, the white-tailed kite, previously not known to visit the site. White-tailed kites had been thought on the verge of extinction in California in the 1930s, made a rebound and possibly peaked in numbers during the 1970s, and have fluctuated in numbers since. White-tailed kites were afforded special protection in the Santa Barbara County LCP in the early 1980s, but by the early 1990s, kites were virtually absent from the County. Abandonment of the area by white-tailed kites during that time was likely caused, at least in part, by the prolonged drought the ended in 1993. This spring, two pairs of white-tailed kites nested in Monterey pine and cypress trees (see Exhibit 1A).

Other habitat on site includes coastal sage scrub, small isolated wetlands (including a vernal pool of anthropogenic origin), riparian wetlands and stream corridors, southern willow scrub, fresh water marsh, an estuary in the mouth of Eagle Canyon, and the beachfront areas at the foot of the bluffs. Tomate Canyon contains a seasonal pond with high wildlife values, north of the railroad tracks.

Burmah Beach, located 1,600 feet east of the western parcel boundary is a known harbor seal "haulout" and rookery. In addition, the beach at the foot of the cliffs on the

site is a resting area for hundreds of Brown Pelicans. Naples Reef, which is considered a unique and sensitive habitat area, and an important surfing location, is located in the Pacific Ocean in close proximity to the western end of the site.

Eagle Canyon, which traverses the easterly boundary of the site, drains to the Pacific Ocean via a small estuary at the mouth of the canyon. Eagle Canyon Creek has been found to contain breeding habitat for the federally endangered California red-legged frog. In addition, the estuary at the mouth of the creek contains the federally threatened tidewater goby.

Two sensitive plants are found on site: southern tarplant and cliff aster. The cliff aster tends to inhabit the shale bluffs of the site, and therefore is mostly located outside of the proposed development envelope according to the applicants' consulting botanist, Dr. Kathy Rindlaub. Southern tarplant is a California Native Plant Society List 1(b) plant and was known when the project EIR was prepared in 1992 to occur in one location, with 20-30 plants, at that time. The presence of the southern tarplant on site has since been determined to be far more extensive and significant than was thought when the Commission approved the former permit for the golf course proposal in 1994 and nine populations have been documented on site - one containing at least 4,500 plants in 1998.

Finally, a number of new wetlands have been documented since the site was characterized at the time of project approval. The underlying environmental assessments for the proposed project were prepared at the end of approximately five dry years - a drought cycle. Since the original project approval, however, energy facility abandonment (soils excavation and compaction, in an area of low-permeability clay soils) in 1996 - 1998 combined with wetter rainfall years produced a series of new, small wetlands. The applicant delineated these wetlands in consultation with the U.S. Army Corps of Engineers and the Natural Resources Conservation Service. Some of the amendments presently proposed by the applicant are adjustments of the golf course layout to avoid these wetlands.

3.0 ENVIRONMENTALLY SENSITIVE RESOURCES; WATER QUALITY

The environmentally sensitive species and habitats on the site of the proposed project for which the Commission finds changed circumstances include: California red-legged frog; tidewater goby; monarch butterfly; southern tarplant, white-tailed kite, and wetlands. Findings concerning the potential impacts of the proposed development on each are considered in the following sections.

3.1 California red-legged frog

Life History

The California red-legged frog, a native amphibian believed to have inspired Mark Twain's fabled short story "The Celebrated Jumping Frog of Calaveras County," gained Endangered Species Act (ESA) protection as a threatened species in May 1996.[5]

The historic range of the California red-legged frog extended coastally from the vicinity of Point Reyes National Seashore, Marin County, California and inland from the vicinity of Redding, Shasta County, California, south to northwestern Baja California, Mexico. The frog has sustained a 70 percent reduction in its geographic range in California, and a population decline by at least 90 percent as a result of habitat loss and alteration, overexploitation, introduction of exotic predators, and exposure to pesticides. A single population remains in Southern California. Rangewide, only four populations contain more than 350 adults.

The California red-legged frog was once so abundant as to be a major human food source in the Bay area and the Central Valley. About 80,000 frogs were consumed annually in the late 1800s and early 1900s. As the population declined, bullfrogs were exported from the East Coast to keep the "froggery" going. Bullfrogs, however, are voracious predators. They helped drive the red-legged frog (and many other species) populations lower yet. Habitat loss to logging, wetland draining, water diversions, dams, cattle grazing, pesticides, urban sprawl, and agricultural expansion also decimated the species. California has lost 90% of it historic riparian areas and wetlands.

Conservation of amphibians like the California red-legged frog are important for many reasons, including their role as "indicators" of significant environmental changes that may go undetected by humans. Their bodies are much more vulnerable to factors such as disease, pollution, toxic chemicals, radiation, and habitat destruction.

The largest native frog in the western United States, the California red-legged frog ranges from 1.5 to 5 inches in length. An adult frog is distinguished by its unique coloring: an olive, brown, gray or reddish back marked by small black flecks and larger dark blotches and a rusty-red hue to its belly and the undersides of its hind legs.

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[5] Note: Much of the technical information regarding the California red-legged frog cited below, particularly concerning the habitat of the frog in Santa Barbara County, is quoted from: "U.S. Fish and Wildlife Service. 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*)." (published by U.S. Fish and Wildlife Service, Portland, Oregon. viii + 173 pp.), absent further internal citations within the document.

The California red-legged frog requires a variety of habitat elements with aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats. Breeding sites of the California red-legged frog are in aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons. Additionally, California red-legged frogs frequently breed in artificial impoundments such as stock ponds and reservoirs.

California red-legged frogs utilize a variety of habitats in the Santa Barbara County area, including dune swale ponds (Vandenberg Air Force Base), and population numbers are higher where bullfrogs, which are significant predators of California red-legged frogs, are not present. The USFWS and researchers advising the Service have determined that overall, California red-legged frogs are most likely to persist where multiple breeding areas are embedded within a matrix of habitats used for dispersal. California red-legged frogs live in a Mediterranean climate in Santa Barbara County, which is characterized by temporal and spatial changes in habitat quality. In addition to climatic fluctuations, the habitats used by this species typically change in extent and suitability in response to the dynamic nature of floodplain and fluvial processes (i.e., natural water flow and sedimentation regimes that, in flux, create, modify, and eliminate deep pools, backwater areas, ponds, marshes, and other aquatic habitats) (N. Scott and G. Rathbun *in litt.*1998). Therefore, the frog uses a variety of areas, including various aquatic, riparian, and upland habitats. Rangewide, and even within local populations, there is much variation in how frogs use their environment; in some cases, they may complete their entire life cycle in a particular habitat (i.e., a pond is suitable for all life stages), and in other cases, they may seek multiple habitat types. Overall, multiple breeding areas are embedded within a matrix of habitats used for dispersal Scott and G. Rathbun *in litt.* 1998).

Although previous characterizations of the subject site (1992 EIR, for example, and more recent surveys by the applicants various consultants) have tended to minimize its value for California red-legged frog habitat, the most recent literature compiled by the USFWS indicates that the frogs rely on, and will utilize for breeding habitat, more marginal water sources than had been noted previously by site reviewers. Tadpoles have been observed by several observers over the years in the vernal pool on site, for example. In one case (Interface Planning comments in the 1992 FEIR) the tadpoles were identified after-the-fact as likely being those of bullfrogs, although the applicants have since stated that there are no accounts of bullfrog observations on the subject site. In light of more contemporary information published by the USFWS, it seems that these dismissals may have been based on incomplete information and the tadpoles could potentially have been those of red-legged frogs. In addition, suitable breeding habitat has been identified in Tomate Canyon by the standards recently documented by USFWS, although Tomate Canyon (nor other site areas) has never been surveyed for tadpoles (the applicants' consultants state that California red-legged frog surveys do not look for tadpoles because disturbing habitat to look for the tadpoles could result in an impermissible "take" of the species).

Frogs spend considerable time resting and feeding in riparian vegetation when it is

present. It is believed that the moisture and cover of the riparian plant community provide good foraging habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding. California red-legged frogs can be encountered living within streams at distances exceeding 3 kilometers (2 miles) from the breeding site, and have been found up to 30 meters (100 feet) from water in adjacent dense riparian vegetation, for up to 77 days (Rathbun *et al.*1993).

California red-legged frogs often disperse from their breeding habitat to forage and seek summer habitat if water is not available. This summer habitat could include spaces under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks. California red-legged frogs use small mammal burrows and moist leaf litter (Jennings and Hayes 1994); incised stream channels with portions narrower and deeper than 46 centimeters (18 inches) may also provide habitat (U.S. Fish and Wildlife Service 1996a).

Reproduction. California red-legged frogs breed from November through April (Storer 1925). Males appear at breeding sites from 2 to 4 weeks before females (Storer 1925). At these sites, males frequently call in small groups of two to seven individuals, although some instances they may call individually (Jennings *et al. in litt.* 1992). Females are attracted to the calling males. A pair in amplexus (breeding position) moves to an oviposition site (the location where eggs are laid) and the eggs are fertilized while being attached to a brace. Braces include emergent vegetation such as bulrushes (*Scirpus* spp.) and cattails (*Typha* spp.) or roots and twigs; the egg masses float on the surface of the water (Hayes and Miyamoto 1984). Each mass contains about 2,000 to 5,000 eggs that are each about 2.0 to 2.8 millimeter (0.08 to 0.11 inches) in diameter (Figure 8). The eggs are dark reddish brown (Storer 1925).

Growth and Development. Eggs hatch in 6 to 14 days depending on water temperatures (Jennings 1988b). Typically, most adult frogs lay their eggs in March, or earlier, depending on localized temperatures. Eggs require approximately 20-22 days to develop into tadpoles, and tadpoles require 11 to 20 weeks to develop into terrestrial frogs. Sexual maturity can be attained at 2 years of age by males and 3 years of age by females Jennings and Hayes 1985); adults may live to 10 years.

Activity Patterns and Movements. Hayes and Tennant (1985) found juvenile frogs to be active diurnally and nocturnally, whereas adult frogs were largely nocturnal. The season of activity for the California red-legged frog seems to vary with the local climate (Storer 1925); individuals from coastal populations, which rarely experience low temperature extremes because of the moderating maritime effect, are rarely inactive. Individuals from inland sites, where temperatures are lower, may become inactive for long intervals (Jennings *et al. in litt.* 1992) and no information is available on the activity levels of California red-legged frogs at higher elevations.

Feeding. The diet of California red-legged frogs is highly variable. The foraging ecology of larvae has not been studied, but they are thought to be algal grazers (Jennings *et al.*

litt. 1992). Hayes and Tennant (1985) found invertebrates to be the most common food items of adult frogs. Vertebrates, such as Pacific tree frogs (*Hyla regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs, although invertebrates were the most numerous food items. Feeding typically occurs along the shoreline and on the surface of the water; juveniles appear to forage during both daytime and nighttime, whereas subadults and adults appear to feed at night (Hayes and Tennant 1985). Radiotracking studies suggest that frogs also forage several meters into dense riparian areas (G. Rathbun pers. comm 1993, as cited in U.S. Fish and Wildlife Service 1996a).

Reasons for Decline and Threats to Survival

The California red-legged frog is threatened by human activities, many of which operate synergistically and cumulatively with each other and with natural disturbances (i.e., droughts or floods). Factors associated with declining populations of the frog include degradation and loss of its habitat through agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, non-native plants, impoundments, water diversions, degraded water quality, use of pesticides, and introduced predators. The reason for decline and degree of threats vary by geographic location. California red-legged frog populations are threatened by more than one factor in most streams. The following discussion is organized according to the five listing criteria under section 4(a)(1) of the Endangered Species Act.

The proposed project will include several features that may attract California red-legged frogs from their known breeding habitat within Eagle Canyon into the upland and dispersal areas elsewhere in the site (for example to the vernal pool or seasonal ponds and riparian/wetland habitats in Drainage 4, Tomate Canyon, and elsewhere on the site depending on annual rainfall patterns. At the same time the golf course operations provide attractions for the frogs (examples, irrigated greens and fairways, the uncovered reclaimed water storage lake) and nuisances at the same time. The broader areas of the golf course are not subject to any more restrictive protective measures concerning chemical applications for turf management, etc. Therefore exposure to dispersing frogs attracted onto the golf course at large may occur.

Measures to mitigate these impacts, such as broader restrictions on chemical applications throughout the subject site than have previously been proposed by the applicants, undergrounding and covering the proposed reclaimed water reservoir and re-routing the undercrossing in Tomate Canyon, and possibly the undercrossing in Drainage 4 to avoid impacts to the riparian wetlands (seasonal ponds) known to form in these canyons north of the railroad tracks in wet years, would have been imposed through special conditions. These measures have not been imposed because impacts of the proposed project discussed elsewhere have rendered the project as a whole, inconsistent with the applicable requirements of the County's certified LCP and therefore the project, as proposed, cannot be approved.

The construction of a network of golf cart paths and maintenance routes on the proposed project site, combined with the estimated 40,000 rounds per year of golf and relatively intensive maintenance equipment access to the site (mowing, spraying, trash collection, halfway house & turf farm management, etc.) would result in impacts to the site analogous to some amount of roadway/urbanization affects. Irrigated turf areas would likely become attractive corridors for frog dispersal, and mortality due to crushing by carts, maintenance vehicles, etc. appears to be unavoidable.

Because other impacts of the proposed project addressed elsewhere in this report have resulted in the Commission's denial of the proposed project, special conditions that would have been associated with an approval have not been imposed. Had the Commission required conditions for the subject project, however, conditions to provide frog refugia, potential additional aquatic habitat of breeding quality to offset the unavoidable, predictable loss of some California red-legged frogs due to golf course operations, and other measures would have been required

Urbanization typically results in changes in hydroperiod due to new or increased irrigation and intensified land use activities. In the case of the Dos Pueblos Golf Links, the applicants propose to install a 5.4-acre (.7 acre surface area) uncovered reclaimed water reservoir that will receive gray water for irrigation purposes from the Goleta Sanitary District. The proposed reservoir is located in the southeastern area of the site, south of the railroad tracks, and close to the Eagle Canyon creek and estuary where the breeding population of the California red-legged frog is located.

The proposed reservoir would introduce a perennial water source at the site (the reservoir would be 15 feet deep and would be drained to as little as the 11-ft. level, but would still have a minimum of at least three or four feet of water under all conditions). This feature would easily result in the colonization of the reservoir by non-native predators of the California red-legged frog, most notably, by bullfrogs, which were noted on site by the applicants' consultants, SAIC, in 1999. Previously, tadpoles spotted in the vernal pool that is situated near the proposed reservoir site were noted in the 1992 project EIR, and were described in comments by the Interface/Dudek senior biologist as likely being bullfrog tadpoles in comments published in the FEIR. It is not known how or in what numbers the bullfrogs became established at the site: often they are placed in a riparian corridor or wetland deliberately (frequently as the release of childrens' petstore tadpole-raising projects), and then breed prolifically. Bullfrogs are voracious predators of red-legged frogs. Usually bullfrog populations are limited in areas with seasonal drying because it takes the bullfrog tadpoles two years to mature (as opposed to the typical California red-legged frog tadpole which can mature from tadpole to emergent frog in as little as about two months, though typically requires somewhat longer).

The applicants assert nevertheless that bullfrogs will be prevented from colonizing the reclaimed water lake by means of an annual survey for bullfrogs and removal of any non-native frogs detected during the survey. The most certain way to eliminate breeding habitat for the bullfrogs, however, is to underground and completely cover the

reclaimed water reservoir. There are other problems with the reservoir as well. For example, to obtain approval for the proposed project Habitat Conservation Plan, and for the Section 10(a) permit for incidental "take" of a federally threatened species, the applicants have proposed to render the reclaimed water lake more or less biologically sterile or at least inhospitable for breeding populations of the California red-legged frogs. The applicants propose amendments to the previous project approval that would prevent the growth of aquatic vegetation within the reservoir and would not provide dense, sheltering growth around the reservoir, and additionally would draw the lake down during a single evening with strong pumping (necessary to achieve sufficient pressure to water the 208-acre site in the time available because reclaimed water can only be legally applied during nighttime hours according to the applicants). These issues are the subject of letters by the applicants' and opponents' consulting biologists, and have been additionally considered by Commission staff ecologists. The applicants assert that California red-legged frogs in the lake when drawdown pumping commences would "immediately sense the lowering water levels and move to the sides and exit the lake." The reservoir is large, almost an acre in surface area, fifteen feet deep, holding 5.4 acre-feet of water. It has not been demonstrated that a red-legged frog anywhere within the lake would sense the lowering water levels and behave as the applicants assert, in time to reach the sides and emerge before the water levels drained to the vertical point of the reservoir's sides (approximately six feet down from surface). The applicants have stated that they are opposed to undergrounding and permanently covering the lake because they assert that this would cost $2 million more than the proposed lake, and render the project infeasible.

Commission staff has conferred with the applicants' biologist, Dr. Galen Rathbun, to consider design modifications that could reduce the reservoir's potential impact on California red-legged frogs and result in the best possible design of the options that the applicants indicated that they would be willing to implement if such a structure should eventually be approved. The Commission staff did not indicate to the applicants however, that the aboveground uncovered reservoir favored by the applicants was the preferred design of the staff ecologists. Moreover, the proposals to cover the reservoir put forward in early discussions by the applicants, relied on a semi-permeable cover that would still allow the frogs to sense water inside and thus be attracted to the reservoir. Once frogs are attracted to the structure, if they cannot enter, they may simply await an opportunity and die at the foot of the reservoir. The problem of frog barriers has been documented by the research of Dr. Rathbun. In light of that possibility, Commission staff concluded that an uncovered reservoir would be better than a semi-covered reservoir if frogs could escape. The uncovered reservoir would still render frogs that entered it highly visible, and therefore vulnerable to, predators. Dr. Froke noted projects he has consulted on or is otherwise familiar with in northern California where uncovered reservoirs have been constructed on golf courses or other sites. He believes that frogs either do not use the reservoirs, or do so safely, but acknowledges that in these examples there has been no systematic monitoring to verify this. It is possible that California red-legged frogs within the reservoir when drawdown occurs at night would be particularly vulnerable either in declining water levels or while

trying to escape the draining pond, to predation by known nighttime predators of California red-legged frogs, such as raccoons or night herons.

For these reasons, had the project been otherwise consistent with the applicable policies and provisions of the County's certified LCP, the Commission would have imposed a condition to underground and fully cover the reservoir, thereby avoiding the potential adverse impacts the reservoir may have upon California red-legged frogs. In the present case, however, impacts to sensitive species and habitats that are discussed in other sections have rendered the project inconsistent with the applicable standards and the Commission therefore denies the project.

In addition, the previous staff reported dated May 31, 2002 contained substantial analysis of the potential impacts of the applicant's proposal to apply pesticides and other chemical turf management products on the subject site. The applicant's notified staff on November 21, 2002 that they were amending their application to severely restrict such application of chemicals but the amendment is only at a very conceptual, general level presently and has not addressed the inconsistencies between the conceptual proposal and specific chemical use authorizations requested by the applicants through the HCP and Agricultural Turf Management/Integrated Pest Management Plans that are also part of the applicants proposed project description presently.

Therefore, the findings stated in the previous staff report dated May 31, 2002 concerning potential adverse impacts to riparian habitat and species on site that may occur and the resultant inconsistencies with the applicable standards of the County's LCP that result, continue to apply and are hereby incorporated by reference. The Commission would require significant changes to the applicants' proposals through revised plans and other special conditions if this project were otherwise approvable to address the concerns about chemical management and impacts upon sensitive species. The key change the Commission would require if the project had been approvable, would have been the elimination of the Par 3 course altogether to ensure the protection of the monarch butterfly, tidewater goby, southern tarplant and California red-legged frog populations that are all jeopardized by the construction and operation of the Par 3 course. The applicants have asserted that changes proposed to the grading plans for the Par 3 course, in addition to other Best Management Practices the applicants would implement, would avoid the potential adverse impacts of chemical applications on the Par 3 course (up to the 2-year storm would be diverted from Eagle Canyon through positive grading away from the canyon, and through the placement of swales). The Commission's water quality staff has evaluated these proposals (Exhibit 50) and while noting that the proposals are well developed for this type of development, the implementation of the proposed water quality measures cannot assure against the intrusion of polluted runoff into the waters of the site, particularly Eagle Canyon Creek. Therefore, although the applicants' proposal has merit, it does not eliminate the risk to the threatened and sensitive species, particularly the California red-legged frog. The applicants also indicate that Eagle Canyon and other upland riparian habitat corridors denoted as California red-legged frog habitat by the USFWS and others would be

protected by "chemical use buffers" (shown with broken lines on Exhibit 1) setback from these habitats. The Commission has determined however that these "buffers" are really not buffers at all but only demark areas where the same chemical management practices authorized elsewhere on the golf course will, when undertaken in these areas, simply trigger certain monitoring requirements. There is not other restriction offered by the "buffers" and this has been verified by the Commission's water quality unit technical staff (see Exhibit 50). The water quality staff has developed potential special conditions also noted in these exhibits that would have been imposed to mitigate the adverse impacts of the proposed project consistent with requirements that are typically imposed on all development proposals of this significance by the Commission, but these measures will not be required because as noted, the project must be denied due to other impacts discussed elsewhere in this report that render it inconsistent with the LCP.

Applicable LCP Policies and Provisions

Santa Barbara County's certified Local Coastal Program (LCP) contains the following Land Use Plan (LUP) policies and provisions and implementing ordinances regarding Environmentally Sensitive Habitat and Water Quality. The portions that are that are applicable to the changed circumstances consideration of the project regarding the California Red-legged Frog and the consideration of the proposed amendments are set forth in pertinent part below:

LUP Policy 2-11: *All development, including agriculture, adjacent to areas designated on the land use plan or resource maps as environmentally sensitive habitat areas, shall be regulated to avoid adverse impacts on habitat resources. Regulatory measure include, but are not limited to, setbacks, buffer zones, grading controls, noise restrictions, maintenance of natural vegetation, and control of runoff.*

The LUP provides in Section 3.9.3. (Planning Issues) that "*Habitats are considered to be environmentally sensitive when they exhibit extreme vulnerability to disturbance or destruction from human activities. In Santa Barbara County, recreational uses, agricultural practices, and development pose the greatest threats to habitats because existing County regulations do not provide adequate protection.*

The LUP states on page 119: *While the (ESHA) designations reflected on the land use plan and resource maps represent the best available information, these designations are not definitive and may need modification in the future. The scale of the maps precludes complete accuracy in the mapping of habitat areas and in some cases, the precise location of habitat areas is not known. In addition, migration of species or discovery of new habitats would result in the need for designation of a new area. Therefore, the boundaries of the designations should be updated periodically in order to incorporate new data.*

In addition, the LUP states on page 120: *Most native plant communities are not designated on the land use plan and resource maps because they exist in so many*

locations throughout the coastal zone. Only major streams and wetlands are shown on the land use plan maps.

The LUP further states on pages 119 and 120: *Significant habitat resources in the coastal zone which meet at least one of these criteria are designated on the land use plan maps. Environmentally sensitive habitat areas have been grouped into the following categories: (*dunes, wetlands, native grasslands, vernal pools, butterfly trees, marine mammal rookeries and hauling grounds, White-tailed Kite habitat, subtidal reefs, rocky points and intertidal areas, kelp beds, seabird nesting and roosting areas, native plants, streams) ... *Due to the limitations of mapping techniques and, in some cases, incomplete information on habitat areas, the following policies shall apply to development on parcels designated as a habitat area on the land use plan and/or resource maps and to development on parcels within 250 feet of a habitat area or projects affecting an environmentally sensitive habitat area.*

LUP Policy 9-1: *Prior to the issuance of a development permit, all projects on parcels shown on the land use plan and/or resource maps with a Habitat Area overlay designation or within 250 feet of such designation or projects affecting an environmentally sensitive habitat area shall be found to be in conformity with the applicable habitat protection policies of the land use plan. All development plans, grading plans, etc., shall show the precise location of the habitat(s) potentially affected by the proposed project. Projects which could adversely impact an environmentally sensitive habitat area may be subject to a site inspection by a qualified biologist to be selected jointly by the County and the applicant.*

Habitats found in the County and policies for protecting these habitats are listed below. These policies are in addition to existing State and Federal regulations which protect many species of plants and animals and their habitats.

According to the FEIR for the subject project (92-EIR-16), Tomate and Eagle Canyons (LUP pg. 135) are among the ESHAs designated on site by the County's LCP. In addition, native grassland areas, rare plant habitat areas, and wetlands and riparian drainages providing upland habitat for the red-legged frog, and the vernal pool south of the railroad, at the railroad bridge, are all ESHA pursuant to the requirements or the LCP.

LUP Policy 9-9 (Wetlands buffers): *A buffer strip, a minimum of 100 feet in width, shall be maintained in natural condition along the periphery of all wetlands. No permanent structures shall be permitted within the wetland or buffer area except structures of a minor nature, i.e., fences, or structures necessary to support the uses in Policy 9-10. ... the (wetland boundary) definition shall not be construed to prohibit public trails within 100 feet of a wetland.*

LUP Policy 9-10: *Light recreation such as birdwatching or nature study and scientific and educational uses shall be permitted with appropriate controls to prevent adverse impacts.*

LUP Policy 9-13: *No unauthorized vehicle traffic shall be permitted in wetlands and pedestrian traffic shall be regulated and incidental to the permitted uses.*

LUP Policy 9-14: *New development adjacent to or in close proximity to wetlands shall be compatible with the continuance of the habitat area and shall not result in a reduction in the biological productivity or water quality of the wetland due to runoff (carrying additional sediment or contaminants), noise, thermal pollution, or other disturbances.*

LUP Policy 9-15: *Mosquito abatement practices shall be limited to the minimum necessary to protect health and prevent damage to natural resources. Spraying shall be avoided during nesting seasons to protect wildlife…biological controls are encouraged.*

LUP Policy 9-19: *No mosquito control activity shall be carried out in vernal pools unless it is required to avoid severe nuisance.*

LUP Policy 9-20*: Grass cutting for fire prevention shall be conducted in such a manner as to protect vernal pools. No grass cutting shall be allowed within the vernal pool area or within a buffer zone of five feet or greater.*

LUP Policy 9-21: *Development shall be sited and designed to avoid vernal pool sites as depicted on the resource maps.*

The LUP states on page 136: *Streams and creeks affect both the quantity and quality of local water supplies. Heavy siltation of the stream bed can clog the natural flow of water from the surface into groundwater reserves. Increased sedimentation in streams also results in higher flows and increased flood hazards. Polluted runoff from upland development or direct discharge into a stream can infiltrate the groundwater, thereby polluting underground water resources. Development and land use activity within and adjacent to the watercourse has profound effects on stream hydrology, channel geometry, and water quality. Protection of streams requires regulation of land use within the immediate environment as well as control of land use in the larger watershed. The following policies are directed at development within the stream corridor. Regulation of land uses in watershed is addressed in Section 3.3 of the (coastal) plan.*

Definitions:

Stream: *watercourses, including major and minor streams, drainageways and small lakes, ponds, and marshy areas through with streams pass. (Coastal Wetlands are not included.)*

Riparian Vegetation: *vegetation normally found along the banks and beds of streams, creeks, and rivers.*

Stream Corridor: *a stream and its minimium prescribed buffer strip.*

Buffer: *a designated width of land adjacent to the stream which is necessary to protect biological productivity, water quality, and hydrological characteristics of the stream. A buffer strip is measured horizontally from the banks or high water mark of the stream landward.*

Policies:

LUP Policy 9-37: *The minimum buffer strip for major streams in rural areas, as defined by the land use plan, shall be presumptively 100 feet, and for streams in urban areas, 50 feet. These minimum buffers may be adjusted upward or downward on a case-by-case basis. The buffer shall be established based on an investigation of the following factors and after consultation with the Department of Fish and Game and Regional Water Quality Control Board in order to protect the biological productivity and water quality of streams:*

a. soil type and stability of stream corridors;
b. how surface water filters into the ground;
c. slope of the land on either side of the stream; and
d. location of the 100-year flood plain boundary.

Riparian vegetation shall be protected and shall be included in the buffer. Where riparian vegetation has previously been removed, except for channelization, the buffer shall allow for the reestablishment of riparian vegetation to its prior extent to the greatest degree possible.

LUP Policy 9-38: *No structures shall be located within the stream corridor except: public trails, dams for necessary water supply projects, flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development; and other development where the primary function is for the improvement of fish and wildlife habitat. Culverts, fences, pipelines, and bridges (when support structures are located outside the critical habitat) may be permitted when no alternative route/location is feasible. All development shall incorporate the best mitigation measures feasible.*

LUP Policy 9-40: All *development, including dredging, filling, and grading within stream corridors, shall be limited to activities necessary for the construction of uses specified in Policy 9-38. When such activities require removal of riparian plant species, revegetation with local native plants shall be required except where undesirable for flood control purposes. Minor clearing of vegetation for hiking, biking, and equestrian trails shall be permitted.*

3.2 Tidewater Goby

The federally threatened Tidewater Goby, is a small brackish water fish endemic to California estuaries has been discovered in the estuary at the mouth of Eagle Canyon Creek since permit approval in November 1994. The fish is subject to the same potential impacts from project construction and operations that may affect the waters of Eagle Canyon Creek as is the California Red-legged Frog discussed in the previous section, and those findings are therefore incorporated here by reference and extend equally to the Tidewater Goby. Special Conditions that the Commission would otherwise have imposed to address impacts of the proposed project upon the goby will not be necessary because due to unmitigable adverse impacts of the proposed project on other environmentally sensitive habitat and species elsewhere on the subject site, the Commission denies the proposed project.

3.3 Monarch Butterfly

The Santa Barbara County LCP protects butterfly habitat (specifically trees harboring roosting populations of the insects). The certified Land Use Plan states that tagging studies indicate that the Monarch butterfly (*Danaus plexippus*) migrates southward over long distances to escape the cold winters of the central and northern states. Their wintering grounds are areas within a coastal strip extending from Los Angeles to Monterey. These wintering grounds are roosting habitats consisting of a circular configuration of tall trees, usually eucalyptus, which are essential for the mating phase of the butterfly's life cycle. During the fall and winter months the trees are used by massive numbers of Monarch butterflies as communal roosts. These winter clusters represent the most sensitive part of the Monarch's life cycle. Repopulation of the species depends upon the mating phase which occurs in these specialized habitats. Little is known about the behavior patterns and migration routes of the Monarch butterfly; therefore, this habitat is of important scientific, educational, and general public interest.

In addition, the Monarch butterfly is also considered a state "sensitive animal" and wintering sites for this species are considered sensitive resources by the California Department of Fish and Game. Though the Monarch butterfly is not endangered, its overwintering sites and annual migration are threatened by human activity. In 1984, the International Union for Conservation of Nature and Natural Resources classified the migration and overwintering behavior of the monarch butterfly as a "threatened phenomenon." Many scientists agree that if overwintering sites are not protected, especially in Mexico, the migration and overwintering phenomenon could disappear in as little as 20 years (Marriott, in Outdoor California, February 2002).

Changed Circumstances

The Final Environmental Impact Report for the project (92-EIR-16) stated (page 5.1-19, page 000374 of the Administrative Record) that :

A recent survey of the County conducted by a monarch butterfly expert indicated that Eagle Canyon was used by approximately 130 butterflies during October, 1990. ...Eagle Canyon is a small monarch aggregation site that is abandoned early in the season by monarchs searching for a higher quality wintering site. ....clustering or roosting within the proposed golf course area has not been reported. A brief survey conducted by The Monarch Project (1987) indicates that eucalyptus trees onsite provides nectaring habitat for monarchs, but do not constitute a significant or sensitive monarch resource. These trees are not the more sensitive winter habitat site as discussed in Policy 9-22 and 9-23 of the County LCP.

The applicant does not deny that monarch butterfly use of the site has increased significantly since the 1992 EIR was prepared for the proposed project. A study commissioned by the applicant and prepared by Althouse and Meade, June 2001. The Meade study indicates that butterflies are using an aggregation site of eucalyptus trees located within the eastern area of the Executive Par 3 Course. This area is also proposed for placement of a bioswale drainage feature.

The newly identified aggregation site, identified in the report as the "Upper Western Grove Site" contained a maximum of 4,848 butterflies on October 24, 2000. The report states that this peak of population size in the third week of October is a classic autumnal aggregation trend. Autumnal sites typically harbor large numbers of transient butterflies. Autumnal sites are considered important to aggregation phenomena and are protected as Environmentally Sensitive Habitats. The report also indicates that during a prior survey 12,910 monarch butterflies were counted in Eagle Canyon (east site) on a single November day in one case.

A total of 72,208 monarch butterflies were counted during the 2000-2001 survey on twenty-eight different dates from October 6, 2000 to March 9, 2001, in Eagle Canyon.

The Eagle Canyon West Grove contained a maximum aggregation size of 6,710 butterflies on November 13, 2000.

This is a significant change compared to the FEIR identification of approximately 130 butterflies in October, 1990, ten years earlier. The 1990 count was relied on by the County in approving the Conditional Use Permit for the project, and by the Commission in approving the project in November 1994.

For these reasons, changed circumstances exist with regard to the Monarch butterfly use of the site, both in location of aggregation and in intensity of use of butterfly trees.

Life History

According to Althouse and Meade, Inc., the Monarch butterfly is a cosmopolitan and well-known species with distribution across the temperate zone of North America and much of the world. In North America, they express the dramatic population level phenomena of overwintering migration, where populations collapse their distribution from an area of more than two-hundred million acres in the summer months to less than several hundred acres in the winter.

Monarch butterflies west of the Rocky Mountains move to the west coast of California in late summer and early fall. Monarch butterflies enter the coastal zone and seek out aggregation sites in protected locations near the ocean. The number of monarch butterflies that aggregate in any one grove may change dramatically from year to year, as trees grow or fall, and as weather conditions vary among seasons and years. These sites are dynamic with respect to their ability to provide appropriate aggregation conditions, and are dependent on the condition of the trees, associated vegetation, site-specific topography, and changes in the local environment.

The overwintering period of the Monarch butterfly is a vulnerable stage of the life cycle of the species. (Althouse and Meade, Inc., June 2001)

LCP Policies and Provisions

The County's LCP defines Monarch butterfly habitat as Environmentally Sensitive Habitat Area, and thus all ESHA policies and provisions are applicable to Monarch sites. The County's LCP contains two policies specifically applicable to Monarch butterfly sites:

Land Use Plan Policy 9-22: *Butterfly trees shall not be removed except where they pose a serious threat to life or property, and shall not be pruned during roosting and nesting season.*

Land Use Plan Policy 9-23: *Adjacent development shall be set back a minimum of 50 feet from the trees.*

These policies are replicated as development standards in Section 35-97.12 of the Coastal Zoning Ordinance:

Section 35-97.12. *Development Standards for Butterfly Tree Habitats*

1. *Butterfly trees shall not be removed except where they pose a serious threat to life or property, and shall not be pruned during roosting and nesting season.*
2. *Adjacent development shall be set back a minimum of 50 feet from the trees.*

In addition to policies specifically protective of butterfly trees (set forth above), the certified LCP protects Environmentally Sensitive Habitat Areas. The Upper Western Grove and the Eagle Canyon West Grove (the overwintering site) collectively constitute ESHA.

Certified coastal Land Use Plan policy 2-11 cited above states that:

All development, including agriculture, adjacent to areas designated on the land use plan or resource maps as environmentally sensitive habitat areas, shall be regulated to avoid adverse impacts on habitat resources. Regulatory measures include, but are not limited to, setbacks, buffer zones, grading controls, noise restrictions, maintenance of natural vegetation, and control of runoff.

Monarch Butterfly Habitat in Eagle Canyon Eucalyptus Groves

According to the applicant's consultants, Althouse and Meade, Inc., the Monarch butterfly aggregations occur in two locations in and adjacent to Eagle Canyon. The more aggregation site identified as the "Upper Western Grove" and the other site is identified as "Eagle Canyon West." The latter is located within Eagle Canyon, in a relatively steeply sloping area that is not proposed for development (the grove is approximately 80 feet east of the Par 3 Course). This site was the most populated site in 2000, according to the applicant's consultant.

The Eagle Canyon West Grove tends to be more prominently used for overwintering, whereas the Upper Western Grove tends to be most populated during the fall months, and is referred to as an autumnal aggregation site. (See aggregation counts for each grove prepared by Althouse and Meade, Inc., 2000-2001).

The Upper Western Grove is located within the Executive Par 3 Course. (See Exhibit 3). The Par 3 Course is not set back 50 feet horizontally from the dripline of the trees as required by the County's LCP. The course is placed under the trees, with one of the greens immediately under the overhanging branches. The applicant asserts that this design is acceptable because of the height of the overhanging branches (inferring vertical separation as a substitute for the horizontal) and because the type of encroaching development is an "irrigated lawn." Specific impacts to the aggregation groves are discussed in the following section.

The construction of the proposed Par-3 golf course does not comply with the requirements for a 50-foot setback from butterfly trees applicable to all development, as required by the County's certified LCP, as discussed below. Monarch aggregation was not occurring in the eucalyptus grove amidst the Par-3 course at the time of permit approval, therefore this inconsistency between the development footprint and the requirements of the LCP did not exist at that time. As discussed below the applicants acknowledge that the proposed Par 3 course is not set back the minimum distance of 50 feet from the outer canopy of the eucalyptus grove (Grove J on applicants' tree plan) that contains the new butterfly aggregation site identified as a changed circumstance. The applicants argue that such a setback is not necessary and need only be measured from the handful of specific trees their consultants have recorded with butterflies affixed to them. They argue that other trees comprising the grove, even immediately adjacent to the trees they have documented with aggregations on them, are not protected by the

standards of the County's certified LCP that require a minimum setback of 50 feet from butterfly trees.

The former permit incorporated a condition that stated (County Special Condition 9 (B3) "Monarch Butterflies):"

Pipeline construction shall not occur within 50 feet of the Monarch autumnal roosting trees located in Eagle Canyon between October 1 and January 31.

This condition only addresses the encroachment of the proposed reclaimed water pipeline construction, which would occur on existing pipe racks within Eagle Canyon. The condition was developed to address the minor use of the site by Monarch butterflies that was known at the time the EIR for the project was prepared and at the time the County and Commission permits were subsequently approved (1993 and 1994). The impacts of the pipeline construction would only occur one time, and it was determined that if the pipeline construction was set back a minimum of 50 feet from the roosting site known then (with a population of only 130 butterflies in the count noted in the EIR), mitigation would be adequate to avoid any significant impacts to the Monarch butterflies in Eagle Canyon.

The use of the groves in and adjacent to Eagle Canyon by aggregating Monarch butterflies has increased exponentially, however, since the project was approved. The Upper Western Grove contained an aggregation of 4,848 butterflies in one day's count (October 24, 2000) - the peak for the grove that fall, and the Eagle Canyon West Grove contained a maximum aggregation size of 6,710 butterflies on November 13, 2000.

Thus, construction and operation impacts of the project as proposed pose a significant threat to the Monarch butterflies currently using the site.

With regard to construction, the applicant's consultants recommend that construction activities within 200 feet of Monarch butterfly habitat "should not be planned between October and March to avoid impacts to aggregating butterflies."

The Executive Par 3 Course is located immediately adjacent to the Upper Western Grove, however, as stated above. Unless Par 3 Course construction does not proceed during the prescribed months, construction will inevitably take place within the 200 ft. boundary. Nevertheless, limiting the time of construction does not address the potential impact of most concern.

The most serious threats to the Monarch aggregations are posed by the operation of the Par 3 Course. The applicant's consultants identified four types of disturbance from golf course operations:

1. Disturbance to aggregations from people moving underneath the clusters.
2. Strikes by golf balls.
3. Pesticide overspray into the grove, or pesticide present on wet surfaces.

4. Reduction of groves adjacent to the aggregation sites.

- **Disturbance during Operations**

Monarch butterflies can be disturbed and flushed from their aggregations by people coming too near a butterfly cluster. This depends on the time of day and the topography of the aggregation site.

The autumnal site, which is the Upper Western Grove site, is within the Par 3 course coincident with the green for Hole 3 and the tee for Hole 6. This aggregation site is the one most likely to be subject to human disturbance, due to the relatively flat topography and the position of clusters on the north face of the line of trees (toward the areas of play). Golfers playing Hole 3 will aim directly toward the Autumnal Roosting Grove (Upper Western Grove) and Golfers playing Hole 6 will tee off immediately adjacent to the trees. Whether golf balls could be expected to strike butterfly aggregates is probably a function of the skill and intent of the individual golfer.

The overwintering grove (Eagle Canyon West Grove) on the west bank of Eagle Canyon is somewhat more removed from development, and unlikely to be the target of accidental or deliberate golf ball strikes, but could still be subject to disturbance from people approaching the edge of the canyon, or entering the canyon (seeking balls for example) unless they observed the butterflies quietly.

- **Pesticide Applications: Overspray, Drift, Pesticides on Wet Surfaces**

Monarch butterflies are susceptible to pesticides, both airborne and on the ground.

Althouse and Meade report that Monarchs visit grassy areas to imbibe water when dew forms or when sprinklers or other sources of moisture have wetted either vegetation or the ground. Monarchs especially like to visit wet medium length grass (3 to 4 inches). Pesticide residues in such locations can kill monarchs.

The consultants point to four conditions in the applicant's Habitat Conservation Plan (July 17, 2001, page 35, prepared by applicant pursuant to USFWS permit process for Red-legged Frog and Tidewater Goby "take" due to project construction and operations).

The referenced page of the HCP states in pertinent part that:

... Within the golf course areas (par-three course, 18-hole course, putting green, driving range, and turf farm), herbicides would be applied from a boom-sprayer (15 to 18 feet in width) attached to a 250-gallon tank on the back of a golf course utility truck.

...In order to reduce the possibility of exposing California red-legged frogs to pesticides and herbicides, the following restrictions will govern the application of these chemicals

onsite and be incorporated into the final ATMIPM (Agroturf Management and Integrated Pest Management Plan) program (the 3 restrictions applicable to the Par 3 Course)*:*

1. *During the rainy season (November through April), no herbicides or pesticides will be applied within 24 hours prior to forecasted rain or within 24 hours after rainfall.*

2. *Application of herbicides and pesticides will be administered after the morning dew has evaporated and before the evening dew has set.*

3. *In no case shall any spraying of chemicals take place anywhere onsite when wind conditions exceed five (5) miles per hour (mph).*

Analysis of the applicant's chemical management plan and consideration of the plans' assurances of environmental protection is addressed in more detail previously in these findings (see the Red-legged Frog section B.1). That section contains a fuller evaluation of the details and problems of the chemical management strategies the applicant proposes.

As stated previously, the Final EIR for the approved project states on page 5.4-1, Administrative Record page 000452, (Section 5.4.1.1 Regional Setting, Climate and Meteorology) that:

The prevailing winds are from the northeast at approximately five miles per hour *(1990 windrose from the El Capitan State Beach air quality monitoring station). This is caused by the Pacific High, an anticyclone high pressure cell over the Pacific Ocean several hundred miles to the west. Locally, there is a tendency for the diurnal land/sea breeze cycle to cause the prevailing winds to change direction and move offshore from early evening to morning and then return to the general onshore wind flow. Afternoon wind speeds are approximately 10--20 miles per hour (mph) during the spring and summer, approximately 10 mph during the fall and* ***approximately 3 mph during the winter.***

Thus, as noted previously, the winter season is the only time winds fall below the 5-mile per hour measure, and this increases the likelihood that ideal spraying opportunities will arise during the months when the monarch aggregations have formed on site. The Par 3 Course is essentially at "ground zero" from the Monarch Groves, and the prevailing wind direction would blow any application of chemicals on the Par 3 Course north of the railroad tracks directly into the Monarch trees. Even a sudden, brief change in wind direction and velocity could catch a spraying applicator unprepared and send overdrift into the aggregates.

The application windspeed requirements in the HCP, even if ideal, would potentially deliver pesticides to the Monarch aggregates in seconds (the measurement of windspeed in miles per hour is virtually meaningless in such close spaces). Pesticide overspray is a serious problem, and some notable cases of overspray and spray drift

from agricultural spray applications in Ventura County -- most notably at the Mound Elementary school located adjacent to lemon groves from which accidental overapplication of Lorsban or Dursban (trade names for chlorpyrifos-- which is not proposed as a chemical of use on the course) sickened school children nearby on approximately November 10, 2000 according to the Ventura County Agricultural Commissioners office (contacted by Commission staff) Such incidents demonstrate that even licensed operators applying authorized chemicals have accidents and make errors that may have significant adverse consequences.

The applicant's consultants state that if the conditions for chemical use in the HCP are met, impact to Monarch butterflies from chemicals on site "will be reduced to acceptable levels." While it is not clear what "acceptable levels" would be, it does appear very difficult even under ideal conditions, to comply with the HCP requirements. When possible applicator error and sudden wind changes are considered, exposure of Monarch butterfly aggregations in the Upper Western Grove to harmful chemicals appears quite likely.

In addition to the HCP chemical application restrictions listed above, the consultants recommend that: The *use of pesticides shall be controlled during the aggregation season to ensure that no insecticides come in contact with Monarch butterflies.*

As noted above, windspeeds suitable for compliance with the rules are best predicted in the winter season, when butterfly aggregates are present and sensitive. In addition, some of the chemicals proposed for use by the applicant indicate that wintertime application is recommended, which dramatically increases the risk of destroying the aggregations of nearby butterflies if misapplication occurs. Other chemicals on the list recommend irrigation after application to ensure penetration of the chemical to the roots of turf grasses. This requirement renders the HCP pledge to apply chemicals after dew dries in the morning and before dew forms in the evening, essentially meaningless, since water must be applied to the turf after these chemicals are applied. The chemically treated, wet turf then becomes an attractant to butterflies, as stated above.

The data sheets for some of the applicant's "preferred use" chemicals indicate that application near the aggregate groves could pose a substantial risk of mortality to the gathered butterflies. For example, the plan adds Imadaclorpid (brand name "Merit") to the list of "Preferred use chemicals" which are supposed to be the least toxic category of allowable chemicals, and represent the chemical options the applicant should use before turning to more toxic chemicals. The material safety data sheet for Merit, which is used to control insect pests on golf course turf, states the following information for the insecticide (insect killer):

ENVIRONMENTAL HAZARDS:

This product is highly toxic to aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

*This product is **highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.***

The instructions for "Merit" further state:

*The active ingredient in MERIT 75 WSP Insecticide has sufficient **residual activity** so that applications can be made preceding the egg laying activity of the target pests. High levels of control can be achieved when applications are made preceding or during the egg laying period. ...Optimum control will be achieved when applications are made prior to egg hatch of target pests, **followed by sufficient irrigation or rainfall to move the active ingredient through the thatch.***

Use of this chemical in compliance with the instructions for use would conflict with the directive by Althouse and Meade not to combine pesticides and wet grass because butterflies are drawn to wet grass, where they imbibe liquid.

This chemical ("Merit") is just one of the many "preferred use chemicals" that the applicant represents will be applied to the golf course. The only means the applicant proposes to confirm that in fact the application is not harmful to sensitive species is through subsequent water sampling in adjacent waterways after the chemical is applied in areas marked on the site plan as "chemical use buffer areas" (shown with a broken line) adjacent to waterways on site.

The applicant relies on water testing after chemical application as the only method to insure that its chemical use does not harm sensitive species. Even if the water testing is done properly and yields accurate results, should chemical residues be found, no action is immediately required. The applicant is permitted to make adjustments to the chemical applications, keep testing the water, and see how it goes for up to two years. No intervention in operations, ban on use of chemicals, or investigation of ecological damage to sensitive habitat or species is required if water or soil testing results are positive for contaminants.

Section 3.0 of the HCP states that buffer areas have been identified for Eagle Canyon, Tomate Canyon and Drainage 4 North and that use of chemicals authorized for application on site within these buffer areas will trigger chemical sampling outlined in Section 3.1.1. Section 3.1.1 (Chemical Sampling) of the HCP (pages 31 & 32) only states, however, relatively vague standards for sampling. In one reference, "Table 3" is the standard, in another reference use of "certain chemicals" (unspecified) will trigger "additional sampling" but only if used within the "buffer areas."

Despite the use of the term "chemical buffer area", application of chemicals is not prohibited in these areas. The "chemical use buffers" shown on the site plan only indicate a zone that triggers testing when certain chemicals are applied.

The Table 3 testing parameters are identified in the HCP as required only for the first two years of golf course operations, or additional time to followup on adaptive management if contaminants are detected. Thus, the Table 3 testing appears to have a sunset feature, and will terminate. Therefore, the proposed project does not include any meaningful, enforceable prohibition on further chemical use if necessary to avoid harm to sensitive species

Nothing in the HCP or applicants proposal requires testing for the residues of insecticides, fungicides, herbicides and other toxic chemicals authorized for use on the site in the TMP/IPM that might harm Monarch butterflies. Moreover, there is no testing proposed at all to ensure that toxins do not enter the terrestrial and botanical habitat areas utilized by the Monarch butterflies since the HCP proposes measures that are aimed at protecting the Eagle Canyon Creek.

While the proposed chemical management procedures may be adequate for general purposes in many locations on the 208-acre site, these procedures are completely inadequate for use in the Executive Par-3 Course located at Eagle Canyon. The Monarch butterflies found in this area of the site are highly sensitive to disturbance. The entire butterfly aggregation in the Upper Western Grove could be extirpated by a chemical application mistake.

The risk of upset associated with building and maintaining the Executive Par-3 Course in the highly sensitive Eagle Canyon area is unacceptable and cannot be mitigated to levels consistent with the requirements of Santa Barbara County's certified LCP. The Commission finds that the project can only be rendered consistent with the certified LCP through the implementation of Special Condition 3, which requires deletion of the Executive Par-3 Course, among other changes to the project described in the Special Condition.

The elimination of the Par-3 Course will ensure that the significant populations of autumnal and overwintering populations of Monarch butterflies documented on site will be sufficiently buffered from the remainder of the golf course operations to prevent accidental poisoning of the butterflies through chemical applications.

Additionally, the elimination of the Par-3 Course will also eliminate the applicant's proposal to remove or thin trees in that area of the site, which is consistent with the Althouse and Meade recommendation that such removal or thinning be limited as much as possible to avoid undermining the fragile parameters of the microclimate that attracts and protects the butterfly aggregates in and adjacent to Eagle Canyon.

The elimination of the Par-3 Course will also ensure that golfers are not playing toward, and immediately under the autumnal aggregations located near Holes 3 and 6. It will prevent the noise, errant golf shots and human presence that could result in disturbance to and potential flushing of butterfly aggregations, and prevent the adverse consequences to the Monarch populations of chronic stress associated with use of the habitat area for the estimated 20,000 rounds of golf (1 to 4 players per round) per year.

Assuming that the maximum 80,000 golfers is evenly distributed by month, for sake of illustration, over 6,000 golfers could pass beneath the Upper Western Grove site on the Par-3 course in a single month.

Thus, the construction and operation of the Par-3 course poses unacceptable levels of potentially adverse habitat impacts, potential chemical destruction of thousands of aggregating butterflies, and the removal or thinning of eucalyptus trees to create sufficient clear playing space.

The applicant's consultants recommend against the reduction in the density of eucalyptus groves to the west and north of the aggregation sites and note that tree thinning and removal may affect the microclimate conditions within the aggregation sites. Protection from wind and sunlight, and amelioration of extremes in temperature and humidity are functions that groves of trees outside of the immediate aggregation area provide. Reduction of the density of foliage or the number of trees in groves near the butterfly aggregations should be minimized, according to the consultants. The consultants also note that all of the eucalyptus trees on the north side of the railroad, near the entrance to the property contribute to the microclimate conditions of the aggregation sites.

The applicants have reiterated that they do not propose to remove any of the eucalyptus trees within Eagle Canyon itself, or within Grove J, just north of the railroad tracks and adjacent to the Canyon, on the Par 3 course. However, the applicants propose placement of tees and/or greens within less than the minimum 50 feet of setback area called for by the certified LCP from butterfly trees. The applicants justify this placement by asserting that only the smaller subset of trees within that grove that have butterfly aggregations affixed to them during the autumnal roosting or overwinter season are technically protected as butterfly trees. They assert that so long as the setback is preserved from that smaller subset of trees, the project is consistent with the applicable policies. The Commission has always interpreted the butterfly tree policies as protecting the entire cluster or grove of trees and not just a few specific trees, when the trees are closely configured as in this case. The setback is imposed from the outermost edge of the grove, because otherwise diseased trees may be deemed a potential hazard to humans utilizing the golf facilities close to such trees, thereby increasing the pressure to remove trees from the grove. Even if the trees so removed do not individually attract aggregates of monarch butterflies, the loss of outer trees increases the wind and chill factor the butterflies endure and renders the remaining trees more vulnerable to "blowdown", thereby incrementally weakening the habitat of the grove overall and thus gradually diminishing the habitat value of the monarch butterfly ESHA.

The applicants' consultants, Althouse and Meade have submitted a recent update indicating that removal of trees north of Grove J, within the Par 3 course but not trees in Grove J itself (which the applicants do not propose) would not adversely affect the monarch butterfly habitat of Grove J.

The Commission concludes that even though it will not be necessary to impose special conditions in this case because for other reasons the Commission denies this project, if the project had been approved, a condition for revised plans to delete the Par 3 course would have been required among other measures to protect the monarch butterfly habitat consistent with the requirements of the LCP.

3.4 Southern Tarplant

The Southern Tarplant (sometimes called "Spikeweed") is considered a Federal "*Species of Concern*" and a California Native Plant Society "List 1(B)" species, which signifies that is a rare, threatened, or endangered California native plant. List 1(B) status qualifies the plant for listing status as a rare, threatened, or endangered plant under the California Endangered Species Act. The only higher status that can be conferred on a plant is List 1(A) which essentially means that the plant is extinct.

Southern Tarplant is an annual species, in the aster (Sunflower) family, and at seasonal maturity can grow to as large as 1.5 feet in width and approximately two feet tall (maturity size ranges significantly in response to adequacy of environmental conditions during a particular season's germination and growth). The peak of bloom occurs in late summer and early fall, when the plants are covered with small, bright yellow flowers. The skeletal remains of dead tarplant resemble tumbleweed.[6]

- **Information Known at the Time of Project Approval**

The Southern Tarplant was first discovered on the Arco Dos Pueblos site in 1991, as part of a Biological Resources Analysis (June 28, 1991, Revised October 15, 1991) undertaken by Jacqueline Bowland, then Senior Biologist at Interface Planning and Counseling Corporation, the consulting firm serving as agent for then-applicant, Arco Oil and Gas.

- **20 - 30 plants on proposed 18th Fairway**

Ms. Bowland, undertaking field surveys to support the analysis, discovered a small population of Southern Tarplant numbering approximately 20 to 30 plants by her estimate, in the middle of what is presently proposed to be the 18th Fairway of the golf course. According to Ms. Bowland, that population was considered to be the most northerly range extension of the Southern Tarplant known at that time, and discovery of the plant was something of a surprise.

Ms. Bowland's biological survey was submitted to Santa Barbara County as part of the materials developed by Interface to support the original application for the golf course

[6] Background information on southern tarplant was provided to Commission staff by John Storrer, Storrer Environmental Services, who is an experienced environmental condition compliance consultant under contract with Santa Barbara County to monitor the Arco Dos Pueblos project.

and appurtenant facilities (the Biological Resources Analysis comprised Section IX of the application, dated October 25, 1991, submitted by Whitt Hollis as employee/agent, Arco Oil and Gas). The biological survey was eventually incorporated by reference into the Environmental Impact Report prepared for the subject project (92-EIR-16) under the direction of Santa Barbara County staff.

- **CNPS "List 3" Status**

At the time the 1991 Interface biological analysis was prepared, the California Native Plant Society status of the Southern Tarplant was "List 3." This status was reported by the Interface analysis in the application to Santa Barbara County, and subsequently re-stated the Final EIR for the project. March 1993 (FEIR 92-EIR-16 was certified in 1993).

"List 3" status for a plant is a designation of much less concern than List 1(B) status. List 3 status means that more information is needed, but does not constitute listing the plant as rare, endangered, or threatened.

The Interface Biological Resources Analysis (County application, Section IX, Page IX-3) states:

A special interest plant was encountered in the ruderal grassland community on the south side of the railroad tracks. Southern tarplant or spikeweed (Hemizonia australis) was found in one small population adjacent to a windrow to the west of barranca #3 on the south side of the access road that parallels the bluffs (refer to Figure 1) (Figure 1 is an Addendum Exhibit). The population occurs within a disturbed area associated with an active oil and gas production facility, where brushing for fire control has occurred recently. This plant is on List 3 of the CNPS Inventory of Rare and Endangered Vascular Plants of California (Smith and Berg, 1988). List 3 indicates that more information is needed to obtain information such as the plant's distribution and current threats to its existence, and to define appropriate protection policies. According to one local flora, this plant occurs from the Ellwood area south to lower California and is generally found in sandy substrates near the coast (Smith, C.F., 1974).

This summary of the status of the Southern Tarplant was repeated in the Environmental Impact Report for the project. Final EIR 92-EIR-16 was dated February 1993 and finalized in March 1993 by Santa Barbara County, incorporating comments and responses. 92-EIR-16 was certified by the County Board of Supervisors on August 17, 1993.

Page 5.1-16 of the FEIR, dated March 1993, Administrative Record Page 000371 states:

Southern Tarplant. The southern tarplant (Hemizonia australis) has no official status, but it is on List 3 of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Smith and Berg, 1988). "List 3" is a compendium of plants for which CNPS lacks the information necessary to determine

rare, threatened or endangered status. CNPS believes that many historic occurrences of southern tarplant have been extirpated but requests additional rarity or endangerment information. This species occurs throughout southern coastal California, from San Diego County to Santa Barbara County. According to Smith (1976), it is "common in many sandy fields near the ocean, between Goleta and Ellwood." The occurrence of this species on the project site appears to constitute a range extension since its northern limit is reported to be Ellwood Mesa. A small population of southern tarplant was located by Interface (1991) immediately south of the coastal road and west of Drainage #3 (Figure 5.1-1), as verified by the EIR consultants.

The List 3 status of the Southern Tarplant was interpreted by the County as requiring that the impacts to the plant be addressed through mitigation, rather than through avoidance of the impact (preservation of the population in its existing location).

Mitigation Measure B8 (FEIR page 5.1-48) stated that the collection of seed, greenhouse germination of the collected seed, and subsequent transplanting of the greenhouse stock elsewhere on site would be sufficient mitigation, and required that the BELP (Biological Enhancement Landscape Plan) drafted by the applicant be revised to include these measures (including monitoring and a contingency plan in case of high mortality). Thus, the FEIR concluded that "*Implementation of the above measure would reduce impacts to sensitive plants occurring onsite to less than significant levels (Class II).*

Thus, the FEIR did not consider project alternatives that would avoid impacts to the Southern Tarplant, protecting the population in place.

- **Upgrade to CNPS "List 1(B)" Status**

On April 4, 2002 the applicant submitted a binder to Commission staff, in response to an earlier request by Commission staff for documents in the applicant's records concerning Southern Tarplant. The binder contained a one page memorandum, under tab 3, from Jackie Bowland (Interface Planning and Counseling Corporation, Senior Biologist) to Whitt Hollis, labeled as "Memorandum to Dos Pueblos Golf Links File" RE: Southern Tarplant, dated May 14, 1992.

The memorandum regarding Southern Tarplant advises of a pending change in the California Native Plant Society's assigned status for the plant. The memorandum notes that the plant's listing would possibly change from List 3 to List 1(B) in the then-pending publication of the CNPS updated Inventory of Rare and Endangered Plants of California anticipated later in that year. The memorandum states in part:

... A new edition of this publication is due out this fall, which will list the southern tarplant as 1B. List 1B includes "plants rare, threatened or endangered in California and elsewhere." The importance of this change is that all plants listed in the Inventory as 1B are considered rare under Section 15380 of the State CEQA Guidelines, whether they are listed as such by the California Department of Fish and Game (CDFG) or not.

... This change elevates the importance of this plant population, and may require mitigation measures to reduce or eliminate potential adverse impacts. Acceptable mitigation measures are subject to approval by the CDFG and Santa Barbara County, and could include such approaches as avoidance and ongoing protection of the population, avoidance with a minimum buffer area of undisturbed habitat surrounding the population, transplantation elsewhere, or a combination of some or all of these measures.

Ms. Bowland's memorandum is dated May 14, 1992. The Southern Tarplant was subsequently elevated to List 1B status in the CNPS Inventory revised edition as Ms. Bowland predicted. Although the change in status of the Southern Tarplant had already occurred, the FEIR that was subsequently issued in 1993 was not corrected to reflect the change from 3 to 1(B) in the CNPS Inventory.

As the result, upon finalization of the EIR the mitigation approach of collecting seed but destroying the donor population was deemed acceptable as a condition of approval in the County's subsequent approval of the project, and was later incorporated by reference into the coastal development permit approved by the Commission in 1994.

- **Changes in the Distribution and Number of Southern Tarplant locations & populations since 1994 permit approval**

The new hearing on changed circumstances also provides staff with the opportunity, under the Commission's regulations, to request information staff believes necessary to properly evaluate the project in light of potentially changed circumstances. Staff requested in September 2001 that the applicant provide an updated map of biological resources on site, particularly vegetation. In response, the applicant supplied a full sized, to-scale site map represented as the current vegetation map of the site (November 21, 2001 vegetation map prepared by Dudek & Associates, full-sized copy on file at District office; no reduced copy available.)

In addition, the applicant submitted a report dated November 26, 2001 prepared by Dudek & Associates, by Sherri L. Miller, Senior Biologist, titled: "Update of Biological Resources Report for the ARCO Dos Pueblos Golf Links Project, Santa Barbara County, California." The report states in part:

This report documents the results of a biological resources survey conducted by Dudek and Associates, Inc. (DUDEK) at the approximately 208-acre Dos Pueblos Golf Links project area. The project site is located in an unincorporated area of Santa Barbara County, California.

The purpose of this letter report is to determine if there are any significant changes (e.g., changed circumstances) relating to vegetation communities on the Dos Pueblos Golf Links site from the original environmental review in 1993 (92-EIR-16) to current

conditions. The site's current physical conditions remain substantially unchanged as compared to the physical conditions recorded in 1991 and 1992 (citations) *and in the 1993 EIR for the project...*

The report stated in summary:

When comparing the current physical conditions onsite to those recorded in 1991 and 1992 (and presented in the 1993 EIR on the proposed project), it is apparent that physical conditions onsite have not changed substantially (see Table 1). The acreage of developed lands has decreased due to the abandonment of the oil and gas facilities and the differentiation between ornamental plantings from developed lands in recent surveys. In addition, the abandonment of the oil and gas facilities has resulted in the creation of disturbed wetlands areas and a slight increase in annual non-native grassland acreage (i.e., grasses have volunteered within some previously developed areas). The golf course has been designed to avoid these disturbed wetlands areas.

The report contained no analysis of changes in the locations or number of Southern Tarplant on site, though attached Appendix A contained a "floral compendium" of "vascular plant species" arranged by family. *Hemizonia* parryi ssp. *Australis*, Southern Tarplant, is listed under the family Asteraceae (Sunflower Family).[7]
Subsequently, interested parties raised a concern about the project's impacts on the Southern Tarplant, among other issues. Commission staff then reviewing the project for changed circumstances was unaware that the Southern Tarplant existed on the subject site, and examined the administrative record for information about the issue. Staff consulted the applicant's November 2001 report and vegetation map referenced above. No Southern Tarplant locations, including the one shown in the 1993 EIR were

[7] "Mulefat" - (*Baccharis salicifolia*) a shrub that is also a member of the Sunflower family, as is Southern Tarplant, was noted on site in the 1993 EIR Appendix 5.1-1 list of plants observed on site by Interface (1991), Rindlaub (1992), and Bowland and Ferren (1992), but does not appear on the plant list appended to Ms. Miller's November 2001 report. The Final EIR documents Mulefat as part of the plant community identified as "Southern Willow Scrub" occurring in patches along drainages on site. The binder submitted by the applicant on April 4, 2002 contains, under Tab 18, a letter dated October 13, 1998 addressed by the office of the applicant's consulting landscape architect to the County Energy Division planner reviewing the Biological Enhancement Landscape Plan for the Arco Dos Pueblos project. The letter states on page 4: *"...(TABLE A)... 5. Suggested change incorporated. The project biologist, Sherri Miller, requests excluding Mule Fat from the Riparian mix because mule fat scrub is habitat regulated by CDFG, and we do not want to create a regulated habitat."* The revised version of the BELP dated November, 1998 does not include Mulefat in the riparian mix, but does include Mulefat in the Southern Willow Scrub mix. From the lack of identification of Mulefat in the November 2001 plant list, it is not clear whether the plant has disappeared from the site since the surveys included in the 1993 EIR were undertaken, or whether it may simply have been overlooked in the 2001 surveys.

mapped, nor were changes to the distribution or number of plants noted in the Miller report regarding site changes since project approval.

Staff requested that the applicant supply additional information about the Southern Tarplant on site, and conferred with the County Energy Division. The Energy Division's environmental monitor, John Storrer explained on request that he had noted a significant population of Southern Tarplant in bloom on the site when Arco abandonment activities were closing down in the summer of 1998. Mr. Storrer explained that he directed that the area be roped off to prevent disturbance to the plants, and that the applicant's consultants investigated the extent of the population and provided that information directly to the County staff.

Mr. Storrer indicated that the population was extensive and coincided almost exactly with the footprint of the former warehouse/loading racks. He sent an informal map of the area to County staff, and the map was provided to Commission staff.

Staff requested a site visit to evaluate the current location of the plants in the area that was discovered in 1998. Mr. Storrer and others accompanied staff (March 14, 2002 site visit), and Mr. Storrer prepared a responsive report, dated April 2, 2002, including a map of the general area of tarplant distribution. This map was eventually incorporated into a revised map prepared by the applicant.

Subsequently, the applicant at the request of staff prepared an iterative series of map revisions and provided supplemental information (the binder received April 4, 2002 and referenced previously, for example) concerning the locations and extent of Southern Tarplant on the subject site. In all, as shown on Exhibit 3, there are nine (9) locations now reported, ranging significantly in size of population from a few individual plants to as many as 4,500 individual plants in one location. The latter was the site discovered by Mr. Storrer in 1998, though the plant count was prepared by others (memorandum of Jackie Bowland to Sherri Miller dated October 6, 1998).

Thus, there is now substantial evidence to conclude that changed circumstances since the Commission's approval of Coastal Development Permit A-4-STB-93-154 exist on site with regard to the Southern Tarplant.

In summary, the changes consist of the significantly increased number of locations where the plant is known to exist on site (nine now compared with one known at the time of project approval), and the population size (largest and only known population at time of approval was 20 to 30 individuals in the middle of the proposed 18th Fairway, compared with as many as 4,500 plants in 1998 in the area presently proposed for a portion of the parking adjacent to the clubhouse, and a portion of the Par-3 Course north of the railroad, near Eagle Canyon). In addition, though not the same kind of changed circumstance, there is new (and accurate) information about the status of the Southern Tarplant as a California Native Plant Society List 1 (B) species. This is an indication that the native plant is considered to be rare, threatened or endangered. The

plant's sensitive status was not accurately reflected in the environmental review and subsequent project approvals.

As a result, the need for preserving the Tarplant was underestimated and measures that would avoid destruction of the plants were not fully evaluated. The mitigation measure implementation approved subsequent to project approval by the County allowed destruction of Tarplants and mitigation for this impact. The applicant's Biological Enhancement Landscape Plan (CUP condition 14/B8) originally provided for the mitigation of the loss of 20 - 30 plants (the number counted in the only population known on site at the time of approval) through seed collection, greenhouse growth of plants from resultant seeds (Matilija Nursery), and later transplantation of the cultivated plants to a designated mitigation site on the Arco project site (and reservation of some seed in case of poor survival/self reseeding). The mitigation requirement finalized in the applicant-prepared BELP only called for a 1:1 ratio (the EIR and the special condition did not set a ratio), and the number of plants to be mitigated was dependent on the number of plants *actually counted* in the year that grading commenced.

The applicant implemented seed collection in 1998 in anticipation of commencing construction shortly after obtaining final County approval that winter, and the issuance of the Coastal Development Permit from the Commission. The plants were grown successfully by Matilija Nursery, but when project approval was delayed, the applicant directed the destruction of the resultant propagated plants, and has repeated the cycle annually thereafter awaiting authorization to commence construction. The applicant explained to staff at the March 14, 2002 site visit that the plants grown by these means every year have been destroyed when each successive year since 1998 failed to yield construction authorization. Thus, genetic material from the donor populations has been lost instead of stored in the soil seedbank. [8]

Life History

Southern Tarplant is a summer-to-fall- flowering annual herb with spine-tipped leaves and abundant, small bright yellow flowers. The mature plant is of variable size, depending on the suitability of the environmental conditions present. Mature plants may range from a few inches in height to a diameter of approximately two feet (with a rounded overall form not unlike that of the tumbleweed). Southern Tarplant reaches its northern limit at the project site (Ellwood was formerly thought to be its northernmost range extension). It is also found in the Goleta Slough, on the UCSB Campus, and in very limited, localized distributions in other coastal southern California areas.

This annual plant's life cycle is one of lush germination after disturbance to a site, thick growth in the initial year or years, then failure of the plant to compete successfully with more aggressive colonizers. The successful initial years result in large seedset and the replenishment of the soil seedbank. At least some of the seeds of Southern Tarplant seem to remain viable for as long as decades, thus preserving the plant's genetic

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heritage and future growth potential through what amounts to a long period of relative dormancy once successional changes take over and send the plant back underground, literally, into the residual seedbank phase of its life cycle. When disturbance arises again, and competition is removed, the cycle repeats, perpetuating the Southern Tarplant.

According to staff report for the Bolsa Chica Coastal Program Land Use Plan Amendment No. 1-95/Implementing Actions Program, dated November 27, 2000, of only about 30 populations of Southern Tarplant known to remain in the Los Angeles Basin, most are small (less than 1,000 individuals) and at least 12 of those populations are threatened by development. At Bolsa Chica the population has fluctuated widely from year-to-year (consistent with observations at Arco Dos Pueblos). In 1991, no plants were found. In 1992, Southern Tarplant was again present and in 1993 around 545 individuals were observed. There were no detailed surveys until recently. In 1999 and 2000, consultants for Hearthside Homes conducted careful surveys of the entire Bolsa Chica Mesa. They counted 3,401 individuals in 1999, and 9,292 individuals in 2000.

- **Spatial and Temporal Patchiness is Normal for Southern Tarplant**

- **Soil Seedbank Importance**

Besides annual variations in number, the locations of the denser stands also varied considerably from year to year. These existing data indicate the extreme temporal and spatial patchiness in the distribution of this rare plant that must be considered in any protection plan. Fred M. Roberts, who was from 1991 to 1999 a botanist for U.S. Fish and Wildlife Service where he worked on rare plant issues, including issues related to Southern Tarplant, is quoted in the Bolsa Chica report explaining the significance of this variability as follows:

"This variability in response to climatic and other influences significantly increases a species' potential for surviving unfavorable times. Species may produce prodigious amount of seed one favorable year to weather a more typical 4-5 contiguous unfavorable years. Likewise, seeds with slightly different genetic codes will exploit slightly different germinating conditions. All this increases the vigor and potential of the species. The population that is in evidence one year may represent only a fraction of the total seed bank potential, both in number and in area. If conservation does not consider enough habitat for population dynamics, only a small fraction of the seed bank will be protected and this will significantly reduce the potential for species to survive hard times."

According to the Bolsa Chica report, there are only about five populations of Southern Tarplant in existence known to have over 8,000 individuals. Thus, the 1998 count in one location on the Arco Dos Pueblos site of over 4,500 individuals is clearly significant and indicative of the extent of soil seedbank reserves of tarplant genepool the 208-acre site harbors.

- **Range of micro-habitats, preservation of sufficient habitat**

The Bolsa Chica report emphasizes that simply preserving one portion of an area that had large numbers of individuals this year or any given year provides no assurance that the viability of the population will be maintained. It is important that the range of micro-habitats supporting the species be protected. It is also important to preserve sufficient habitat to insure that populations of pollinators are maintained. In the case of Southern Tarplant, pollination biology is unknown, however native bees are pollinators for rare saltmarsh species such as Saltmarsh Bird's Beak (Parsons, L.S. and J. B. Zedler, 1997, in Bolsa Chica report, *Factors affecting reestablishment of an endangered annual plant at a California salt marsh. Ecological Applications 7:253-267)* and Saltmarsh Goldfields (Ferren, Wayne, letter to staff ecologist John Dixon dated October 28 2000, in Bolsa Chica report, re: wetland edges, transitions, and upland habitats) making preservation of adequate habitat for pollinators doubly important.

LCP Policies and Provisions

Santa Barbara County's certified Local Coastal Program defines rare plant communities as Environmentally Sensitive Habitat by definition, without regard for mapping status.

LUP Policy 2-11: *All development, including agriculture, adjacent to areas designated on the land use plan or resource maps as environmentally sensitive habitat areas, shall be regulated to avoid adverse impacts on habitat resources. Regulatory measure include, but are not limited to, setbacks, buffer zones, grading controls, noise restrictions, maintenance of natural vegetation, and control of runoff.*

The LUP provides in Section 3.9.3. (Planning Issues) that "*Habitats are considered to be environmentally sensitive when they exhibit extreme vulnerability to disturbance or destruction from human activities. In Santa Barbara County, recreational uses, agricultural practices, and development pose the greatest threats to habitats because existing County regulations do not provide adequate protection.*

The LUP states on page 119: *While the (ESHA) designations reflected on the land use plan and resource maps represent the best available information, these designations are not definitive and may need modification in the future. The scale of the maps precludes complete accuracy in the mapping of habitat areas and in some cases, the precise location of habitat areas is not known. In addition, migration of species or discovery of new habitats would result in the need for designation of a new area. Therefore, the boundaries of the designations should be updated periodically in order to incorporate new data.*

In addition, the LUP states on page 120: *Most native plant communities are not designated on the land use plan and resource maps because they exist in so many locations throughout the coastal zone. Only major streams and wetlands are shown on the land use plan maps.*

The LUP further states on pages 119 and 120: Significant *habitat resources in the coastal zone which meet at least one of these criteria are designated on the land use plan maps. Environmentally sensitive habitat areas have been grouped into the following categories: (*dunes, wetlands, native grasslands, vernal pools, butterfly trees, marine mammal rookeries and hauling grounds, White-tailed Kite habitat, subtidal reefs, rocky points and intertidal areas, kelp beds, seabird nesting and roosting areas, **native plants**, streams) ... *Due to the limitations of mapping techniques and, in some cases, incomplete information on habitat areas, the following policies shall apply to development on parcels designated as a habitat area on the land use plan and/or resource maps and to development on parcels within 250 feet of a habitat area or projects affecting an environmentally sensitive habitat area.*

LUP Policy 9-1: *Prior to the issuance of a development permit, all projects on parcels shown on the land use plan and/or resource maps with a Habitat Area overlay designation or within 250 feet of such designation or projects affecting an environmentally sensitive habitat area shall be found to be in conformity with the applicable habitat protection policies of the land use plan. All development plans, grading plans, etc., shall show the precise location of the habitat(s) potentially affected by the proposed project. Projects which could adversely impact an environmentally sensitive habitat area may be subject to a site inspection by a qualified biologist to be selected jointly by the County and the applicant.*

Habitats found in the County and policies for protecting these habitats are listed below. These policies are in addition to existing State and Federal regulations which protect many species of plants and animals and their habitats.

Further, the LCP Coastal Zoning Ordinance provides that if newly documented environmentally sensitive habitat area, which is not included in the ESH Overlay District, is identified on a lot or lots during application review, then the provisions of Secs. 35-97.7. - 35-97.19. shall apply. (Sec. 35-97.3)

The Coastal Zoning Ordinance defines Environmentally Sensitive Habitat Area (ESHA) as: *Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

Thus, the LCP clearly establishes that the Southern Tarplant populations located on site are defined as ESHA. This is particularly true in light of the plant's accurate sensitivity status in the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California, which identifies the Southern Tarplant as a List 1(B) species (the only rarer status, List 1(A), indicates species that are generally extinct).

Therefore, as Southern Tarplant populations are ESHA, and newly discovered on site (since the time of permit approval), the provisions of Coastal Zoning Ordinance (CZO) Secs. 35-97.7 and 35-97.18 apply:

CZO Sec. 35-97.7 Conditions on Coastal Development Permits in ESH

A coastal development permit may be issued subject to compliance with conditions set forth in the permit which are necessary to ensure protection of the habitat area(s). Such conditions may, among other matters, limit the size, kind, or character of the proposed work, require replacement of vegetation, establish required monitoring procedures and maintenance activity, stage the work over time, or require the alteration of the design of the development to ensure protection of the habitat. The conditions may also include deed restrictions and conversation and resource easements. Any regulation, except the permitted or conditionally permitted uses, of the base zone district may be altered in furtherance of the purpose of this overlay district by express condition in the permit.

CZO Sec. 35-97-18. Development Standards for Native Plant Community Habitats.

Examples of such native plant communities are: coastal sage scrub, chaparral, coastal bluff, closed cone pine forest, California native oak woodland (also individual oak trees), endangered and rare plant species as designated by the California Native Plant Society, and other plants of special interest such as endemics.

...(2) When sites are graded or developed, areas with significant amounts of native vegetation shall be preserved. All development shall be sited, designed, and constructed to minimize impacts of grading, paving, construction of roads or structures, runoff, and erosion on native vegetation. In particular, grading and paving shall not adversely affect root zone aeration and stability of native trees.

Construction and Operations Impacts

The project will grade and remove most areas of Southern Tarplant now identified on the subject site. In addition, the largest population of plants (discovered in 1998, as described above) is established in a former oil and gas development area of the site that has residual contaminated soils (this is true in a number of areas of the site). The applicant received a Coastal Development Permit from Santa Barbara County for a proposed remedial action plan (RAP), which is currently pending on appeal to the Commission and will be scheduled for a future hearing. The RAP calls for the excavation and offsite disposal of soils in the primary tarplant population area, with the attendant destruction of the soil seedbank. These issues (soil cleanup) will be addressed separately when the appeals are considered.

The previous sections have established that Southern Tarplant is considered a rare, threatened, or endangered California native plant. Under the County's LCP, as stated previously, the plant's status renders the habitat supporting it ESHA. Special provisions of the Coastal Zoning Ordinance set forth above apply to development that could affect an ESHA.

Separate sections of this report discuss the adverse impacts upon the sensitive habitat and resources of the Eagle Canyon area that would be caused by the construction (and operation) of the Executive Par-3 Course, the 9 hole course at the eastern end of the site (Water quality impacts to Eagle Canyon Creek, California Red-Legged Frog, Tidewater Goby, and the impacts of constructing and operating the Par-3 course on the eucalyptus groves hosting fall and winter aggregations of Monarch butterflies). The Commission's findings in those sections required the imposition of Special Condition 3 (Revised Plans) to ensure that the unavoidable, significant adverse effects Par-3 Course construction would have on these environmentally sensitive habitats and species would be avoided. Revisions to the project layout are also required to protect the area where the largest populations of Tarplant have occurred on the site, which would otherwise be destroyed by the proposed parking lot and portions of the Par 3 Course. In addition, the section of the findings that addresses White-tailed Kite ESHA requires imposition of the condition for revised plans to buffer an area around an established nesting site. That area generally incorporates the second significant tarplant population, which is in approximately the same location documented in the 1993 EIR - in the proposed 18th Fairway. The third population is located on the western margins of Tomate Canyon, and minor adjustments to the project footprint appear sufficient to protect that population. By conserving primary populations in three areas of the site, better mitigation will result through capture of a wider array of microhabitats, populations will be more widely distributed for native pollinators (especially important because Southern Tarplant pollination is not well understood) and backup seed sources in the event of a population crash in one or more of the sites will exist.

As noted previously, Southern Tarplant numbers may fluctuate significantly in time and space, and the primary location of the plant's genetic material is in the soil seedbank that awaits future opportunities for growth, maturity, and new seed set. Thus it is useful to think about mitigation for impacts to the Southern Tarplant in terms of overall site impacts (grading and development) that will destroy the seedbank and development impacts related to the management of the site (landscaping, for example) and surface treatment thereafter that would inhibit Southern Tarplant germination and even if germination occurred, would impair the ability of the seedlings to mature and set new seed (germination in an area of managed turf would be an example). Thus the proposed grading of virtually all of the terraced areas where most tarplant is found on the site can be expected to eliminate both the plants and the plants' seedbank (future genebank), throughout the majority of the site.

John Storrer, County monitor for the Arco site and an experienced field biologist who has prepared environmental analyses of Southern Tarplant locations, writes in a report on the subject site's primary population that Southern Tarplant mitigation may be most usefully thought of in spatial terms.

To preserve healthy Tarplant populations on site over the long term, it is necessary to set aside the areas where Tarplants have previously been present, along with a buffer that will prevent disturbance of plants that are growing and will also preserve sufficient

seedbank to maintain the population. This can be accomplished by preserving the population in the area currently proposed for the Par-3 Course.

In addition, a Tarplant recovery plan is necessary to provide mitigation of tarplant populations and seedbank resources that will be permanently lost through soil remediation and grading for the golf course elsewhere throughout the site.

If the Commission had approved the proposed project with special conditions, a condition that requires the preparation of a Tarplant Area Restoration Plan (TARP) to provide for adequate mitigation of adverse impacts to Southern Tarplant and for the management of the tarplant conservation areas would have been required. The plan would have required preservation of tarplant ESHA, with mitigation of the loss of outlier populations only where such loss was minor compared to the preserved populations and otherwise unavoidable. It is not clear that there are any areas where the loss of southern tarplant on the subject site is necessarily unavoidable for revised plans to redesign the project footprint would likely protect most if not all of the southern tarplant populations on site.

In addition, the conceptual special conditions would have required the applicant's present Biological Enhancement Landscape Plan (BELP) to delete the use of herbicides in the tarplant mitigation areas. Because revised plans would have required the elimination of the Par 3 course, as discussed elsewhere herein, many of these concerns would have been addressed by that change. The chemical management methods described in the BELP are inconsistent with the requirements set forth in the applicable special conditions for protection and buffering of water quality in Eagle Canyon, and the protection of sensitive species (including Monarch butterfly aggregates that could be adversely affected by chemical management within the former Par-3 course area).

As discussed in detail elsewhere within this report, the applicant's Agricultural Turf Management & Integrated Pest Management Plan as submitted relies heavily on chemical management of the Par 3 Course that will be set aside as a tarplant restoration site and a buffer for the sensitive species and habitats in and adjacent to Eagle Canyon. The applicants have indicated that they may be rethinking chemical management on the site, but have not deleted any of the proposed chemical use authorizations contained in these management plans to date. Revised plans would also have required adjustments to the clubhouse parking footprint to avoid the primary population of the tarplant. Therefore, although there may have been ways to mitigate or avoid certain impacts to southern tarplant that could have been implemented through special conditions, particularly conditions for revised plans that emphasize avoiding tarplant populations, the project is inconsistent with the policies and provisions of the County's LCP for reasons set forth elsewhere in these findings and is therefore denied.

3.5 White-Tailed Kite

The white-tailed kites (*Elanus leucurus*) (formerly known as black-shouldered hawks or kites) are designated by Fish and Game Code section 3511 as a fully protected species and as such they cannot be taken at any time by permit or otherwise except for scientific research or to protect livestock. The U.S. Fish and Wildlife Service considers the species as a Migratory Nongame Bird of Management Concern. Such species are considered to be of concern in the United States because of documented or apparent population declines, small or restricted populations, or dependence on restricted, vulnerable, or declining habitats.

The mature white-tailed kite is a medium-sized, graceful, long-winged hawk. The kite hover-hunts, with wings held high and beating vigorously. When the white-tailed kite dives to take prey, the wings are lifted and the kite appears to float down.[9]

The adult white-tailed kite is approximately 14.5 inches long, with a wingspan of 40 inches. The sexes look similar, with white head, chin, throat, chest, belly and underwing coverts. The bird has a white underwing with primary feathers darkening at the ends, a white tail, and a pale gray back and upperwing with flight feathers darkening towards outer wing. Gulls and terns look similar in coloration but lack black shoulder and have a different bill shape.

Juvenile white-tailed kites have a brown head, nape and back and a white face, with brown streaks on white breast, dark upperwing with pale tips to the coverts and a dark band at tip of white tail.

The white-tailed kite primarily preys on diurnally (daytime) active small rodents, with peak foraging in the morning hours. The meadow vole provides the principal component of the white-tailed kite diet. Kites are not known to prey significantly on gophers according to the UCSB Museum of Systematics and Ecology. This may be due to the relatively small size of white-tailed kites compared to most other raptors - gophers are bigger than voles and more difficult for kites to carry, and gophers remain underground, feeding on plant roots, more than voles. Voles feed on seeds and small insects gathered above ground and are thus more readily obtainable prey for the white-tailed kites. Therefore, a critical component of the white-tailed kite's habitat is an adequate supply of voles, and thus the habitat that the voles themselves require for existence.

White-tailed kite nest-building occurs January through August, with pair bonding and initial tree selection in the earliest phase, followed by nest construction. Egg laying begins in February and probably peaks in March and April, though this species can double clutch and very occasionally even triple clutch. A single nest may have from 2 to 6 eggs. Peak fledging typically occurs in May and June with most fledging complete by October.

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[9]Where not otherwise attributed, the general background information concerning white-tailed kites is from literature and online sources of the CDFG and the U.S. Geological Survey (USGS), and from the archival records of Santa Barbara County.

White-tailed kites have been observed to nest in a variety of native and non-native trees, including live oaks, Monterey pines, cypress, and Eucalyptus. The nests are generally 20 to 50 feet or so from the ground and somewhat cryptic. Groups of trees are much preferred over isolated trees. The surrounding trees not only place the nests out of direct view, but also provide perching opportunities for courtship and sentinel activities.

Although white-tailed kites range widely for prey, during nesting, adequate prey must be present close enough to the nest to supply not only sufficient food to raise their chicks, but also to allow the parents to remain nearby to guard the nest against predators--which include crows and other raptors.

Kite nests are constructed simply and sparsely of loosely arranged sticks and twigs. The strength of the nest depends primarily on the stability of the tree and branches holding the nest. Santa Barbara County records indicate that white-tailed kite nests constructed in eucalyptus trees have failed during summer windstorms, destroying nests located in the trees. Eucalyptus trees, which may satisfy some nest selection requirements for the kites, especially where more suitable alternative trees do not exist, often have relatively flimsy, breakable, and easily-moved branches that sway in high winds and thus render eucalyptus trees riskier for successful nesting. At the subject site, as discussed below, there is an abundance of potential eucalyptus trees for the white-tailed kites to choose from, yet they seem to select the mature cypress and Monterey pine trees on site in preference to eucalyptus trees. Dr. Dixon notes that of the approximately 985 trees present on site, some 326 are planned for removal, including 12 of the 15 trees used for nesting and related activities by white-tailed kites in 2002.

During the fall and winter, the birds have been known to roost communally in the Goleta Valley area of Santa Barbara County, although evidence recorded by UCSB researchers affiliated with the University's Museum of Systematics and Ecology shows that habitat fragmentation associated with increased urbanization and development has shifted kite roosting and nesting behavior and locations. Kites have been locally extirpated in some locations. No winter roosting surveys have been performed, although the applicants consultants observed foraging white-tailed kites during a January 1999 survey for California red-legged frogs on the subject site (SAIC, Thompson, 1999).

The Environmental Impact Report prepared for the Ellwood Beach- Santa Barbara Shores Specific Plan Area in 1992 noted that at that time the number of kites along the south coast area of the county had been consistently low during the previous five years relative to the mid-1970s. During the 1970s the population of the kite rebounded from near-extinction in the 1930s, reaching a high of 98 birds and a low of 23 birds, with a mean of 42 birds, in the annual Santa Barbara County Christmas Bird Counts sponsored by the Audubon Society between 1973 to1983. In the years from 1984 to 1988, 29, 21, 21, 18, and 18 kites were counted. UCSB research records indicate that

kites subsequently "evacuated" from the Goleta Valley during a prolonged drought (equated with low prey) and no kites resided in the Goleta Valley between 1989 and 1991.
Mark Holmgren, Curator of the Vertebrate Collection, UCSB Museum of Systematics and Ecology,[10] notes that kites are a mobile species, and while generally not migratory, may become nomadic and abandon a foraging or nesting area due to depletion of prey resources or in response to disturbance (Holmgren and Ball, June 6, 2002).

Data collected by UCSB indicates that approximately 30 to 35 individual kites, total, occupied the south coast area of the County in 2002, with an estimate of 6 occupied territories south of highway 101 and 6 or 7 occupied territories north of the highway.

The UCSB biologists estimate that the new information described below documenting the use of the ARCO Dos Pueblos site by at least two pairs of nesting white-tailed kites renders the site as perhaps the most important site for kites between Goleta and Gaviota, and is potentially as important as Ellwood Mesa and More Mesa as measured by the number of breeding pairs. (Holmgren and Ball, June 6, 2002).

Changed Circumstances

The Commission's present review of the proposed project is limited to full review of the project based on changed circumstances in the biological and physical environment of the subject site, or to new or revised development proposed (amendments), since the Commission approved the project in 1994. With regard to the white-tailed kite, changed circumstances exist because the fully protected species, previously not observed on the project site at the time of Commission approval of former CDP A-4-STB-93-154, has been documented nesting on the site and foraging there throughout the year.

Field studies of the site between 1999 and the present have documented that at least two pairs of white-tailed kites have been nesting on the site. Nesting by white-tailed kites had never been documented on the site at the time of the Commission's 1994 approval of the former permit for the presently proposed project. As discussed below, the presence of nesting pairs of white-tailed kites on the subject site is therefore evaluated herein as a changed circumstance.

Information about the White-tailed Kite at Time of Permit Approval

In the late 1800s, the White-tailed Kite was considered a relatively common raptor in Southern California; by the late 1920s, however, only ten pairs were known in Santa Barbara County area, and by the 1940s, the Kite was on the verge of extinction. Over the next 40 years the Kite population increased somewhat, but fluctuated significantly, reaching a peak in the mid-1970s and then declining to 797 (statewide count) in 1978 - four years before the Santa Barbara County LCP was certified. (Source: "A Biological

[10] The Museum's data includes research on white-tailed kites in the Goleta Valley and the south coast of Santa Barbara County dating back to the mid-1960s.

Evaluation of More Mesa" completed by a team of biologists at UCSB and published August 31, 1982.) The Kite population in southern coastal Santa Barbara County fell from a high of 110 birds in 1975 to zero sighted in 1991 and 1992. 20 Kites were counted during the 1993/94 Audubon Christmas Bird Count, January 1, 1994. There is no evidence in the administrative record that any of these Kites were counted on the Arco Dos Pueblos project site.

At the time the applicant's original application was prepared and submitted to Santa Barbara County, the documents submitted by the applicant indicted that the White-tailed Kite had not been detected on the subject site. No additional information was presented to supplement these documents prior to the Commission's approval in 1994.

The applicant submitted a Biological Resources Analysis, dated June 28, 1991 (Revised October 15, 1991) prepared by Interface Planning and Counseling Corporation (Section IX of the application) that documented that the White-tailed Kite (also referred to as the Black-Shouldered Hawk or Kite) was not known to be present on the site. This report was subsequently incorporated into the FEIR, and the Interface Planning and Counseling Corporation staff provided extensive comments on the FEIR (and upon the Commission staff's subsequent staff reports for the Commission's consideration). Interface staff commented on the draft EIR (published in the Appendices to the FEIR, at page 6 of the comment letter supplied by Jacqueline Bowland, Senior Biologist, Interface Planning and Counseling Corporation, dated January 20, 1993:

" ... (43) ...Page 5.1-17: The text should include a general discussion of raptors that could occur on the site, given the protected status of these birds. During surveys conducted by Interface, few raptors were seen. These included soaring red-tail hawks, turkey vultures, and kestrals. ***No roosts or nests were identified on the project site.****"* (Administrative record page 000829, emphasis added)

Ms. Bowland's comments continue, offering an explanation for the absence of any significant raptor use of the site:

"... Discussions with Paul Collins of the Santa Barbara Museum of Natural History of the habitat quality of this site indicates a possible lack of sufficient prey base for raptors in the project vicinity, as a result of ongoing cattle grazing and other agricultural land uses." (as above)

Staff has reviewed the administrative record for the original permit proceedings, which is comprised of over 5260 pages in 31 volumes. This staff review disclosed only one document (other than the above referenced application) in which the White-tailed Kite was expressly referenced. The document in the record for the original permit proceedings where the potential issue of the White-tailed Kite was discussed was in the "Final Environmental Impact Report for the Arco Dos Pueblos Golf Links Project, 92-FEIR-16" (FEIR) dated March 1993 (Administrative Record, 000280 et seq.).

The FEIR, prepared for the County of Santa Barbara's Resource Management Department, discussed and considered impacts to Biological Resources in section 5.1, commencing on pg. 5.1-1. In that section, raptors are mentioned generally on page 5.1-9 but the White-tailed Kite is not mentioned specifically:

"... Thirty sensitive bird species potentially could utilize one or more of the habitats on the project site. Most of these sensitive species are raptors and riparian habitat species that have become increasingly rare due to cumulative loss of habitats. The grasslands onsite provide some foraging habitat for raptors (owls, hawks, vultures, eagles), and the large trees (eucalyptus, tamarisk, etc.) provide perching and/or nighttime roosting sites. Raptors expected to frequent the site include turkey vulture (Cathartes aura), great horned owl (Bubo virginianus), barn owl (Tyto alba) red-tailed hawk (Buteo jamaicensis) and American kestrel (Falco sparverius).

The White-tailed Kite is notably absent from this list. In addition, nesting, by any raptor, is not mentioned in this section on the environmental setting of the project. Administrative record page 000364).

Commencing on page 5.1-16, the FEIR addresses sensitive fauna indicated on site based on springtime surveys, observations, species records for the Santa Barbara area. The White-tailed Kite is not identified as a sensitive species found on the site, although the section references Table 5.1-2 (which is only found in the Appendix to the FEIR) as providing "*a list of these sensitive species with their legal status.*" The White-tailed Kite is listed among other birds in the referenced Table 5.1-2, however the table states that the Kite is only potentially present, and has not been observed on site.[11]

Thus all biological surveys, the final EIR, the comments on the EIR (including those of the applicant's consultants), and the record of decision underlying the CUP and CDP A-4-STB-93-154, performed and documented prior to the Commission's consideration of the coastal development permit, was negative for the presence of the White-tailed Kite.

Although the FEIR speculates that White-tailed Kites might potentially use the site, it does not analyze the impacts of the proposed project on White-tailed Kites nesting on the site. The FEIR stops short of considering any meaningful impact analysis concerning the potential effects of the proposed project specifically upon the White-tailed Kite--lacking in particular any consideration of the applicable policy requirements concerning Kite habitat set forth in the certified LCP, or providing any specific mitigation

[11] The FEIR section on "Sensitive Taxa - Fauna" (FEIR pg. 5.1-16, 000371) states that Table 5.1-2 (Appendices) provides a list of all sensitive animals expected to use the project site as residents, breeders, foragers, or migrants. The actual list is produced in Appendix 5.1-2 (001042), titled "Wildlife Taxa of the Project Area." White-tailed Kites are on this list, which is virtually the "kitchen sink" of species that might be present on the site, but not a list of species actually documented to be present. The Appendix species list shows that White-tailed Kites were *not* observed during any of the surveys upon which the FEIR was based.

measures to preserve nesting trees, provide buffers from disturbance for nesting trees, or address foraging habitat necessary to ensure nesting success.

Although the FEIR speculates that White-tailed Kites "may abandon the area", it also states that Kites had never been observed utilizing the site. The EIR states: "...It is expected that raptor populations in the project area would decline as a result of the reduction in foraging habitat and perch sites, and several species such as the black shouldered kite and red-shouldered hawk may abandon the area." (EIR, page 5.1-36). Furthermore, the FEIR sensitive species list indicates that White-tailed Kites might potentially use the site, but it does not specifically identify any potential for nesting by Kites at the site. Rather, the record reflects that White-tailed Kites were not nesting at the site in the early 1990s, or at the time of the County and Commission actions to approve the proposed project. Therefore, the current documented White-tailed Kite nesting on the site is a changed circumstance.

Recent White-tailed Kite Use of the Proposed Project Site

Two pairs of white-tailed kites nested on the site of the applicants' proposed development in the spring of 2002, during a raptor survey of the site undertaken by the applicants, and one nest produced 5 fledglings before the survey was terminated on May 30, 2002. Thus, it is now known that the species occurs as a year-round resident breeder at the Dos Pueblos site, and evidence of this has been documented by a variety of other qualified observers, including biologists from four consulting firms reporting for the applicants, County staff and environmental condition compliance monitors, UCSB biologists, and the Commission's staff ecologists.

At the time of the Commission's last hearing on the proposed project (June 10, 2002) the applicants consulting biologists (Pacific Southwest Biological Services) had just terminated a survey of white-tailed kite nesting on the subject site, after establishing conclusively that two pairs of white-tailed kites were successfully nesting on the site at the study's end. The westernmost of the two pairs fledged five nestlings and the outcome of the easternmost pair, still incubating eggs when the study ended, is unknown (no further observations were conducted).

Field biologists under contract with the applicants recorded incidental observations of white-tailed kites utilizing the site as early as January 1999, while surveying for the California red-legged frog (no previous surveys for raptors had been undertaken on the site to the knowledge of staff since the surveys prepared in 1991 and 1992 for the associated environmental impact report). The County's environmental compliance monitor, John Storrer (Storrer Environmental Services) recorded evidence of nesting on the site by a pair of kites in March of 2000 while undertaking routine condition compliance monitoring of ARCO activities. The Commission staff, including a staff ecologist, observed foraging kites on the site in September 2001, and on November 4, 2002. Subsequent to the September 2001 observations, the senior biologist for the applicants' consultant, Dudek and Associates, documented four adult kites perching and foraging on the site later the same month. Subsequently, in May of 2002, four

qualified observers (the applicants' consultant--Michael Evans of Pacific Southwest Biological Services, the County's environmental compliance monitor--John Storrer, and Mark Holmgren and Morgan Ball--from the UCSB Museum of Systematics and Ecology), confirmed nesting by two pairs of kites on the subject property. One nest produced five fledglings before the applicants terminated the on-site survey. A second pair of white-tailed kites was still actively brooding eggs when the survey was terminated but the outcome of the second nest was not documented.

The applicants submitted a report to the Commission dated June 7, 2002, titled "Dos Pueblos Golf Links White-Tailed Kite Nesting Survey" prepared by Pacific Southwest Biological Services, Inc. (PSBS) documenting the results of the raptor nesting survey that had commenced the previous month. The survey protocol is attached. The survey was undertaken on five of the six required days, one week apart, between May 9, 2002 and May 30, 2002.

The survey determined that the kites were nesting in Tree #127 (numbering conventions for trees arise from number assignments established in the applicants' tree inventory plan; most trees discussed herein can be identified by their tree number on Exhibit 1A and in other attached documents, including the tree inventory) and Tree #67, both planned for removal under the applicants previous proposal. The PSBS report stated that these removals would not impact the white-tailed kites and that kites are not known to require the same nest site for subsequent nesting. A previous report prepared by Dr. Julie Vanderwier, Senior Biologist, Dudek & Associates, Inc., at the applicants' request, titled "Raptor Survey for Dos Pueblos Golf Links," dated November 26, 2001, confirmed the presence of four adult white tailed kites on the subject site during the September 20, 21, 2002 survey. Dr. Vanderwier did not undertake her survey during nesting season and therefore could not confirm active nests, but a map and field notes from her survey submitted at the request of staff the following spring contained notations about old nest site locations on the subject site.

PSBS biologists noted repeated use by white-tailed kites of specific clusters of trees for perching and as sentinel lookouts for nest protection, in support of the active nest sites. The numbers for these trees are documented in the respective reports (all reports associated with the white-tailed kite observations on site are attached)

A third consulting firm retained by the applicants concerning the white-tailed kites on site produced additional analyses and recommendations addressed below. Dr. Jeffrey Froke indicated in pertinent part (report dated October 10, 2002) in his report with regard to kite nesting selection, that:

> "...kites try something new each year, and should be offered attractive options..."

Dr. Froke prepared a report dated October 10, 2002 providing recommendations for landscape design and management practices that he believes will provide alternative nesting locations and enhanced prey populations to mitigate impacts associated with the applicant's proposed project. Dr. Froke's proposal does not redesign the course to

avoid the nesting and other trees identified as significantly used trees by Dr. Dixon, as discussed below. Thus, Dr. Froke's recommendations acknowledge the removal of the presently documented white-tailed kite nesting and associated trees, which are considered environmentally sensitive habitat areas, both under the Coastal Act and the County's certified Local Coastal Program, as discussed below.

Commission staff senior ecologist John Dixon, Ph.D., has evaluated Dr. Froke's recommendations in a memorandum report dated November 19, 2002 (hereinafter "report"—See Exhibits 1A and 13), and finds that the data collected to date demonstrate the use of the site by white-tailed kites for at least 4 years and, hence, probable use in the future if conditions remain the same. One or two nesting pairs are significant numbers at the local or county level, as verified by UCSB biologists with access to accumulated white-tailed kite population data collected in Santa Barbara County since the 1960s. Dr. Dixon concludes that it is important to try to maintain the reproductive output represented by these birds.

The Commission staff ecologist's report states that the proposed project places the reproduction of one or two pairs of kites at risk because it could potentially result in human disturbance that causes kites to avoid the foraging and nesting habitat that would remain at the site and the loss of 200 acres of foraging habitat and of many of the trees that have been, or potentially could be, utilized for nesting and perching by kites. In this regard, the report recounts the opinion of noted raptor experts that displaced raptors cannot simply move "somewhere else." Though this argument is often made, raptor experts consulted by staff point out that it is unlikely that displaced raptors will find new nesting or foraging territory that is not already being exploited by other competitors that are already established at the supposed "somewhere else." Thus, loss of raptor habitat inevitably equates with loss of the raptors that depend on the habitat.

Dr. Froke's proposes to develop nesting opportunities elsewhere on the subject site by means of certain landscaping and management treatments. Dr. Froke believes these measures will allow rodent prey populations to increase for the kites' benefit, thereby offsetting, in his estimate, the loss of nesting habitat and foraging that will inevitably result from the construction and operation of the golf course facilities as presently proposed. Dr. Froke would supplement tree plantings, and move mature trees to new areas (although such transplantings of mature specimen trees are often unsuccessful). Dr. Froke states that even if the trees are likely to die, they will become snags.

Snags offer raptor perches, but not raptor nesting sites for snags are too exposed to disturbance, the elements, and predation. In the case of the white-tailed kite, snags additionally lack the architectural elements of the fuller-canopied trees that typically cradle the simply constructed twig and stick nest the kite constructs.

There are at least three important considerations that must be taken into account by any plan to maintain the kites on site: 1) Provision of suitable nesting and perching habitat; 2) Protection from excessive disturbance, especially around the nesting habitat;

and 3) Provision of an adequate foraging base. In the 2002 nesting survey (Evans, 2002), it is stated that, "...suitable nesting trees, nearby perching trees, and foraging areas, both around the nest site and farther away are all key elements in the local survival of a pair of Kites." Dr. Froke addresses these issues and makes recommendations for a golf course management plan intended to provide the necessary resources.

For successful nesting to take place, suitable nesting trees must be present within the vicinity (from the kites' point of view) of adequate foraging areas. Based on a tree inventory prepared by Interface Planning and Counseling, there are about 985 trees on site, of which some 326 are planned to be removed, including 12 of the 15 trees used for nesting and related activities in 2002. Dr. Dixon states that most of the remaining trees probably are suitably close to foraging grounds and will continue to be so situated if Dr. Frokes' recommendations for native vegetation and rodent friendly management practices are followed and successful. However, there apparently has been no analysis as to the proportion of remaining trees that will be suitable for nesting (i.e., trees with appropriate height and configuration that are in appropriate clusters and adequately buffered from disturbance) after the development. As noted above, Dr. Froke recommends creating a number of nesting groves utilizing some existing trees and in some areas augmenting them by transplanting some adult trees and deeply planting others that would probably die but would act as snags, which might be used for perching but probably not for nesting. New trees would also be planted to maintain a suitable grove in the future.

The Commission ecologist's report also notes that it is important that nesting and foraging kites be protected from excessive disturbance. Nesting behavior, especially in the early stages, is most susceptible to disturbance. Experienced raptor biologists recommend anywhere from about 50 meters to 100 meters or more (100 meters equals approximately 300 feet), depending on the types of disturbance expected and on the individual biologist's personal experiences. Dr. Froke states that, "Nesting birds can be expected to tolerate low-frequency and non-disruptive activities to within 150 to 200 feet of their nest tree (better small grove)." Dr. Dixon states that at the applicants' Dos Pueblos site he recommends that 200-ft (61 meter) buffers be established around any existing nesting tree ESHA and any groves created and maintained as potential nesting sites as part of the golf course plan.

The Commission staff ecologists' report notes that there is also concern that golfing activities might disrupt foraging behavior and that kites might not utilize foraging habitat (existing or newly created) that is sandwiched between fairways (post construction). Dr. Froke presents evidence (observed also by Commission staff accompanying Dr. Froke during meetings at golf courses in Monterey County in October 2002) that white-tailed kites forage effectively in such areas on golf courses in the Monterey. According to Dr. evidence collected by Dr. Dixon for his report, white-tailed kites that forage or nest in close proximity to people tend to either have a genetic predisposition for tolerating the level of disturbance on golf courses or have habituated to golfing activities. He believes

that it is speculative whether kites would tolerate the amount of human activity that would result from the proposed golf course at this site.

Dr. Froke's proposal describes the proposed project as a "high end, low-round" course, which he defines as plus-or-minus 20,000 rounds per year. However, the proposed project description has always stated that the Dos Pueblos Champion Links Style 18-hole Golf Course would serve between 50,000 to 60,000 round of golf per year, open 350 to 360 days per year, and that the smaller Par 3 Executive Golf Course by Eagle Canyon, on the eastern end of the site would serve 20,000 rounds per year.

Dr. Froke may have misunderstood the proposed intensity of the 18-hole course as that actually associated with the intensity of use proposed for the 9-hole course alone. Thus, Dr. Froke's estimate that the 18-hole course, which affects the white-tailed kite habitat directly, will run 20,000 rounds per year, underestimates the intensity of that portion of the project by as much as 2/3 of the actual intensity of golf rounds the applicant proposes to provide on the 18 hole course. This means that the number of golf carts that would pass by a given point per hour (by a nesting tree, for example, as is presently proposed) would actually be three times greater than Dr. Froke has considered. In addition, the most sensitive season for the white tailed kite occurs during the February through August nesting season, which coincides with peak public use seasons for the golf course as well (there will not be an even distribution of golfers-per-hour on the course over the 350 to 360 operating days).

Dr. Dixon states that it is difficult to generalize from Dr. Froke's observations of the behavior of two pairs of kites, which were observed in Monterey, and notes that this adds to the uncertainty of maintaining kites at the site in the face of the planned development.

During staff observations on the Arco Dos Pueblos site in September 2001 and November 2002, the adult kites observed perching or foraging on the Dos Pueblos site maintained great distance from approaching humans, and flew when their perching trees were approached by the walking group of site visitors when the group was an estimated 200 feet or greater from the tree of concern. No kites foraged within 500 feet of the site visitors on either of the two referenced site visits noted.

Dr. Froke's proposal to encourage rodents through planting and maintenance treatments of roughs and out-of-bounds areas on the golf course is considered in Dr. Dixon's report. Raptor experts, and the literature on the subject consulted by staff note that kites in the Santa Barbara County area are vole specialists and that no data have been presented to demonstrate the degree to which restored native grasslands will support that species. The establishment of native vegetation may have a high probability of success, but the pattern of rodent proliferation that would follow is not well known, and only increases in voles would be helpful to the kites, according to the Commission staff ecologist's review of Dr. Froke's proposal.

Dr. Froke's recommendations also restrict the use of rodent bait poisons, recommending trapping, to be followed with fumigation methods of killing rodents if the golf course superintendent insists that such application is necessary to protect the greens and fairways from rodent damage. It appears that there is a potential for the implementation of serious efforts to increase rodents on the site, pursuant to Dr. Froke's objectives, to conflict with other objectives that would be typical for a golf course manager maintaining a championship level course. Thus, where Dr. Froke's recommendations state that certain actions (i.e., fumigation for rodents, application of various chemical management measures to maintain golf course playing quality) only be taken in a "bona fide emergency" to be determined by the golf course superintendent raises the concern that even well intended recommendations would be implemented by personnel charged with other priorities than fostering maximum potential rodent populations on the golf course property.

Dr. Dixon concludes that while Dr. Froke's proposals are worthy, and could produce benefits for white-tailed kites, the proposals are also speculative and untried and lack proof of performance. No published studies have been presented to support the theories underpinning Dr. Froke's proposals. In sum, Dr. Froke's plans are essentially experimental proposals and there is no ability to ensure that the experiments will succeed before the impacts upon the white-tailed kites would be felt by implementation of the proposed project. Thus, even with the implementation of Dr. Froke's full range of recommendations, white-tailed kites could still be driven away from the site, and potentially would not sustainably return.

Dr. Dixon additionally evaluated the documented patterns of use of the site by white-tailed kites to determine what portion of the site constitutes Environmentally Sensitive Habitat Area (ESHA) under the Coastal Act. Section 30107.5 of the Coastal Act defines ESHA:

> **"Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.**

The County's certified LCP incorporates the definition set forth in Section 30107.5 as the guiding definition of ESHA in the LCP, as well. (certified Coastal Land Use Plan, at page 116). The LCP further states at LUP page 117 that:

> **"Habitats are considered to be environmentally sensitive when they exhibit extreme vulnerability to disturbance or destruction from human activities."**

The certified Coastal Zoning Ordinance (LCP Implementation Plan) specifically defines ESHA exactly as ESHA is defined in the Coastal Act, in the definitions section of the CZO on page 21:

> **"<u>ENVIRONMENTALLY SENSITIVE HABITAT AREA:</u> Any area in which plant or animal life or their habitats are either rare or especially valuable because of their**

special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments."

In addition, the certified LUP lists white-tailed kite habitat as a specific form of ESHA (at pages 119 and 120), and further states that provisions in the LCP that are protective of ESHAs are in addition to existing State and Federal regulations which protect many species of plants and animals and their habitats. Further, the County's certified Coastal Zoning Ordinance states that certain kinds of protected species and habitats warrant ESHA designation and protection wherever they are found (CZO at page 175):

Sec. 35-97.1. ESH Purpose and Intent. Within the County of Santa Barbara there are areas which contain unique natural resources and/or endangered species of animal or plant life and existing and potential development may have the impact of despoiling or eliminating these resources. The purpose of this overlay district is to protect and preserve areas in which plant or animal life or their habitats are either rare or especially valuable because of their role in the ecosystem and which could be easily disturbed or degraded by human activities and developments. The intent of this overlay district is to ensure that all development in such areas is designed and carried out in a manner that will provide maximum protection to sensitive habitat areas.

Sec. 35-97.3. Identification of Newly Documented Sensitive Habitat Areas. If a newly documented environmentally sensitive habitat area, which is not included in the ESH Overlay District, is identified by the County on a lot or lots during application review, the provisions of Secs. 35-97.7 – 35.97.19 shall apply.

The CZO further states that certain findings must be made if a proposed project that may affect ESHA is to be approved. These findings include the requirement that development that may affect white-tailed kite habitats be consistent with the following requirements. If the project cannot be found consistent with these requirements, it must be denied or given the minimum use consistent with the applicable development rights associated with the applicable land use designation and zoning standards. For the white-tailed kite, these requirements are set forth in Section 35-97.14:

Coastal Zoning Ordinance Section 35-97.14. Development Standards for White-Tailed Kite Habitats

1. There shall be no development including agricultural development, i.e., structures, roads, within the area used for roosting and nesting.
2. Recreational use of the roosting and nesting area shall be minimal, i.e., walking, bird watching. Protective measures for this area should include fencing and posting so as to restrict, but not exclude, use by people.
3. Any development around the nesting and roosting area shall be set back sufficiently far as to minimize impacts on the habitat area.

4. In addition to preserving the ravine plant communities on More Mesa for nesting and roosting sites, the maximum feasible area shall be retained in grassland to provide feeding area for the kites

Therefore, considering the ESHA associated with the use of the subject site by white-tailed kites, Dr. Dixon states (Exhibits 1A, 13):

"You have asked me to address the issue of ESHA on the site in the context of white-tailed kites. Section 30107.5 of the Coastal Act includes as ESHA those habitats which are especially valuable because of their role in the ecosystem. At Dos Pueblos, trees that are used for nesting activities by white-tailed kites, a California Fully Protected Species, clearly meet this part of the definition because suitable nesting trees and nearby perching trees are a necessary prerequisite for the successful reproduction of this sensitive species on the site. In other similar cases, the Commission has designated as ESHA trees that provide important habitat to individual birds of sensitive species; for example, a discrete grove of Eucalyptus trees used for nesting, perching, and roosting by several species of raptors at Bolsa Chica was designated ESHA. In addition, Section 35-97.14 of the Local Coastal Plan protects white-tailed kite roosting and nesting areas."

"Although there is no question that the some of the trees at Dos Pueblos provide an ecological service to white-tailed kites that qualify them as ESHA, identifying the ESHA footprint at the Dos Pueblos site is difficult for several reasons. First, trees potentially suitable for nesting and perching are scattered over much of the site and do not form discrete clumps or groves distant from other suitable tree habitat. Second, white-tailed kites often, perhaps typically, do not return to the same tree to nest each year. For example, Holmgren and Ball[12] found that the distances between successive nests in the Goleta Slough area varied from around 33 m to nearly 400m. On the other hand, kites have been observed to use the same tree in three successive years at the U. C. Santa Barbara campus[13]. Whether kites return to the same or different trees may be a function of the relative availability of suitable nesting trees at a given site. At Dos Pueblos, based on the kites' usual behavioral pattern, it appears probable that the exact trees that were used for nesting in 2002 will not be used in 2003. Some other trees, perhaps close by - perhaps distant, are more likely candidates. Finally, we have no knowledge of which trees or groups of trees have been most used historically. Designating all trees as ESHA would protect the important habitat with certainty, however it is difficult to justify in the case of particular trees for which there is no history of use. An alternative with a strong empirical rationale is to protect all trees with a history of use and adjacent trees. The adjacent trees are important because they are potential nest trees, they provide perches for critical activities related to courtship and nest protection, and they define a grove of trees, a configuration that is generally necessary to provide a suitable nest site."

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[12] M.A. Holmgren & M. Ball. Distances between kite nests within and between seasons at a long-term territory. Data and maps submitted to the CCC on June 6, 2002.
[13] M. A. Holmgren, personal communication to J. Dixon November 8, 2002.

"In my opinion, it is appropriate to designate as ESHA all trees that fall within the smallest radius circles, centered on each documented 2002 nest tree, that contain all the immediately adjacent trees for which important use was documented. In addition, designate as ESHA all trees with white-tailed kite nests from previous years and those adjacent trees within the average radius observed in 2002. Finally designate as ESHA each of the more distant trees for which important use was documented in the 2002 nesting season. All trees within the circles around the observed nest trees should be given a 200-foot buffer; the distant trees with documented use should be given a 100-foot (30-m) buffer. These buffers are necessary to prevent abandonment of nests or interference with courtship, nesting, and foraging activities."

"During 2002, kites nested in Trees 67 (eastern pair) and 127 (western pair). Other trees were also used for important activities. For example, in a discussion of the observed use of trees near the eastern nest site (trees 81,82,83,113, & 117), the applicant's consultant wrote, "These trees seemed essential for performing courtship-related activities and for serving as sentinel perches...."[14] The western pair were also observed to use trees (128,149,153-155,157,187,&188) other than the nest tree in their routine activities. Nest-building activity was also observed in 2000 in Tree 83[15]."

"For nest tree 67, a circle with a radius of 256 feet (78 m)[16] would contain trees 81-83. For nest tree 127, a circle with a radius of 322 feet (98 m) would contain trees 128, 149, 153-155, & 157. So, in 2002 a circle with an average radius of 289 feet (88 m), centered on the nest tree, contained all the other trees with observed important use. Therefore, following the above protocol, the ESHA would include all trees within 256 feet of Tree 67, all trees within 322 feet of Tree 127, and all trees within 289 feet of Tree 83. In addition, ESHA would include trees 113, 117, 187 and 188. It is very probable that this protocol underestimates the number of trees that have actually been used by kites historically and underestimates the number of trees that would be used in the future in the absence of development, but it is based on existing data that documents use, avoids arbitrariness, and protects groups of trees."

"In certain instances, there also is an ecological basis and a Commission precedent for designating as ESHA foraging habitat for raptors. However, in the present case I don't think there is a strong basis for identifying which of the potential foraging areas within the region are most important for white-tailed kites or for establishing boundaries that delineate foraging ESHA. On the other hand, a significant amount of foraging area must be provided on site in order for the development to be consistent with section 30240(b) of the Coastal Act (*Coastal Act section 30240 (a) and (b) are also incorporated into the County's certified LUP as a guiding policy, on page 116*) which

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[14] M.U. Evans. Dos Pueblos Golf Links, Goleta, Santa Barbara County, California, White-Tailed Kite Nesting Survey. A report by Pacific Southwest Biological Services to Culbertson, Adams, and Associates dated June 7, 2002.
[15] J. Storrer. Letter to K. Getler (S.B. County P&D Energy Division) dated June 3, 2002.
[16] Radii estimated by scaling distances from the tree map provided by the applicant.

requires that, "Development in areas adjacent to environmentally sensitive habitat areas...shall be compatible with the continuance of those habitat...areas." In the above report, Dr. Froke recommends changes in the project design that would result in approximately 80 - 100 acres of the project site being managed in a way intended to promote robust populations of voles that are the major prey of white-tailed kites. If the management plan is successful and if the rodent habitats scattered about the golf course are all utilized by kites, the managed foraging habitats on the project site should support one or two pairs of white-tailed kites."

On the basis of these comments, and the statements set forth in the balance of his November 19, 2002 memorandum, Dr. Dixon concluded that ESHA associated with the white-tailed kite nesting habitat is therefore that area illustrated in Exhibit 1A. Staff concludes that although many elements of Dr. Froke's plans are commendable, and a step in the right direction, the plan still relies on 1) the elimination of much of the ESHA Dr. Dixon has identified and 2) impermissible mitigation for these impacts through methods that are speculative and amount to experimentation.

The applicants' proposed project would construct much of the 16th, 17th, and 18th fairways and greens within the areas that are designed as ESHA by Dr. Dixon. These areas are used for roosting, sentinel perching, and nesting by kites. Paragraphs 1, 2, and 3 of the Coastal Zoning Ordinance, Sec. 35-97.14 (cited above), prohibits removal of the trees used by kites for roosting and nesting and construction of golf course fairways in these areas. Since the applicants propose development of golf course fairways in the identified kite roosting and nesting areas, the Commission finds that the proposed project is inconsistent with Section 30240 of the Coastal Act because it includes removal of ESHA. Section 30240 is incorporated into the County LCP as one of the "guiding policies" for the protection of land and marine habitats. (Santa Barbara County Coastal Plan, section 3.9.1, p. 114-116).

Almost none of the white-tailed kite ESHA identified by Dr. Dixon would remain intact if the golf course is developed as presently proposed. What would remain of the important trees and surrounding habitat utilized by kites would become fragmented, more visible and therefore more vulnerable to predators, and subject to disturbance from the golfing traffic that would pass by the white-tailed kite nesting habitat. At a frequency of up to 60,000 rounds of golf per year as proposed for the 18th fairway, this level of disturbance would be substantial. Thus, the proposed project, even with the implementation of Dr. Froke's commendable, but experimental recommendations, is not consistent with the applicable policies and provisions of the certified LCP.

Staff had previously recommended that a number of measures be implemented through special conditions. These measures would require a redesign of the golf course layout to avoid the impacts that would be caused by the construction and operation of the 18th fairway. Since the publication of that recommendation, however, a second nesting pair of white tailed kites was identified on, and fledged 5 nestlings from, a site on the proposed 16th and 17th fairway areas. The applicants stated that even the extent of the previous staff recommendation would be unacceptable to them. They held that a

championship golf course must have the spectacular vistas and blufftop location of their proposed 18th fairway and that the revised plans recommended by staff could not, and would not be implemented. Thus, the applicants have indicated that they are not willing to modify the project to preserve the kite roosting and nesting area at the site. Because extensive changes would be necessary to conform the project to the LCP and because golf course projects and their design are both unique and specialized, the Commission declines to recommend changes or conditions at this time to bring the project into conformity with the LCP. Therefore, the Commission finds that the proposed project is inconsistent with the certified Santa Barbara County LCP. Accordingly, the Commission denies the proposed project.

3.6 New Wetlands

New, small wetlands have emerged on site since the project was approved by the Commission November, 1994. The footprint of these wetlands coincides with areas of former Arco oil and gas facility abandonment undertaken between 1996 and 1998. Disturbance, excavation and soil compaction, etc., have collected and retained moisture in the wake of the abandonment activities. The applicant secured a wetland delineation in consultation with the Army Corps of Engineers and the Natural Resources Conservation Service (the latter required because the site is classified as rangeland). For the most part, the amendments proposed by the applicant adjust the golf course design to avoid these wetlands. Some golf cart paths, tees, and greens may be closer than 100 feet buffer required by the County's LCP, and if the Commission had approved the proposed project, special conditions to revise the plans so that the necessary buffers were preserved and other measures typical of wetland protection standards would have been required. For other reasons, the proposed project is not consistent with the requirements of the certified LCP and therefore the project is denied and the special conditions to achieve these mitigation measures for wetland impacts that are not already addressed in the applicants' proposal will not be imposed.

The Commission notes that an appeal of ARCO's contaminated soil remediation proposal for the site will impact many of these small wetlands. That appeal is pending and will be heard at a subsequent hearing.

4.0 Alternatives

The Commission's denial of this project does not eliminate all use of the parcels for the applicants (property owners). First, the applicants can redesign the golf course. The site is comprised of 208 acres, which can accept the footprint of a golf course, albeit not the presently proposed design, consistent with the environmental protections discussed in this report.

Staff considered the alternative of a revised plan that addressed many of the projects' adverse impacts on coastal resources that are the subject of changed circumstances by deleting the Par 3 course, undergrounding and covering the reservoir, re-siting of the Clubhouse and parking somewhat, relocating tunnel undercrossings, and other

adjustments or revisions of the project design and layout. This alternative would have retained the 18-hole golf course, but the applicants stated that this alternative was unacceptable. Moreover, with the confirmation of white-tailed kite ESHA on the subject site rendered the modified alternative even less acceptable to the applicants because the 16th, 17th and 18th fairways would all require major redesign and substantial relocation, which also affects the design of the overall course. Nevertheless, as noted above, a redesign for an 18-hole golf course is available on the 208-acre site.

In addition the property presently owned by the applicants consists of 2 large agriculturally zoned lots and one 4-acre former in-holding lot. The lands also contain, according to the applicants, 23 of the Naples Townsite small lots. The County has included these lots in its LCP amendment that allows for County approval of a development agreement with the property owners of the small lots known as the former Naples Townsite.

The County is presently negotiating a development agreement in accordance with the provisions of the certified LCP with the adjacent landowner for residential use of the lots covered by the LCP on that adjoining property. Therefore there is an alternative for residential development on the applicants' property.

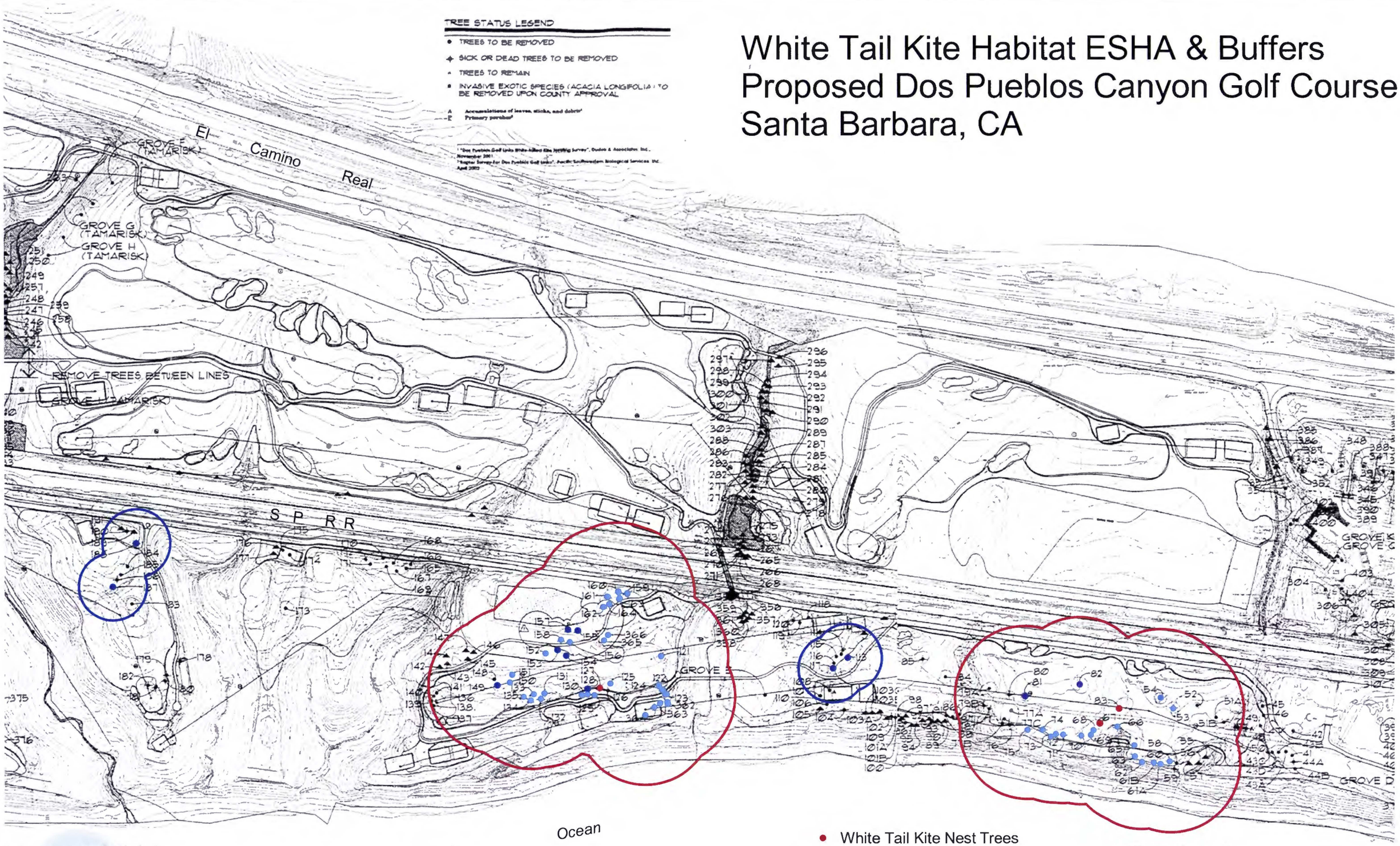
In addition to a redesigned golf course or residential use, all of the uses allowed in the County's LCP for property zoned Agriculture II (AG-II) could be considered for this site. These include the uses enumerated in the County's LCP allowed by CUP or CDP.

5.0 California Environmental Quality Act (CEQA)

Section 13096(a) of the Commission's administrative regulations requires Commission approval of a Coastal Development Permit to be supported by a finding showing the approval of the permit, as conditioned by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect that the activity may have on the environment.

The Commission finds that there are feasible alternatives and feasible mitigation measures that while not proposed by the applicants would avoid or eliminate the significant adverse effects on the environment within the meaning of the California Environmental Quality Act of 1970 that the project as proposed will otherwise have. Therefore, the proposed project is not consistent with CEQA, the policies of the Coastal Act, or the policies and provisions of the certified Local Coastal Program (LCP) of Santa Barbara County. Therefore, the Commission denies the proposed project.

White Tail Kite Habitat ESHA & Buffers
Proposed Dos Pueblos Canyon Golf Course
Santa Barbara, CA



CALIFORNIA COASTAL COMMISSION

Locations Approximate.
For Illustrative purposes only.

Exhibit 1A
A-4-STB-93-154-CC-A2

Tree Inventory Plan, Katie O'Reilly Landscape Architects 4/20/99.

DAR, JVC 11

GOLF USES:

- Tee
- Green
- Fairway
- Sand Trap
- Rough

Trails:

- Lateral & Vertical Access Trails

PROPOSED HABITAT TREATMENTS:

- Coastal Sage Scrub
- Erosion Control
- Existing Vegetation To Remain
- Grassland Plugs
- Native Grassland
- Riparian Revegetation Treatment #1
- Riparian Revegetation Treatment #2
- Riparian Revegetation Treatment #4
- Vernal Pool Buffer Treatment

RIPARIAN CORRIDORS:

- OR ———— Vegetated Stream
- OR - - - - - - - - Unvegetated Intermittent Stream
- Unvegetated Permanent Stream
- —·····— Unvegetated Ephemeral Stream

NOTE: Numbers indicate channel width measurements in feet between markers.

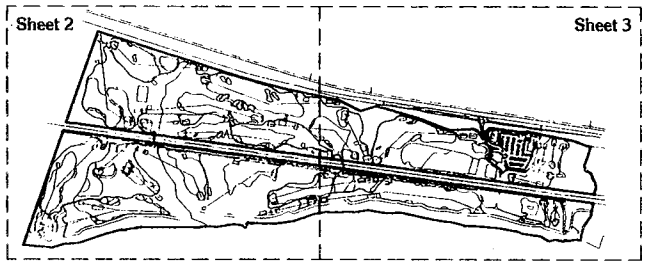
HABITAT TREATMENTS:

CBM	Coastal Brackish Marsh
DW	Disturbed Wetland
FWM	Freshwater Marsh
SWS	Southern Willow Scrub
VP	Vernal Pool

SOIL REMEDIATION AREAS:

- A Mercury Manometer
- B Former (208) Tank Farm
- C Warehouse Storage
- D Former Gas Compressor
- E Well 129-2
- F Active (129/208) Tank Farm
- G Mudpit Near 208-19 Well
- H Concrete Abutment

- Water Quality Sampling Location
- Temp. Construction Staging Area (for western vertical access)
- Conservation Easement
- Chemical Use Buffer



KEY MAP

N

Scale: 1" = 1500'

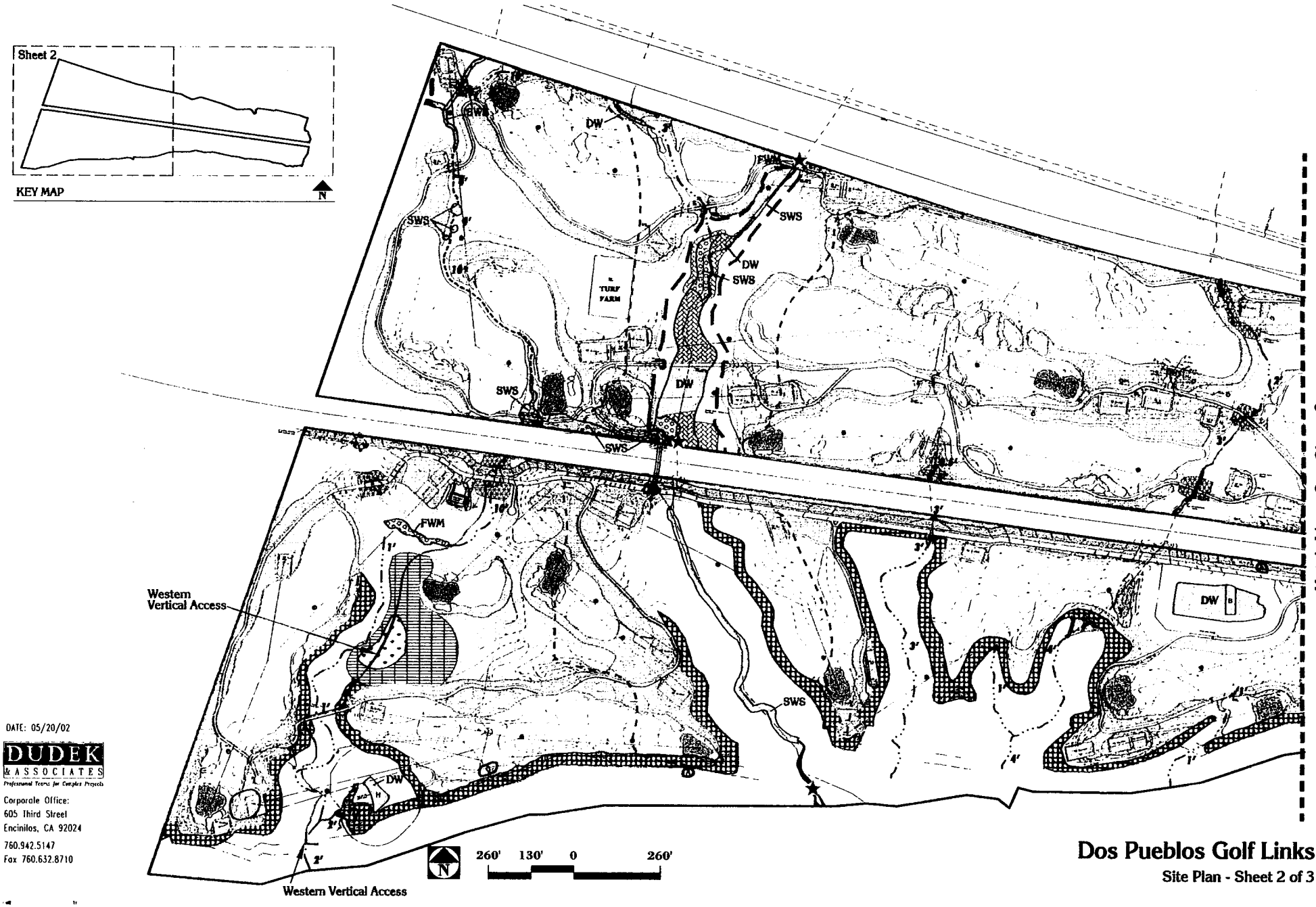
DATE: 05/20/02

DUDEK & ASSOCIATES
Professional Teams for Complex Projects
Corporate Office:
605 Third Street
Encinitas, CA 92024
760.942.5147
Fax 760.632.8710

Exhibit 1
A-4-STB-93-154-CC-A2
SITE PLAN
3 PAGES

Dos Pueblos Golf Links

Site Plan - Sheet 1 of 3



DATE: 05/20/02

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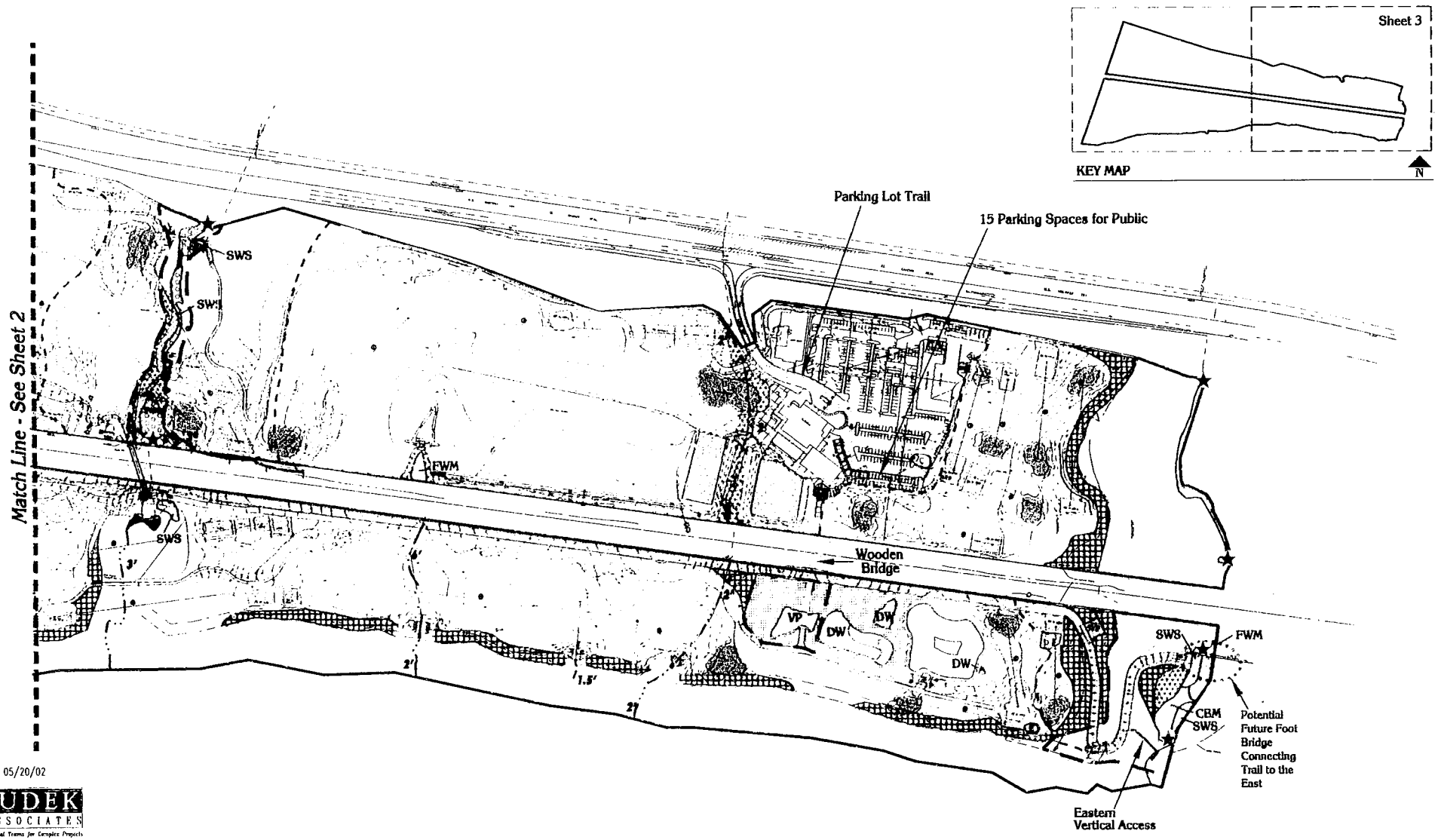
Dos Pueblos Golf Links

Site Plan - Sheet 2 of 3



DATE: 05/20/02

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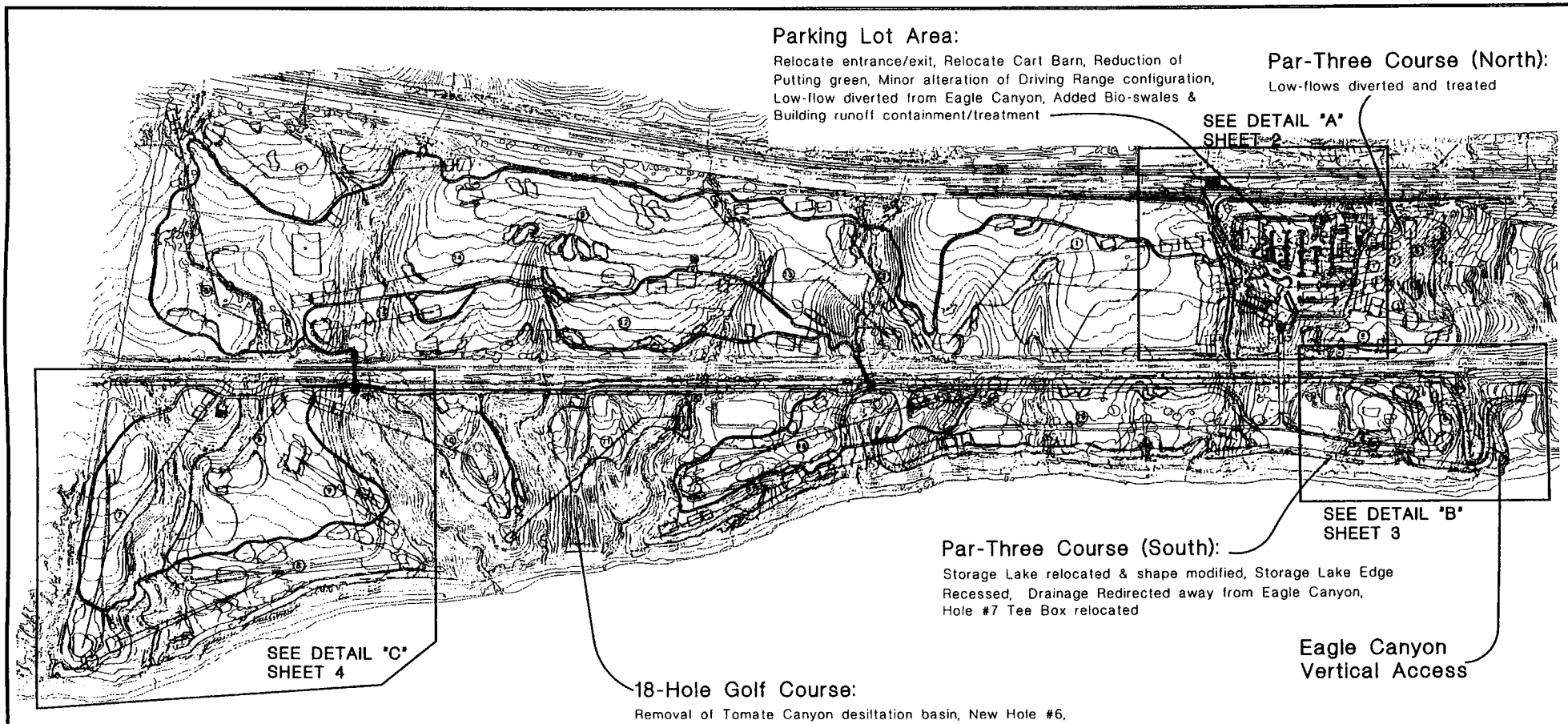
N

260' 130' 0 260'

Dos Pueblos Golf Links

Site Plan - Sheet 3 of 3



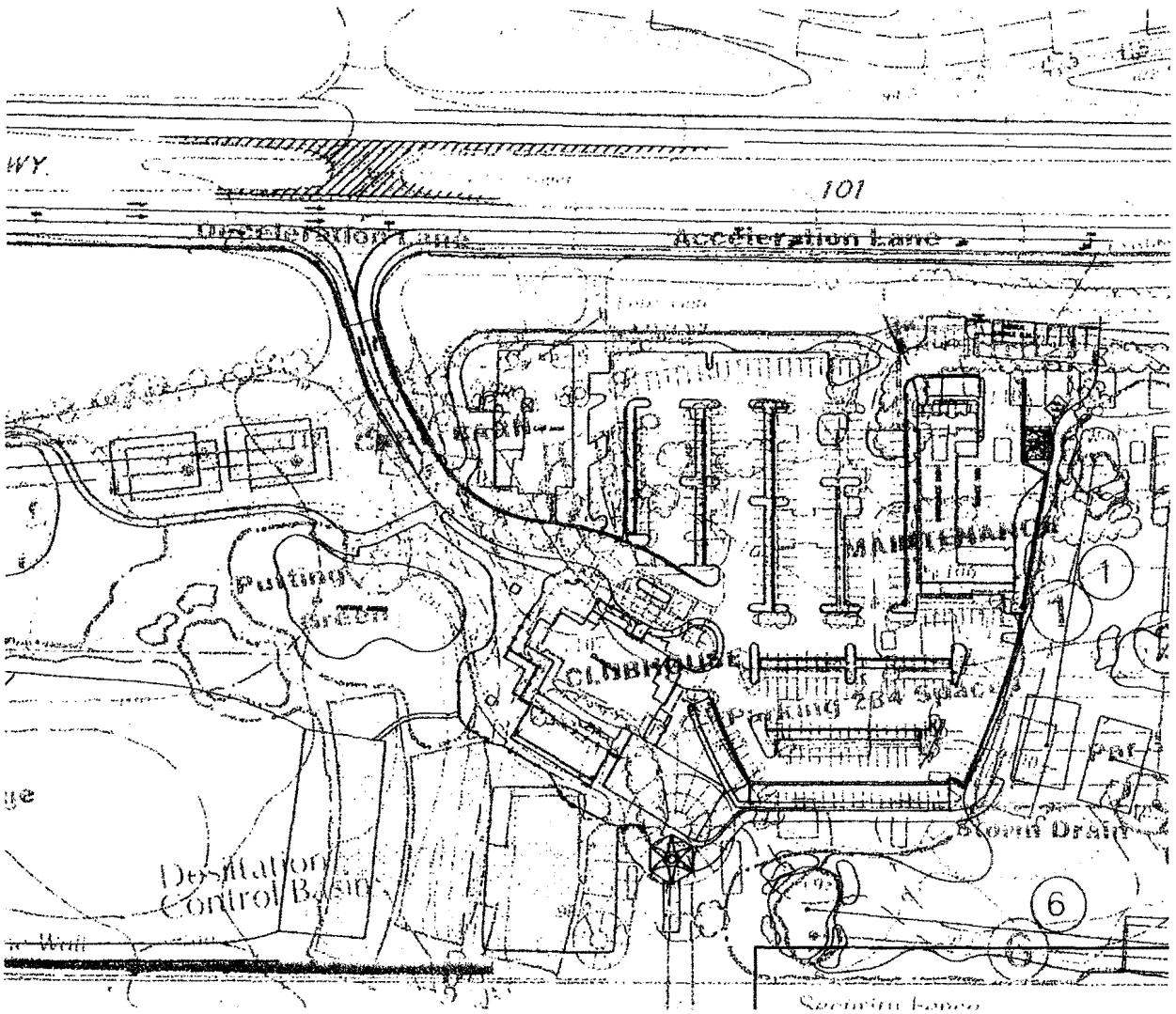
Penfield & Smith
ENGINEERS • SURVEYORS
101 E. VICTORIA ST. SANTA BARBARA, CALIF. 93101
(805) 963-9532
MAILING ADDRESS: P.O. BOX 98 (93102)

SCALE IN FEET
0 200 400 600

* For a more detailed description of these modifications, please refer to: Substantial conformity Determination, dated October 9, 1998, Staff Report(s): Permit Amendment, dated December 14, 1998, January 21, 1999, and May 20, 1999, Revised Project Description(s) dated February 4, 2002 and April __, 2002.

DOS PUEBLOS GOLF LINKS
Project Modifications: 1993-1994 vs 2002*

Exhibit 2
A-4-STB-93-154-CC-A2
PROJECT MODIFICATIONS
4 PAGES



Parking Lot Area:

Relocate entrance/exit, Relocate Cart Barn, Reduction of Putting green, Minor alteration of Driving Range configuration, Low-flow diverted from Eagle Canyon, Added Bio-swales & Building runoff containment/treatment

DETAIL "A"

DOS PUEBLOS GOLF LINKS

Project Modifications: 1993-1994 vs 2002*

1993-1994 Site Plan

2002 Site Plan

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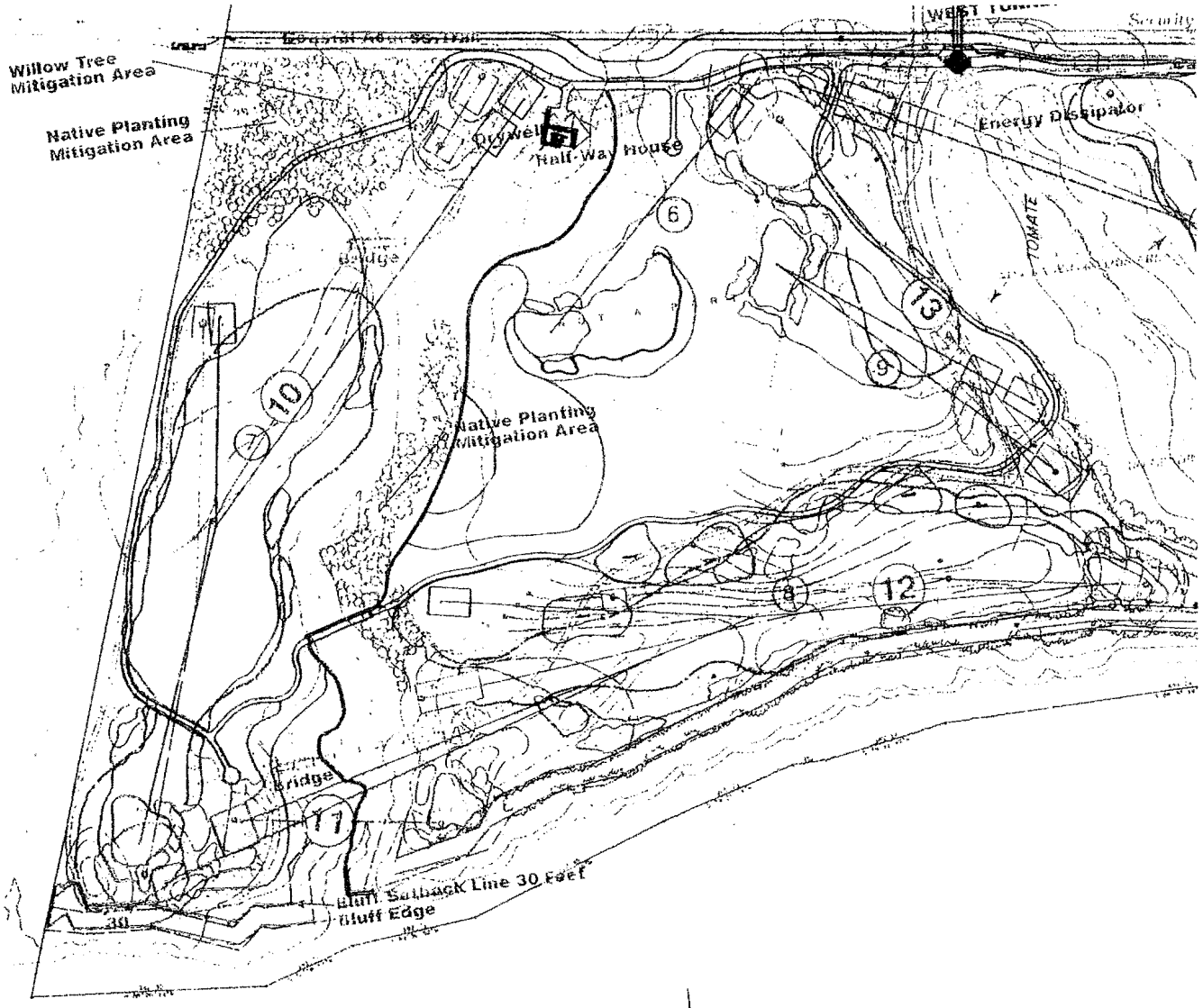
SCALE IN FEET

0 100 200 300

1993SP COMPARED TO 2002SP.DWG



18-Hole Golf Course:

Removal of Tomate Canyon desiltation basin, New Hole #6, Former Hole #11 eliminated, Hole #9 Green relocated (former #13), Hole #11 (former #7) Green relocated

DETAIL "C"

DOS PUEBLOS GOLF LINKS

Project Modifications: 1993-1994 vs 2002*

1993-1994 Site Plan

2002 Site Plan

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MAILING ADDRESS: P.O. BOX 98 (93102)

SCALE IN FEET

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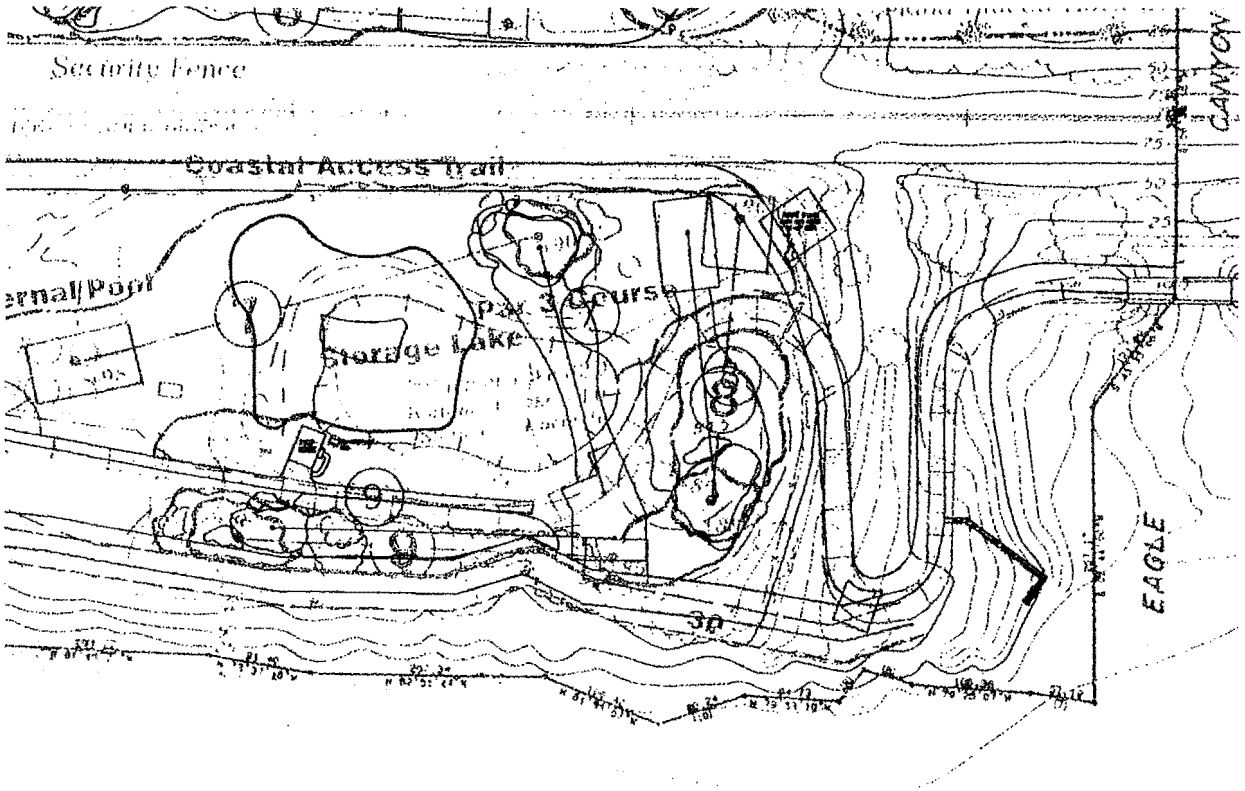


Par-Three Course (South):

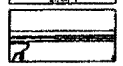
Storage Lake relocated & shape modified, Storage Lake Edge Recessed, Drainage Redirected away from Eagle Canyon, Hole #7 Tee Box relocated

DETAIL "B"

DOS PUEBLOS GOLF LINKS

Project Modifications: 1993-1994 vs 2002*

1993-1994 Site Plan 

2002 Site Plan 

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1993SP COMPARED TO 2002SP.DWG

SCALE IN FEET
0 100 200 300

N

HABITAT TYPES/LANDCOVERS:

BCH	Beach/Sand
BLUFF	Coastal Bluff
CBM	Coastal Brackish Marsh
CSS	Coastal Sage Scrub
CYP	Cypress
DEV	Developed
DW	Disturbed Wetland
EUC	Eucalyptus
FWM	Freshwater Marsh
IP	Iceplant
NNG	Non-native Grassland
OAK	Oak Tree
OC	Open Channel (unvegetated)
ORN	Ornamental Planting
P	*Pittosporum*
PIN	Pine Tree
POS	Poison Oak Scrub
SWS	Southern Willow Scrub
TS	Tamarisk Scrub
VGL	Valley Needlegrass Grassland
VP	Vernal Pool

Waters of the U.S.:

Waters of the U.S. - Intermittent

Waters of the U.S. - Ephemeral

NOTE: Measurements in feet indicate channel width between markers.

Data Station

SENSITIVE ANIMAL SPECIES:

CBP	California brown pelican
CRLF	California red-legged frog
HS	Harbor Seal
MB	Monarch butterfly[1]
TWG	Tidewater goby
WTK	White-tailed kite[2]

Note:
A number after a WTKI label indicates the group number.

A — Accumulation of leaves, sticks & debris[2]

P — Primary perches[3]

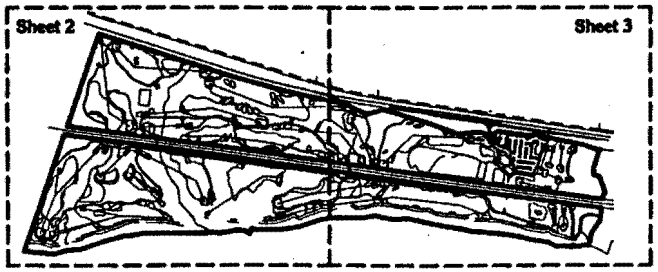
WTK foraging area[2]

MB aggregation site[1]

[1] "Monarch Butterfly Aggregations Associated With Eagle Canyon", Althouse & Meade, Inc., revised November 2001.
[2] "Raptor Survey For Dos Pueblos Golf Links", Dudek & Associates, Inc., November 2001.
[3] "Dos Pueblos Golf Links White-tailed Kite Nesting Survey", Pacific Southwestern Biological
Services, Inc., April 2002.

SOIL REMEDIATION AREAS:

- [A] Mercury Manometer
- [B] Former (208) Tank Farm
- [C] Warehouse Storage
- [D] Former Gas Compressor
- [E] Well 129-2
- [F] Active (129/208) Tank Farm
- [G] Mudpit Near 208-19 Well
- [H] Concrete Abutment



KEY MAP

N

Scale: 1" = 1500'

SENSITIVE PLANT SPECIES:

St *Southern tarplant (Hemizonia parryi ssp. australis, a.k.a. Centromadia parryi ssp. australis)*

- April 1991 survey[1]
- May 1992 survey[2]
- July 1992 survey[3]
- FEIR, March 1993[4]
- May 1995 survey[5]
- October 1998 survey[6]
- November 1999 survey[7]
- October 2000 survey[8]
- September 2001 survey[9]
- March 14, 2002 survey[10]

Note: Number indicates individual plant counts at that location.

Limits of greatest density of Southern tarplant

Ca *Cliff aster (Malacothrix saxatilis ssp. saxatilis)*

- April 1992 survey[11]
- FEIR, March 1993[12]

[1] "Biological Resources Analysis: Section IX, Interface Planning and Counseling Corporation, revised October 1991.
[2] "Dos Pueblos Golf Links Plant Survey", Rindlaub, May 1992. Survey did not specify the location of the population, only verified the plant was located upon the property per the October 1991 survey.
[3] "Wetland Classification and Environmental Analysis for the Dos Pueblos Golf Links" Interface Planning and Counseling Corporation and Ferrin, August 1992. "The entire length of each drainage potentially impacted by the proposed development was surveyed by walking the corridor, either in the bottom of the channel or along the bank. Detailed field noted and photographs were recorded for each drainage system, and a comprehensive plant species list was compiled." Page 11. No additional locations of Southern tarplant were identified.
[4] "Final Environmental Impact Report for the ARCO Dos Pueblos Golf Links Project, County of Santa Barbara, March 1993. The FEIR identifies "A small population of southern tarplant was located by Interface (1991) immediately south of the coastal road and west of Drainage #3 (Figure 5.1-1), as verified by the EIR consultants."
[5] "Letter", Bowland & Associates, May 9, 1995. No southern tarplant was located in the previously identified location.
[6] "Fax Memo", Bowland & Associates, October 6, 1998. The approximate location of a population of 4,505 plants in the vicinity of the former warehouse and loading dock was postulated within an area approximately 68 meters long by 25 meters wide equaling 1650 square meters.
[7] Untitled Survey for Tarplant (all species), Dudek & Associates, Inc. The area of these populations was not estimated, nor surveyed, due to the approved mitigation being based on numbers of plants, not area.
[8] Untitled Survey for Tarplant (all species), Dudek & Associates, Inc. The area of these populations was not estimated, nor surveyed, due to the approved mitigation being based on numbers of plants, not area.
[9] Untitled Survey for Tarplant (all species), Dudek & Associates, Inc. The area of these populations was not estimated, nor surveyed, due to the approved mitigation being based on numbers of plants, not area.
[10] Letter", Storrer Environmental Services, April 1, 2002. Approximate distribution of the former warehouse and loading dock.
[11] "Dos Pueblos Golf Links Plant Survey", Rindlaub, May 1992.
[12] "Final Environmental Impact Report for the ARCO Dos Pueblos Golf Links Project", County of Santa Barbara, March 1993.

Exhibit 3
A-4-STB-93-154-CC-A2
BIOLOGICAL RESOURCES MAP
3 PAGES

Dos Pueblos Golf Links

Biological Resources Map - Sheet 1 of 3

DATE: 05/03/02

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Professional Teams for Complex Projects

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Encinitas, CA 92024
760.942.5147
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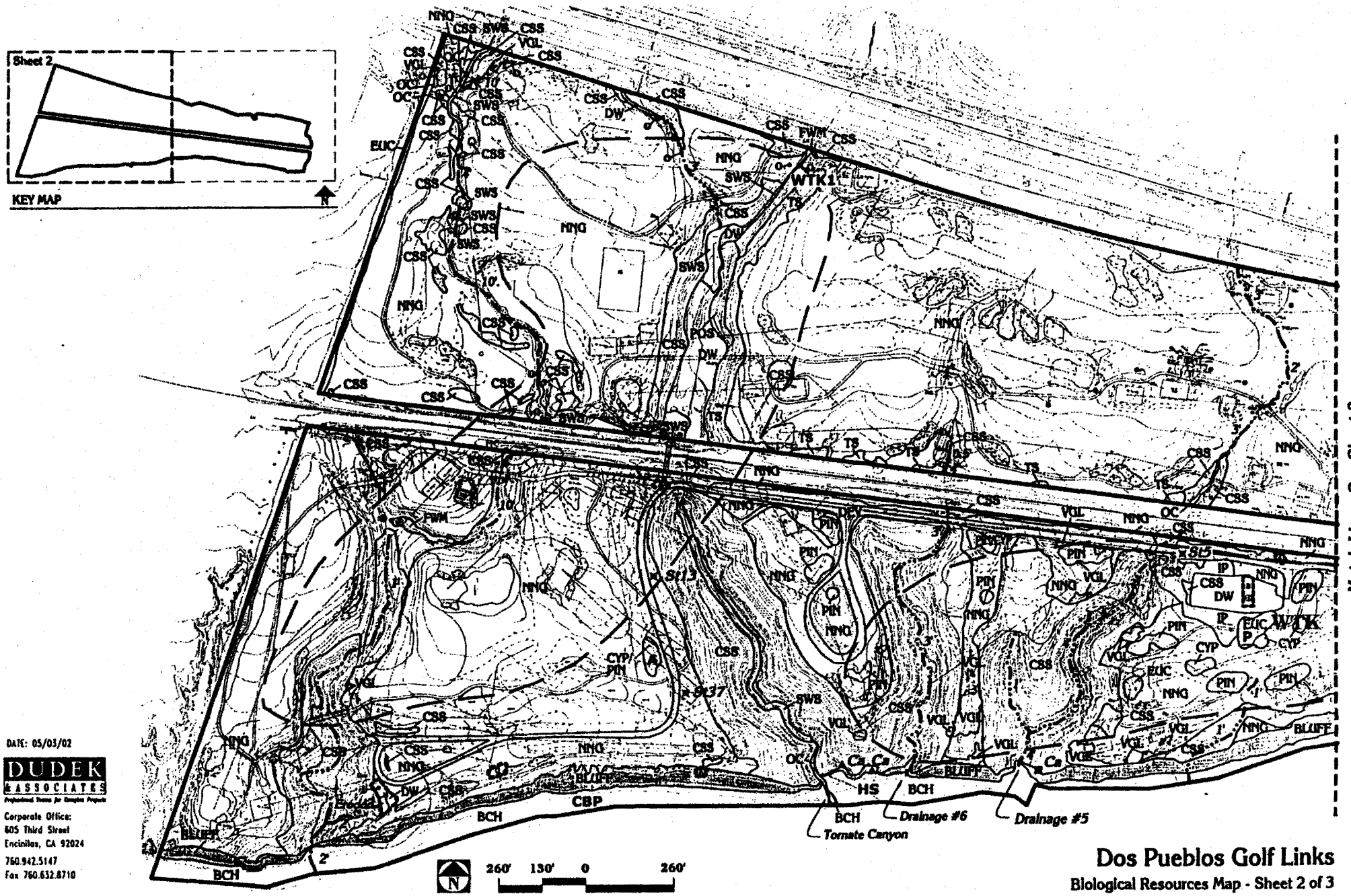

DATE: 05/03/02

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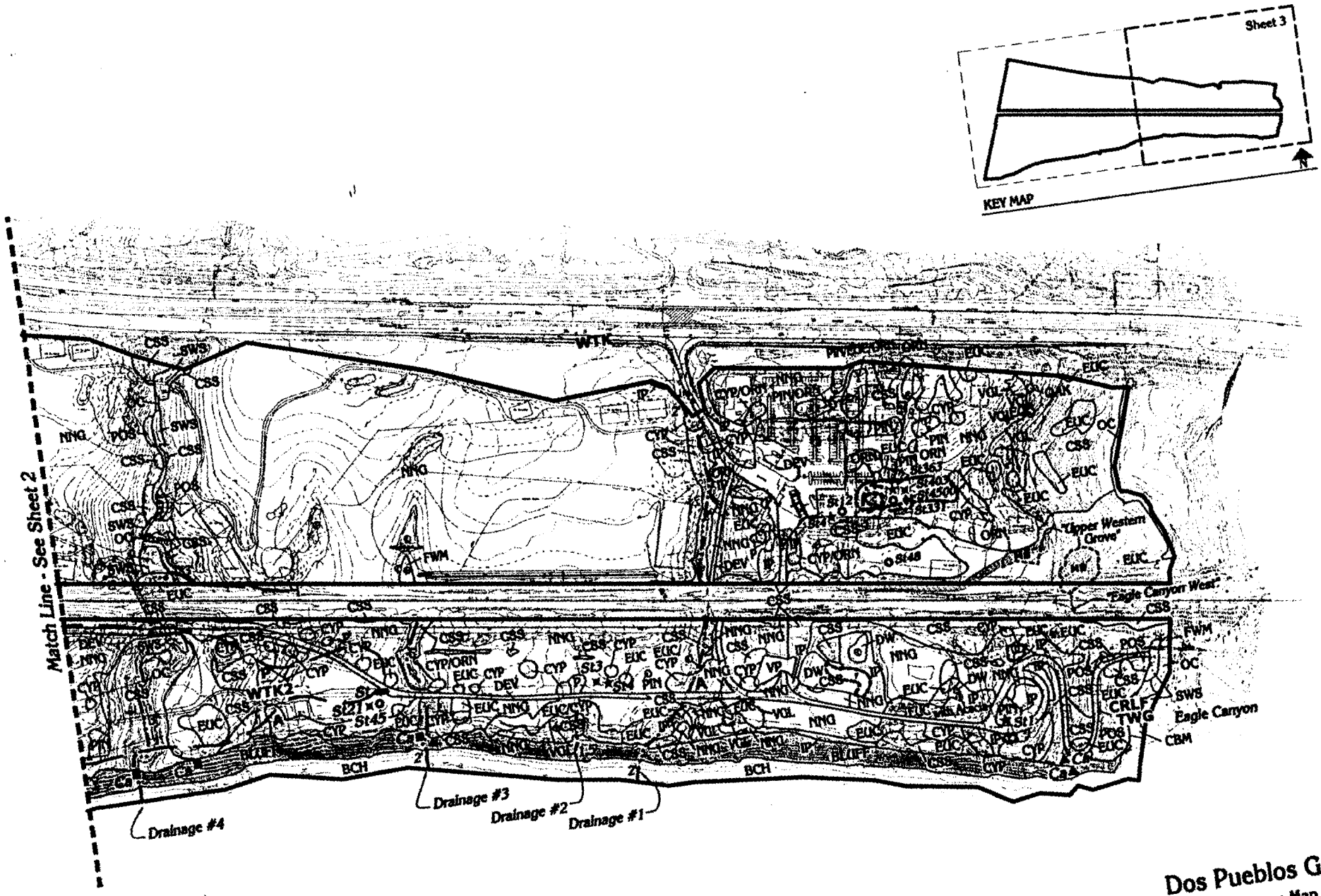
Dos Pueblos Golf Links

Biological Resources Map - Sheet 2 of 3



Dos Pueblos Golf Links

Biological Resources Map - Sheet 3 of 3

DATE: 05/03/02

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Corporate Office:
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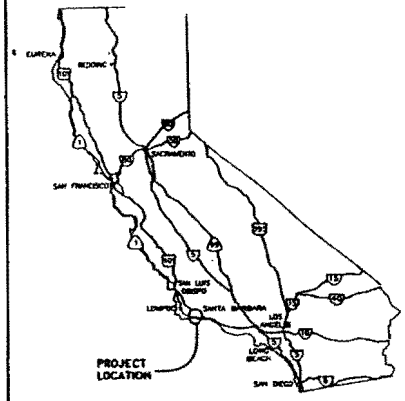
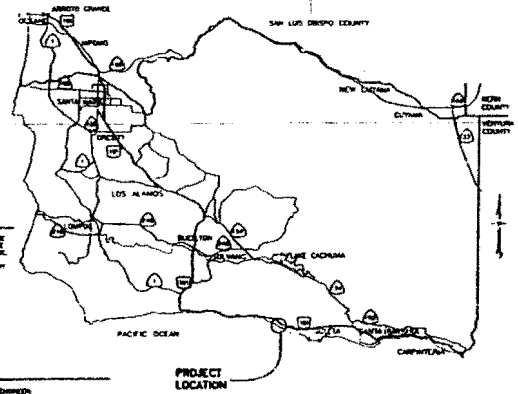
Encinitas, CA 92024

DOS PUEBLOS GOLF LINKS

GRADING AND DRAINAGE PLANS



LOCATION MAP
N.T.S.



VICINITY MAP
N.T.S.

GEOTECHNICAL ENGINEERS STATEMENT

GEOLOGIST STATEMENT

SURVEYOR'S NOTES

1.
2.
3.
4.

CIVIL ENGINEERS STATEMENT

GENERAL INFORMATION

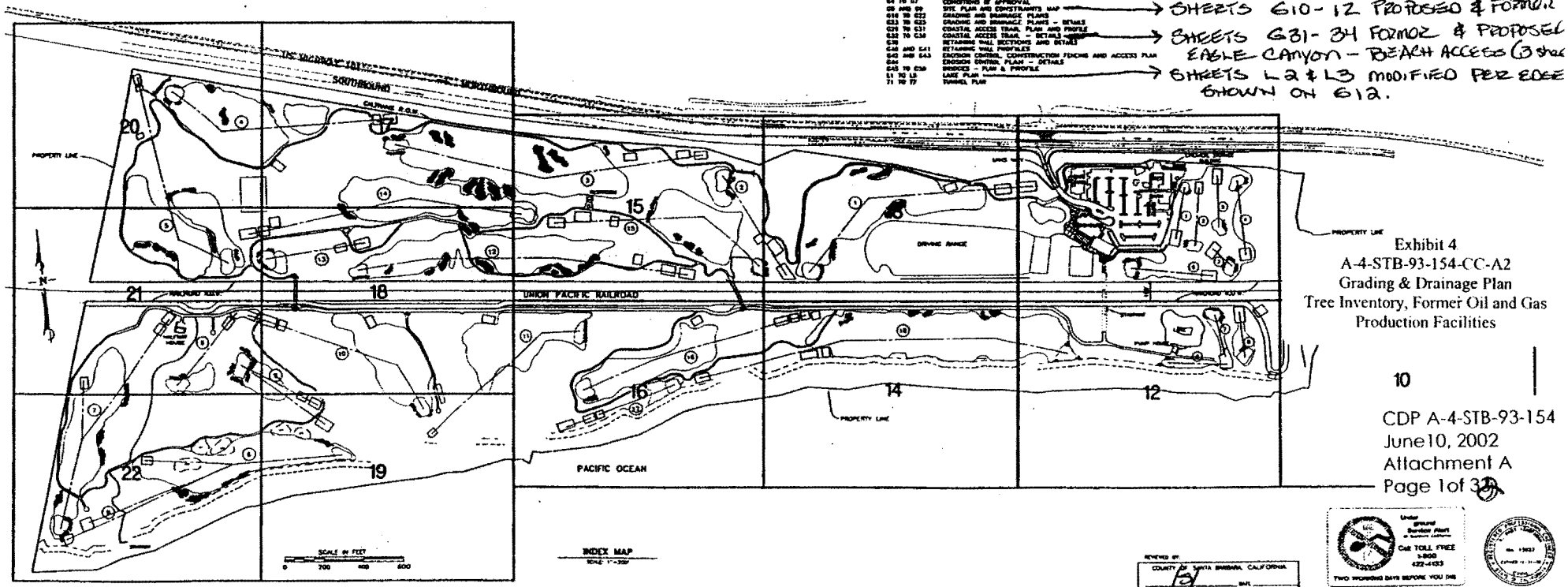
INDEX TO SHEETS

SHEET	DESCRIPTION
G1	GENERAL INFORMATION
G2	NOTES AND SPECIFICATIONS
G3	NOTES AND DETAILS
G4 TO G7	CONDITIONS OF APPROVAL
G8 AND G9	SITE PLAN AND CONSTRAINTS MAP
G10 TO G12	GRADING AND DRAINAGE PLANS
G13 TO G23	GRADING AND DRAINAGE PLANS - DETAILS
G29 TO G31	COASTAL ACCESS TRAIL PLAN AND PROFILE
G32 TO G34	COASTAL ACCESS TRAIL - DETAILS
G35	RETAINING WALL SECTIONS AND DETAILS
G40 AND G41	RETAINING WALL PROFILES
G42 AND G43	EROSION CONTROL, CONSTRUCTION FENCING AND ACCESS PLAN
G44	EROSION CONTROL PLANT DETAILS
G45 TO G50	BRIDGES - PLAN & PROFILE
L1 TO L5	LAKE PLAN
L1 TO L7	RUNNEL PLAN

SHEETS G10-12 PROPOSED & FORMER

SHEETS G31-34 FORMER & PROPOSED EAGLE CANYON - BEACH ACCESS (3 SHTS)

SHEETS L2 & L3 MODIFIED PER EDGE SHOWN ON G12.



INDEX MAP
SCALE 1"=200'

Exhibit 4
A-4-STB-93-154-CC-A2
Grading & Drainage Plan
Tree Inventory, Former Oil and Gas Production Facilities

10

CDP A-4-STB-93-154
June 10, 2002
Attachment A
Page 1 of 3

Call TOLL FREE 1-800 422-4133
TWO WORKING DAYS BEFORE YOU DIG

REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PUBLIC WORKS DEPARTMENT
DEVELOPMENT ENGINEERING DIVISION
DATE

REFERENCES:
BENCHMARK FILE:
BASIS FILE:
PROJECT FILE:
MAP MAKER:
DATE:

XREF DRAWINGS

NO.	DATE	REVISIONS	APP'D

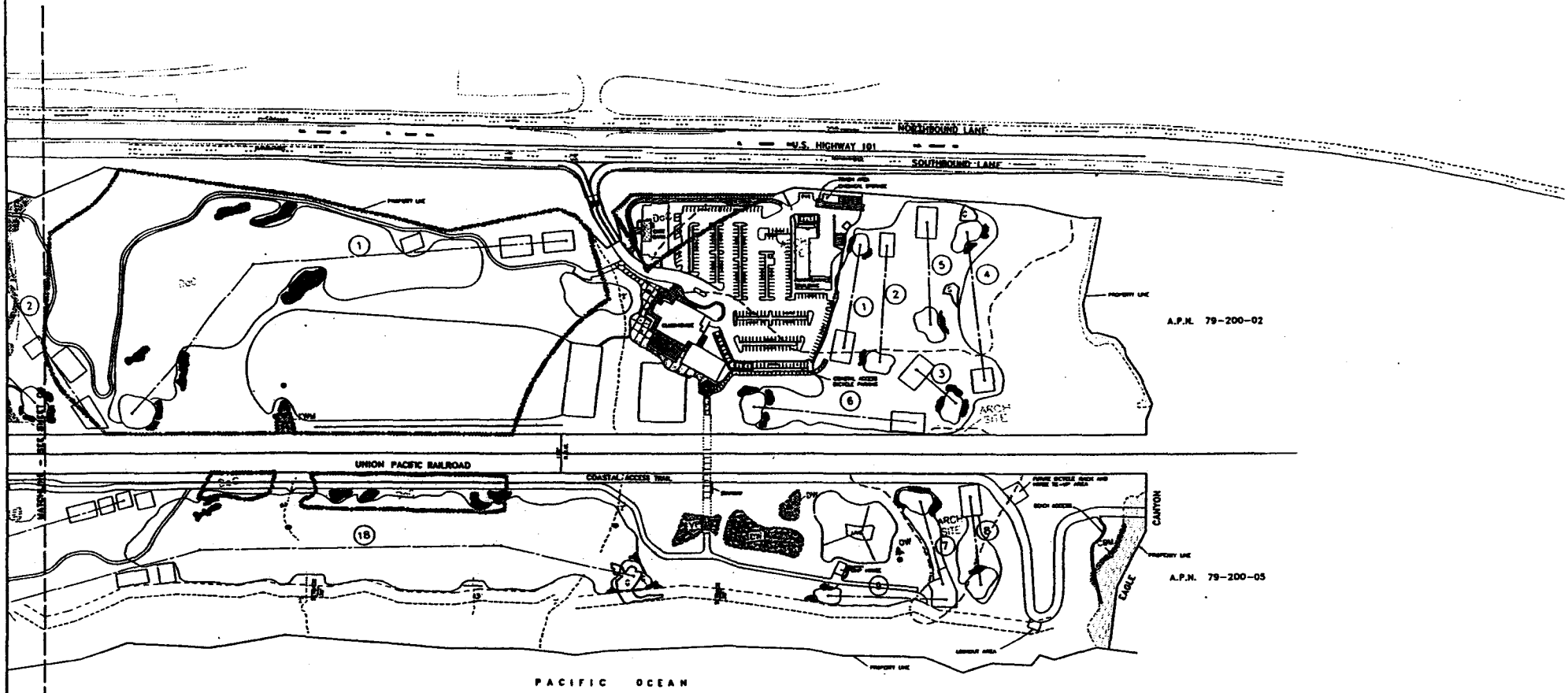
Cove & Crenshaw, Inc.
HOFFNAUER PLANNING DESIGN

Penfield & Smith
ENGINEERS + SURVEYORS
SANTA BARBARA
GOLF OFFICE
ADDRESS:
DESIGN
DRAWN
CHECKED
PROJECT ENGINEER
DATE
R.C.E. 43,307
EXP. 12/31/02

FOR PUBLIC WORKS DEPARTMENT
DATE
FLOOD CONTROL ENGINEER
DATE

GRADING AND DRAINAGE PLAN
GENERAL INFORMATION
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12673.03
SHEET G1 OF 50
U.S. COUNTY FILE



LEGEND

- CAPABILITY CLASS II SOIL DaC DIABLO CLAY, 2%–9% SLOPE
- SENSITIVE ARCHAEOLOGICAL AREA
- 2:1 SLOPE AND/OR TOP OF BANK
- TOP OF BLUFF
- BLUFF SETBACK

ACOE Jurisdictional Wetlands:

- OR ------ Wetland
- OR ------ Waters of the U.S. – Intermittent
- Waters of the U.S. – Permanent
- ------ Waters of the U.S. – Ephemeral

NOTE: Numbers indicate channel width measurements in feet between markers.

- Data Station

Habitat Types:

- CBM Coastal Brackish Marsh
- DW Disturbed Wetland
- FWM Freshwater Marsh
- SWS Southern Willow Scrub
- VP Vernal Pool
- G Grassland

N

SCALE IN FEET
0 100 200 300

CDP A-4-STB-93-154
June10, 2002
Attachment A
Page 2 of 32

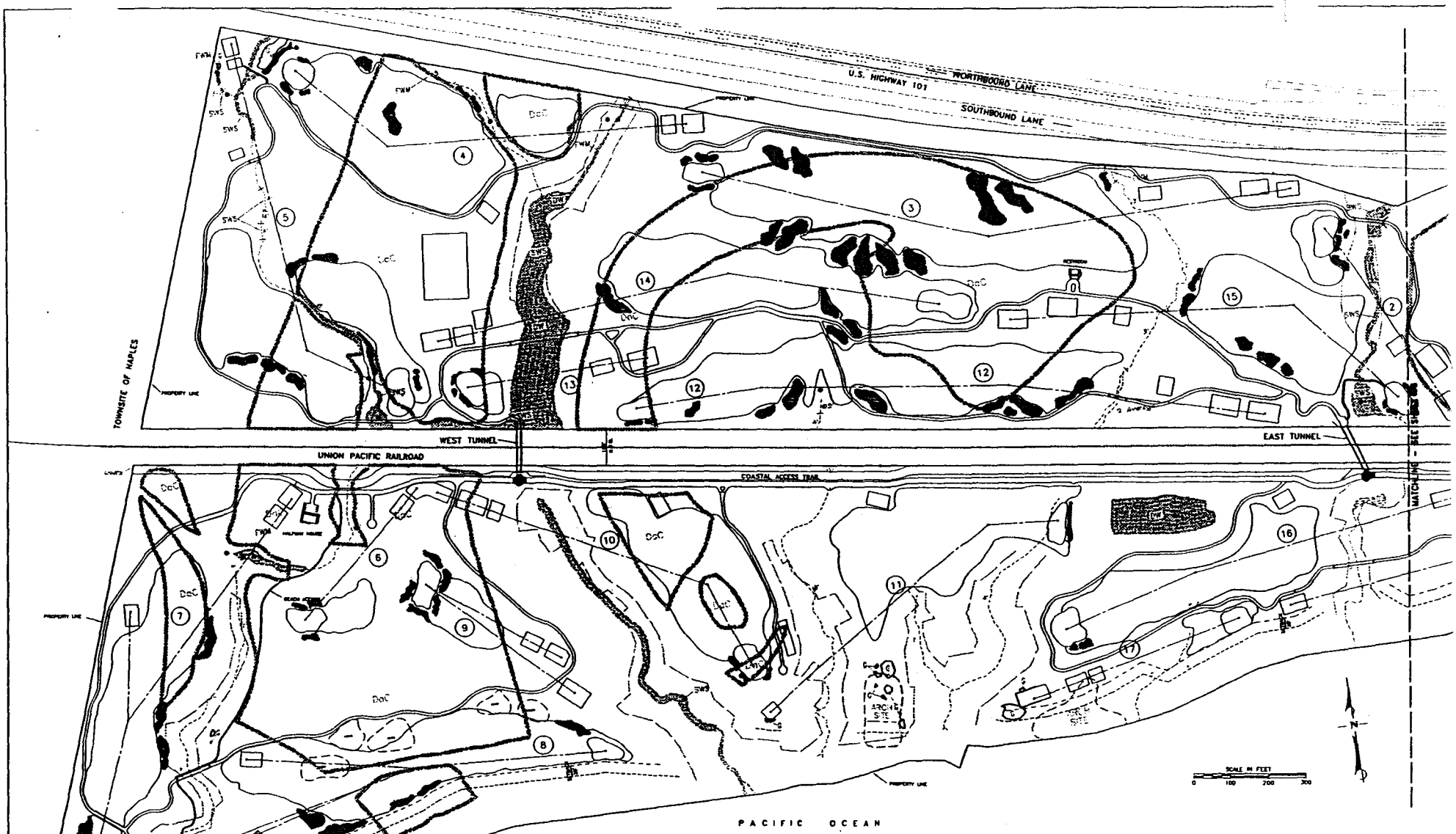
DUDEK & ASSOCIATES
A California Corporation

REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, ORMOND BARTON
FOR PUBLIC WORKS DEPARTMENT
FLOOD CONTROL ENGINEER

Chow & Associates, Inc.
HOFFMAUR PLANNING DESIGN

Penfield & Smith
ENGINEERS • SURVEYORS

SITE PLAN AND CONSTRAINT MAP
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA



DUDEK & ASSOCIATES
A California Corporation

HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

COUNTY OF SANTA BARBARA, CALIFORNIA

SITE PLAN AND CONSTRAINT MAP
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

CDP A-4-STB-93-15
June 10, 2002
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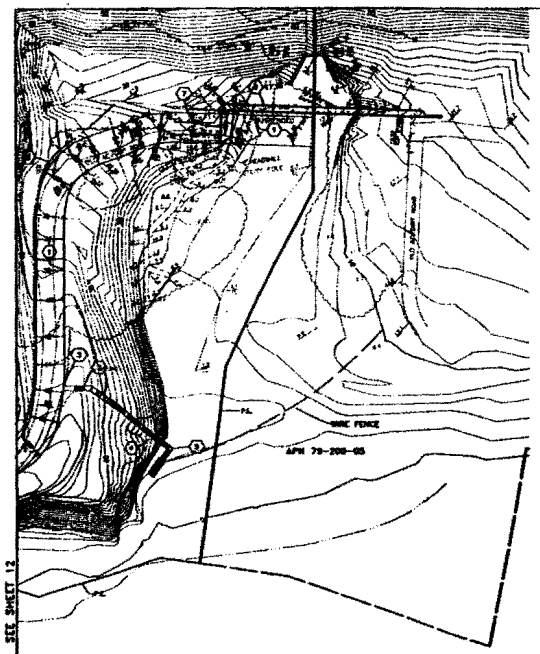

SEE SHEET 12

CONSTRUCTION NOTES

1. PROPOSED 24' WIDE GRAVEL ACCESS TRAIL EASEMENT.
2. PROPOSED 4' WIDE ASPHALT ACCESS TRAIL EASEMENT.
3. [illegible] SEE SHEET 10 FOR TRAIL SECTIONS.
4. SEE SECTIONS SHEETS OF THE GRAVEL ACCESS TRAIL AND ASPHALT 4' WIDE WALKWAY EASEMENT. SEE SHEET 10 AND SHEET 11.
5. CONSTRUCT CONCRETE LANDING AND STEPS. SEE SHEET 10 FOR DETAILS.
6. CONSTRUCT A.C. SWALE.
7. [illegible] SEE SHEET 10 FOR TRAIL CROSS SECTIONS AND CONSTRUCT SWALE ALONGSIDE TRAIL. SWALE SHALL CONNECT TO EXIST. 24" RCP AT SHEET 10 AT THE NORTHERN TRAIL.
8. PROPOSED 30" DIAMETER STEEL CASING. FOR CONSTRUCTION DETAILS SEE WATER SYSTEM PLANS PREPARED BY PENFIELD AND SMITH, INC.

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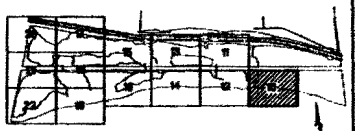


INDEX MAP
NOT TO SCALE

PROPOSED

N

SCALE IN FEET
0 40 80 120

REFERENCE DRAWINGS

NO.	DATE	REVISIONS	APPR.

Owen & Cornelius, Inc.
HOFFMAN PLANNING DESIGN

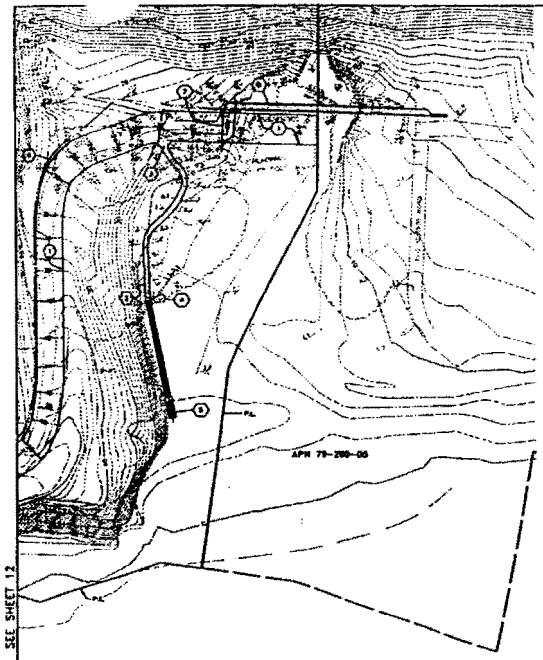
Penfield & Smith
ENGINEERS & SURVEYORS

REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, GRADING DIVISION — DATE
FOR PUBLIC WORKS DIRECTOR — DATE
FLOOD CONTROL DISTRICT (IF REQUIRED) — DATE

GRADING AND DRAINAGE PLAN

DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12825.03
SHEET C10 OF 50
SUB. COUNTY PLT



CONSTRUCTION NOTES

1. PROPOSED 24' WIDE COASTAL ACCESS TRAIL EASEMENT
2. PROPOSED 8' WIDE BEACH ACCESS TRAIL EASEMENT
3. SEGMENT CONSTRUCTED PORTION OF THE BEACH ACCESS TRAIL, 4' WIDE. SEE SHEET C21 FOR TYPICAL SECTION.
4. END CONSTRUCTED PORTION OF THE BEACH ACCESS TRAIL AND BEGIN 4' WIDE BOARDWALK. SEE SHEET C21 FOR DETAILS.
5. CONSTRUCT CONCRETE LANDING WITH STEPS. SEE SHEET C20 FOR DETAILS.
6. CONSTRUCT A.C. SWALE.
7. 8' WIDE, EXPOSED AGGREGATE CONCRETE, ADA COMPLIANCE, WITH CONSTRUCTED WOOD EXPANSION JOINTS (SANTA BARBARA COUNTY STD. DETAIL B-410 MODIFY TO FIT THE PROPOSED TRAIL.
8. PROPOSED MATCH GRADE AT EAGLE CANYON. FOR CONSTRUCTION DETAILS SEE WATER SYSTEM PLANS PREPARED BY POWERS AND SAHS, INC.

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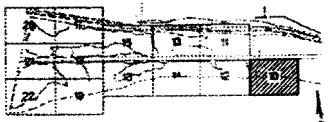

INDEX MAP
NOT TO SCALE

FORMER

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REFERENCES:
BENCH MARK DATUM
AERIAL PHOTOGRAPHY
PROJECT PLAN
VESTING TENTATIVE MAP
SURVEY DATUM
DATE: 3/15/99
USGS BENCHMARK

NO.	DATE	REVISIONS	APPD.

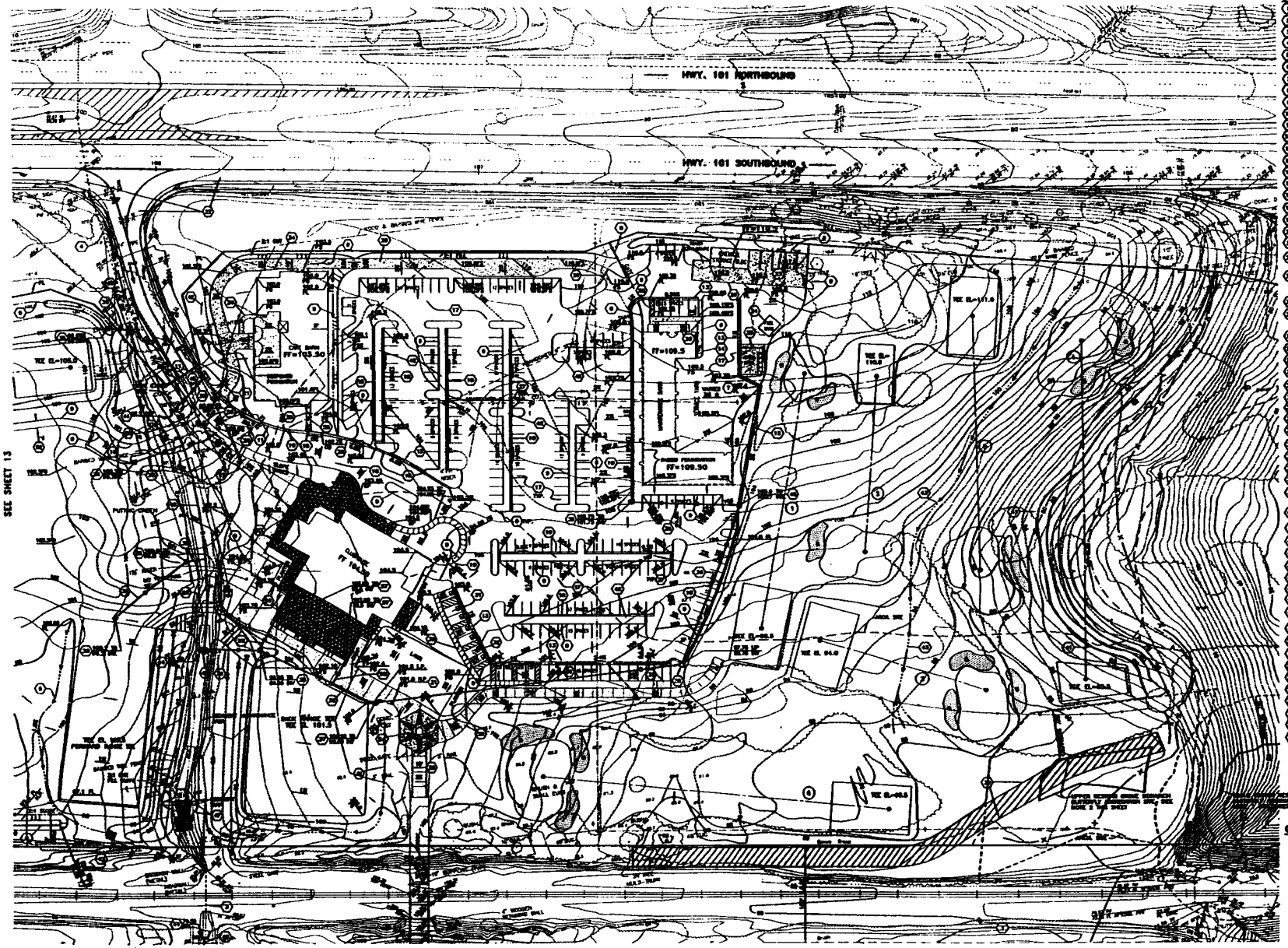
Crowe & Chelsheth, Inc.
HOFFPAUIR PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS
SCRIBED ___ CHECKED ___
DRAWN ___
PROJECT ENGINEER ___ DATE ___
R.C.E. 45,207 EXP. 12/31/00

REVIEWED BY
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT ENGINEERING DIVISION DATE
FOR PUBLIC WORKS DEPARTMENT DATE
FLOOD CONTROL ENGINEER, SBCFCD DATE

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

SHEET C10 of C



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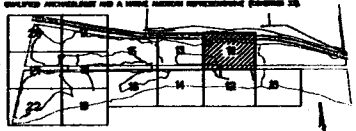
GRADING WITHIN ARCHAEOLOGICAL SITES

1. ARCHAEOLOGICAL TOPS SHALL BE MARKED AND THE LIMITS OF ANY ARCHAEOLOGICAL SITES WITHIN THE GRADING LIMITS SHALL BE FENCED WITH ORANGE SNOW FENCING 50 CENTIMETERS.
2. ALL GRADING WITHIN/NEAR SHALL BE MONITORED BY A PROFESSIONAL ARCHAEOLOGIST AND A NATIVE AMERICAN REPRESENTATIVE.
3. A FILL PROTECTIVE LAYER SHALL BE PLACED OVER THE ARCHAEOLOGICAL SITES AS DIRECTED BY THE ARCHAEOLOGIST AND THE NATIVE AMERICAN REPRESENTATIVE.



INDEX MAP
NOT TO SCALE

Proposed

MONARCH BUTTERFLY AGGREGATION SITES NOTES

1. SHALE CANYON SITE AGGREGATION SITE AS DEFINED ATTACHMENT 8 "MONARCH BUTTERFLY AGGREGATION AREAS WITHIN SHALE CANYON, 2000-2001 SEASON", ALTHOUGH AND MICHAEL ENG. JUNE 2001, REVISED NOVEMBER 2001.
2. WATER MOISTURE SHALE BUTTERFLY AGGREGATION SITE(S) WITHIN SITE AS DEFINED BY ALTHOUGH AND MICHAEL ENG. AND BUFFALO ON EXHIBIT 8, DATED BY PREPARED & DATED, "SEE ALTHOUGH AND MICHAEL ENG. AGGREGATION AREAS WITHIN SHALE CANYON, 2000-2001 SEASON", ALTHOUGH AND MICHAEL ENG. JUNE 2001.

GENERAL NOTES

1. IN THE CLUB HOUSE AREA ALL GRADING SHOWN AS DEFINED ON THE TOPOGRAPHIC MAP HAVE BEEN MADE IN ACCORD OF GRADING & DRAINAGE A.C. PAVEMENT SHALL REMAIN AND FILL OVER THE TOPOGRAPHIC MAP AND ON THE PLANS.
2. MONARCH BUTTERFLY: PERSONS CONSTRUCTION SHALL NOT OCCUR WITHIN 50 FEET OF THE MONARCH AGGREGATION SITE(S) WITHIN SHALE CANYON BETWEEN OCTOBER 1 AND JANUARY 31.

LEGEND

- SILT FENCE
- GRADING LIMIT
- HORSEGRAZING LINE
- DESILTATION BASIN

SCALE IN FEET
0 40 80 120

REVIEWED BY:

COUNTY OF SANTA BARBARA, CALIFORNIA	DATE
PLANNING & DEVELOPMENT, GRADING DIVISION	DATE
FOR PUBLIC WORKS DEPARTMENT	DATE
FLOOD CONTROL ENGINEER, SB/CT/WCD	DATE

REFERENCES:
DRAWING FILE: G11.DWG
BASE FILE:
PROJECT FILE:
XREF DRAWINGS

NO.	DATE	REVISIONS	APP'D

Owen & Crenshaw, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS + SURVEYORS
DESIGN: JG CHECKED:
DRAWN: CWS
PROJECT ENGINEER
R.C.E. 46,653 (EXP. 12/31/02)

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

JOB NO.	12825.00
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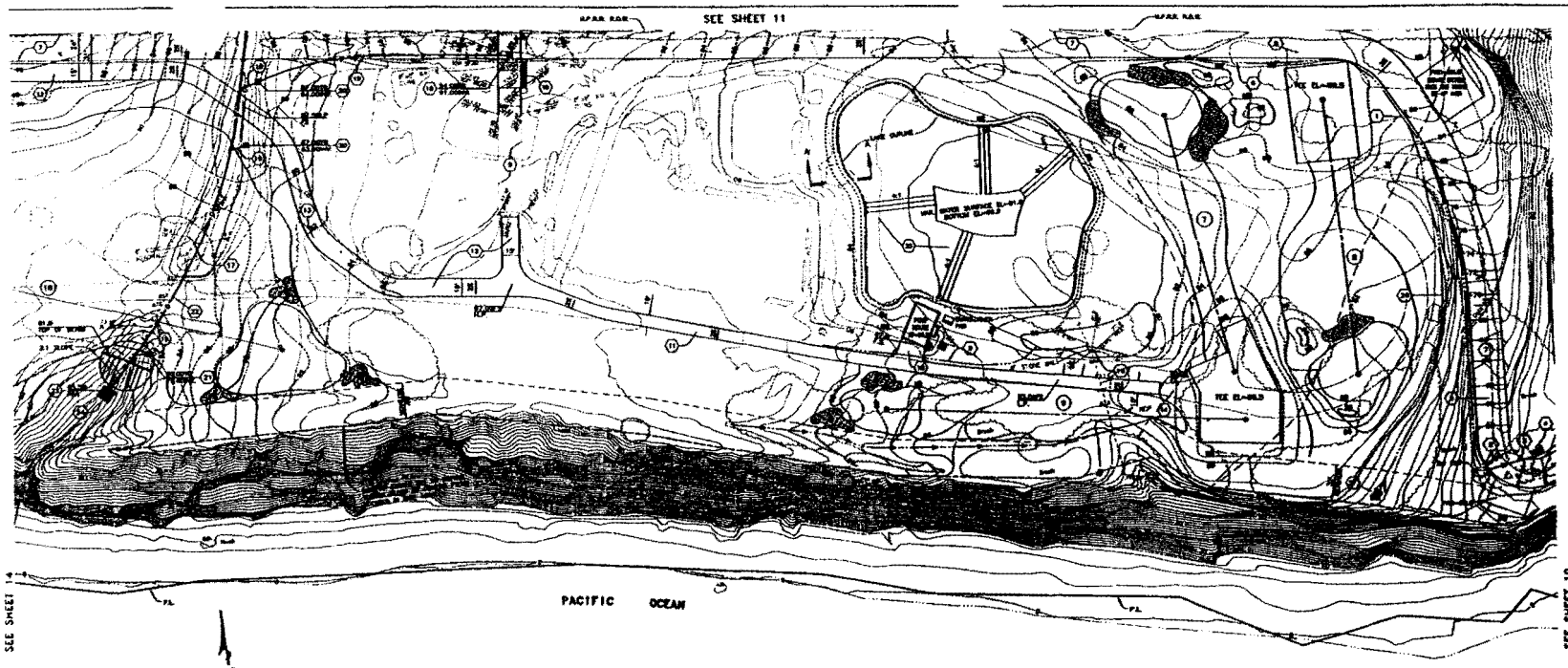
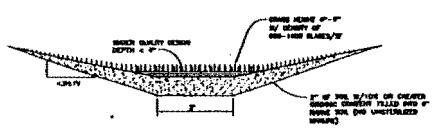


CONSTRUCTION NOTES

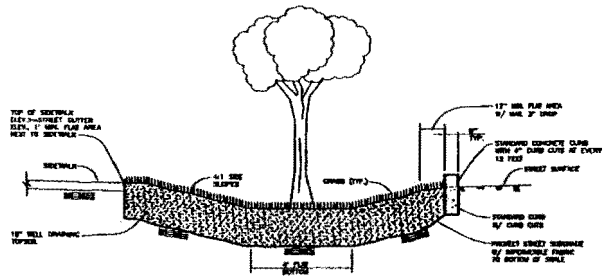
1. CONSTRUCT ACCESS TRAIL, STATION 00+10.00, WIDTH A.C. SWALE PER DWG. NO. SHEET 24.
2. 200 A.C. SWALE AND CONSTRUCT CONCRETE HEADWALL TYPE "C" PER DWG. NO. SHEET 24.
3. CONSTRUCT APPROXIMATELY 30 L.F. OF 18" STORM DRAIN.
4. CONSTRUCT CONCRETE HEADWALL TYPE "C" SWALE PER DWG. NO. SHEET 24.
5. CONSTRUCT ACCESS TRAIL, STATION 00+10.00 WIDTH 20' CROSS SLOPE PROPERTY.
6. CONSTRUCT GRADED SWALE.
7. PROPOSED 24' WIDE GENERAL ACCESS TRAIL.
8. CONSTRUCT POWER POLES WITHIN PROPERTY TO BE REMOVED BY OWNER (4 EACH).
9. EXISTING WOODEN BRIDGE TO REMAIN.
10. CONSTRUCT WOODEN STAIRWAY FROM THE EXISTING BRIDGE TO THE GENERAL ACCESS TRAIL, SEE SHEET 26 FOR DETAILS.
11. CONSTRUCT 10' WIDE A.C. SERVICE ROAD/CART PATH.
12. CONSTRUCT 10' WIDE A.C. SERVICE ROAD/CART PATH.
13. CONSTRUCT 6" CONCRETE CURB. LAY DOWN THE CROWN OF THE CURVE TO MATCH THE ROAD ELEVATIONS.
14. END SERVICE ROAD/CART PATH.
15. CONSTRUCT A.C. PAVED ENTRY AREA TO THE PUMP HOUSE. THE STRUCTURAL SECTION SHALL BE SAME AS THE ADJACENT SERVICE ROAD.
16. EXISTING 24" RCP STORM DRAIN AND HEADWALL TO REMAIN.
17. REMOVE EXISTING 36" RCP AND HEADWALL.
18. CONSTRUCT 24" X 36" OPEN GRATE WITH GRATE.
19. CONSTRUCT 12" STORM DRAIN.
20. CONSTRUCT 18" X 18" OPEN GRATE WITH GRATE.
21. CONSTRUCT 24" X 24" OPEN GRATE WITH GRATE.
22. CONSTRUCT 36" STORM DRAIN.
23. CONSTRUCT 36" CONCRETE HEADWALL.
24. CONSTRUCT 12" WIDE 3' LENGTH OF HEADWALL X 18" THICK RIP-RAP (12" MIN. THK.).
25. CONSTRUCT RECLAIMED WATER STORAGE RESERVOIR. SEE SHEETS L1-L5 FOR PLANS AND DETAILS.
26. CONSTRUCT GRAVEL/GRASS SWALE PER DETAIL "H", THIS SHEET.
27. PLACE 18" LONG X 12" WIDE X 18" THICK SAND-CEMENT RIDE RIP-RAP ENERGY DISSIPATOR.

GRADING WITHIN ARCHAEOLOGICAL SITES

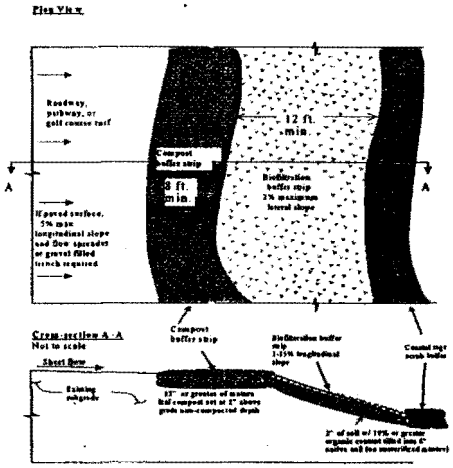
1. [illegible] SHALL BE CONDUCTED AND THE LIMITS OF THE ARCHAEOLOGICAL SITES CLEARLY REPRESENTATIVE SHALL INCLUDE GRADING PRIOR TO CONSTRUCTION.
2. ALL WORK IS RECOMMENDED WITHIN 100 YARDS OF THE LIMITS OF AN ARCHAEOLOGICAL SITE SHALL BE MONITORED BY A PRE-GRADING ARCHAEOLOGIST AND A NATIVE AMERICAN REPRESENTATIVE. [illegible] AS DEEMED APPROPRIATE BY THE ARCHAEOLOGIST. [illegible] AS PREVIOUSLY DISTURBED SOILS. [illegible] SHALL BE MONITORED AS DEEMED NECESSARY BY THE ARCHAEOLOGIST. [illegible] SHALL BE APPROVED BY THE PRIOR TO GRADING PERMIT [illegible].
3. A FINAL REPORT SHALL BE NEEDED TO DOCUMENT THE RECOMMENDATIONS SHALL BE SUBMITTED TO THE OFFICE OF CONSERVATION WITHIN 6 MONTHS OF PREVIOUSLY DISTURBED MATERIAL. ALL EXCAVATED SOILS TO FILL SHALL BE CULTURALLY SCREENED AND CHEMICALLY [illegible]. PLACEMENT OF THE FILL OVER THE ARCHAEOLOGICAL SITES SHALL BE APPROVED BY THE QUALIFIED ARCHAEOLOGIST AND A NATIVE AMERICAN REPRESENTATIVE (EXPANSION 3).



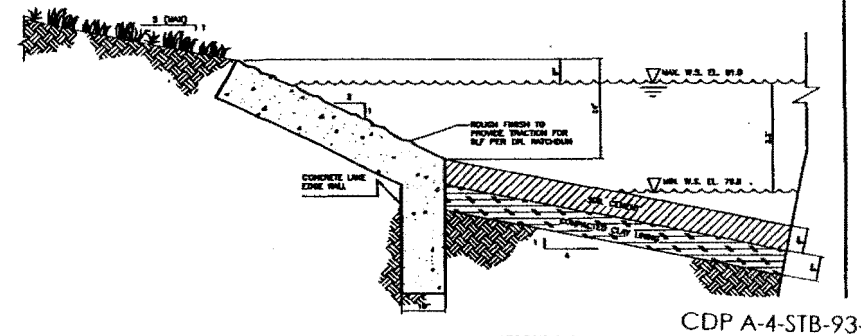
TYPICAL BIOFILTRATION SWALE (A)



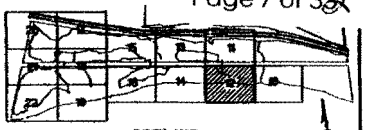
TYPICAL PARKING LOT SWALE (B)



ENHANCED BUFFER STRIP (C)



SECTION A-A
RECLAIMED WATER RESERVOIR EDGE DETAIL



INDEX MAP
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Proposed

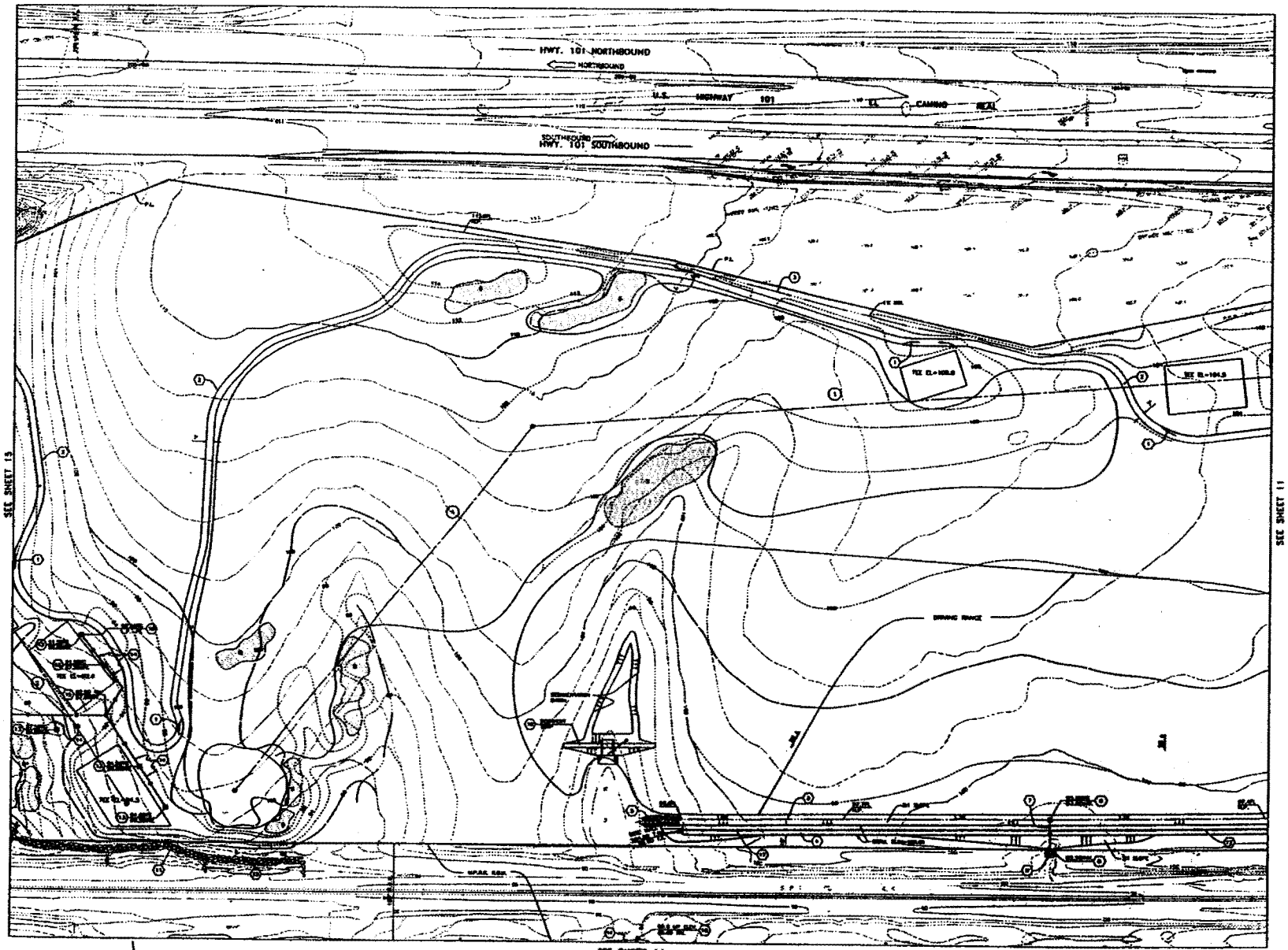
REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, GRADING OFFICER — DATE
FOR PUBLIC WORKS DEPARTMENT — DATE
FLOOD CONTROL ENGINEER, SURVEYOR — DATE

Owen & Crenshaw, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS • SURVEYORS
DESIGNED — CHECKED
DRAWN — DATE
PROJECT ENGINEER — DATE
R.C.E. 46,883 — EXP. 12/31/02

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 13823.01
SHEET G12 of 50
S.B. COUNTY FILE



CONSTRUCTION NOTES

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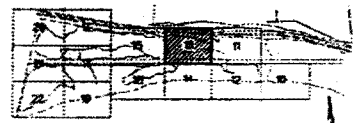

INDEX MAP
NOT TO SCALE

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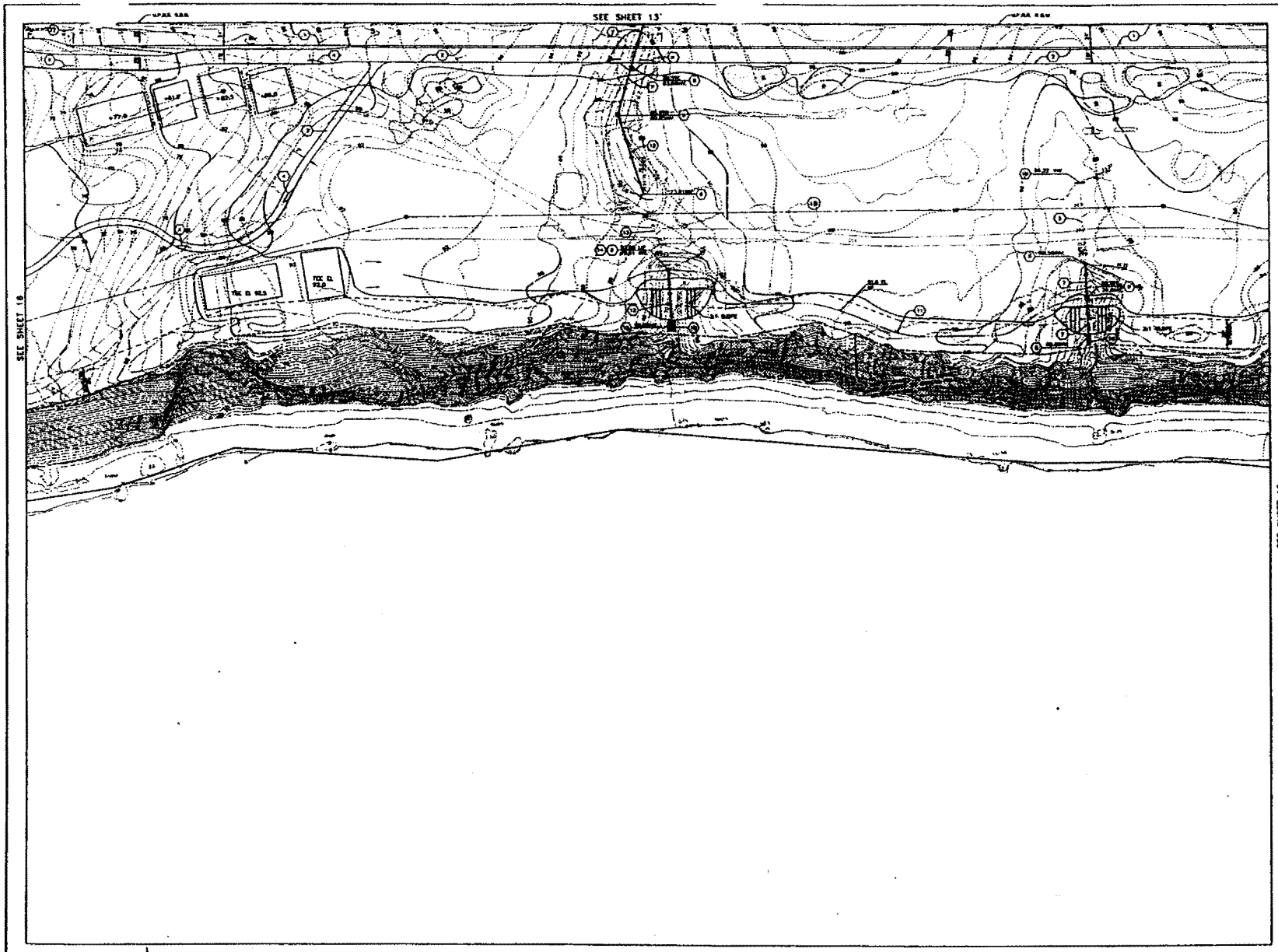
Owen & Cranham, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

COUNTY OF SANTA BARBARA, CALIFORNIA

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

SHEET G13 of 50



CONSTRUCTION NOTES

1. REMOVE 24' WIDE GRAVEL ACCESS TRAIL.
2. CONSTRUCT 10 FOOT WIDE A.C. SURFACED SERVICE ROAD/CART PATH.
3. CONSTRUCT 7 FOOT WIDE CONCRETE CART PATH.
4. CONSTRUCT 6 INCH CONCRETE DIKE.
5. EXTEND 12 INCH RCP STORM DRAIN TO REMAIN.
6. REMOVE AND DISPOSE EXISTING DRAINAGE INLET. CLEAN AND CLEAN OF ACCUMULATED DEBRIS AS NECESSARY. REMOVE EXISTING HEADWALL WHERE APPLICABLE AND CONNECT TO PROPOSED STORM DRAIN.
7. CONSTRUCT 12 INCH STORM DRAIN.
8. CONSTRUCT 18" X 18" PRECAST CONCRETE CATCH BASIN WITH GRATED TOP.
9. CONSTRUCT 12 INCH CONCRETE HEADWALL.
10. CONSTRUCT ROCK RIP-RAP/ENERGY DISSIPATOR.
11. CONSTRUCT GRADED SWALE.
12. CONSTRUCT 24 INCH STORM DRAIN.
13. CONSTRUCT 24 INCH RCP STORM DRAIN TO REMAIN.
14. CONSTRUCT OPEN INLET WITH TWO (2) 24 INCH WIDE WINDOWS, STEEL COVER AND GRADE PER CALTRANS STD. PLANS D75.
15. CONSTRUCT 24 INCH CONCRETE HEADWALL.
16. REMOVE AND DISPOSE EXISTING 12 INCH STORM DRAIN. CLEAN AND CLOSE OF ACCUMULATED DEBRIS AS NECESSARY AND CONSTRUCT 12" INCH CONCRETE HEADWALL.
17. GENERAL ACCESS TRAIL TRANSITIONS FROM 10' TO 24' WIDE.

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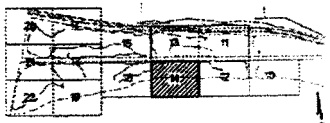

INDEX MAP
NOT TO SCALE

SCALE IN FEET
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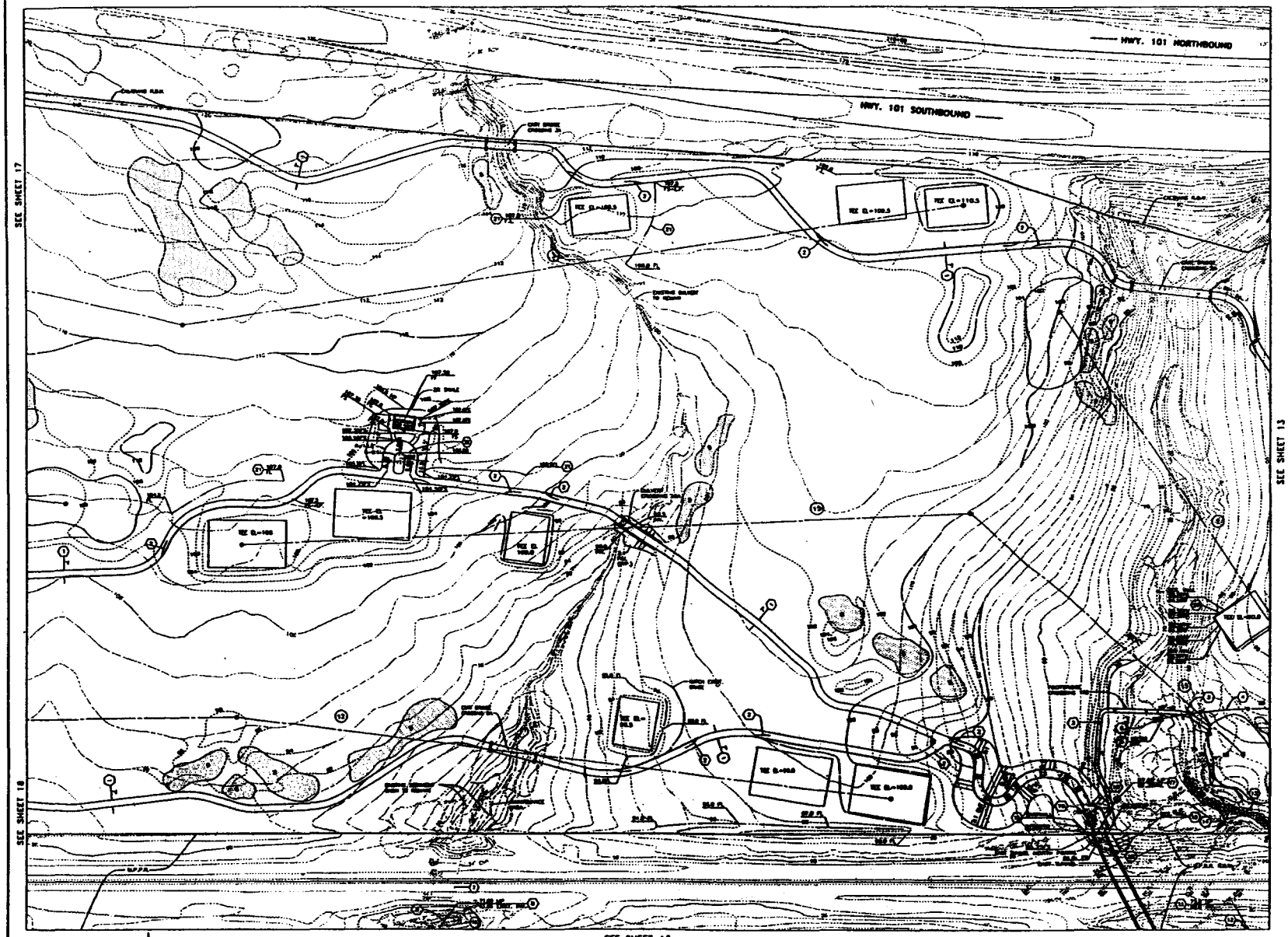
REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, ENGINEERING DIVISION
FOR PUBLIC WORKS DIRECTOR
FLOOD CONTROL ENGINEER, SECTION

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS



CONSTRUCTION NOTES

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SCALE IN FEET
0 40 80 120

GRADING AND DRAINAGE PLAN

DOS PUEBLOS GOLF LINKS

SANTA BARBARA COUNTY, CALIFORNIA

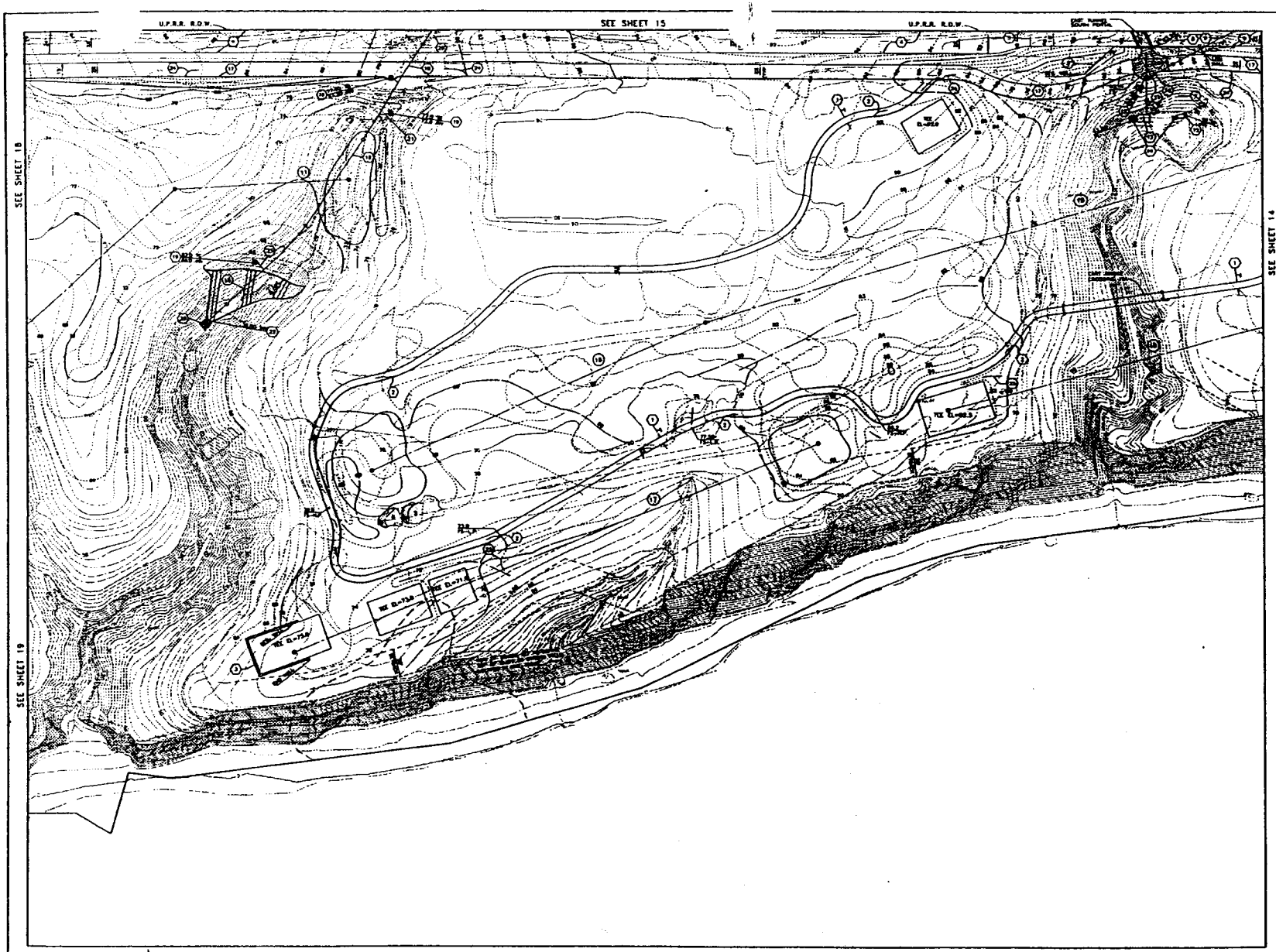
HOFFMAN PLANNING DESIGN

Penfield & Smith

COUNTY OF SANTA BARBARA, CALIFORNIA

FOR PUBLIC WORKS DIRECTOR

FLOOD CONTROL ENGINEER (SECTION)



CONSTRUCTION :

GRADING WITHIN ARCHAEOLOGICAL SITES

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INDEX MAP
NOT TO SCALE

SCALE IN FEET
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REVIEWED BY
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, GRADING DIVISION
FOR PUBLIC WORKS DEPARTMENT
FLOOD CONTROL ENGINEER SECTION

Cearn & Crenshaw, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 13823.03
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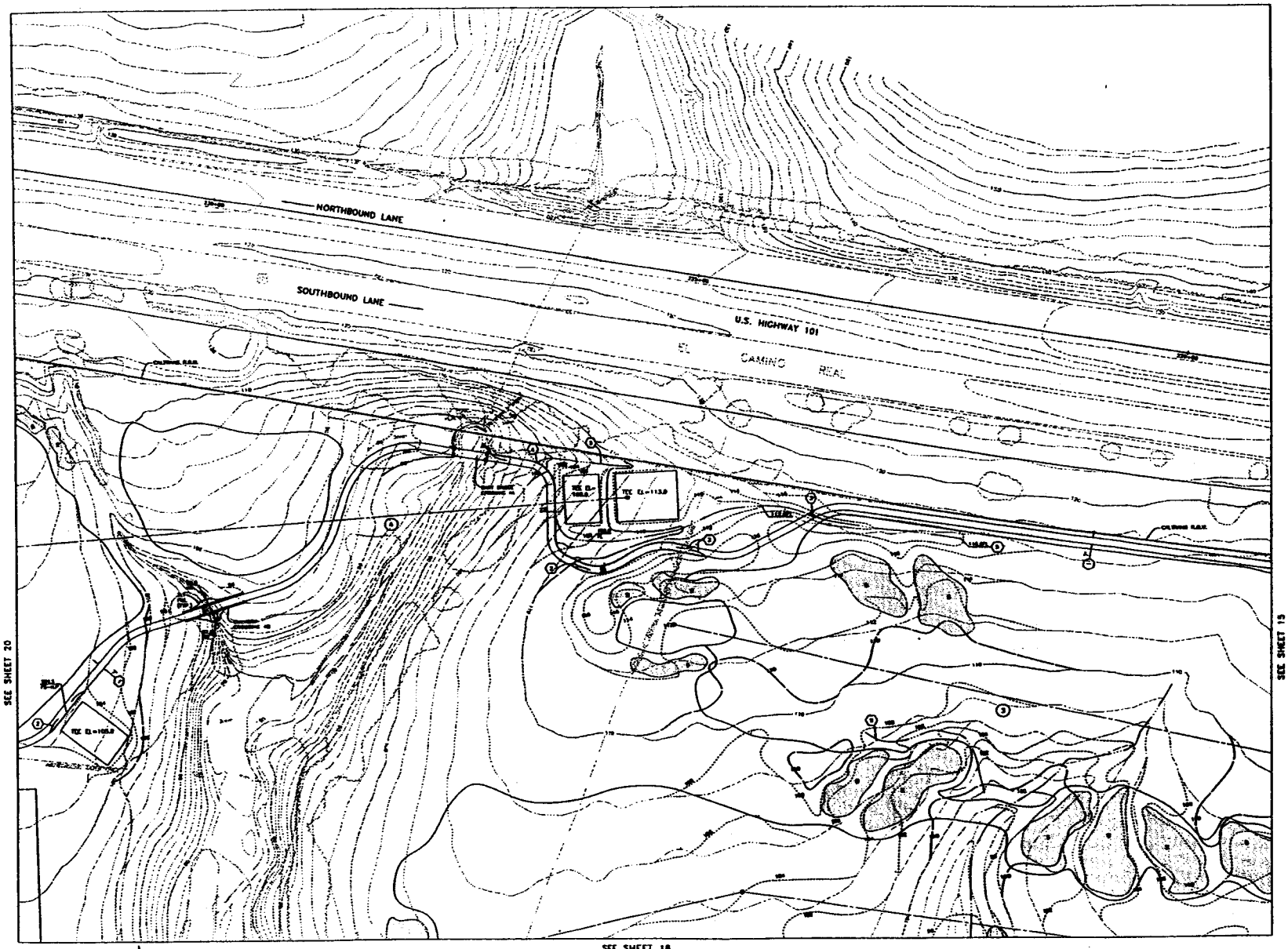

CONSTRUCTION NOTES

1. CONSTRUCT 7 FOOT HIGH CONCRETE CURB WALL
2. CONSTRUCT 6 INCH CONCRETE CURB
3. CONSTRUCT 24 INCH WIDE CONCRETE SWALE PER SANTA BARBARA COUNTY STD. DETAIL D-340A
4. PROVIDE 12 INCH OPENING IN CURB TO ALLOW GRADED SWALE TO DRAIN INTO CURB WALL
5. CONSTRUCT GRADED SWALE

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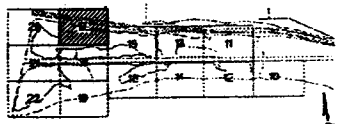

INDEX MAP
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SCALE IN FEET
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REFERENCES:
GRADING PLAN
DRAIN PLAN
PROJECT PLAN
ROAD NAMES
DATE: 3/15/99
VICINITY MAP

NO.	DATE	REVISIONS	APPD.

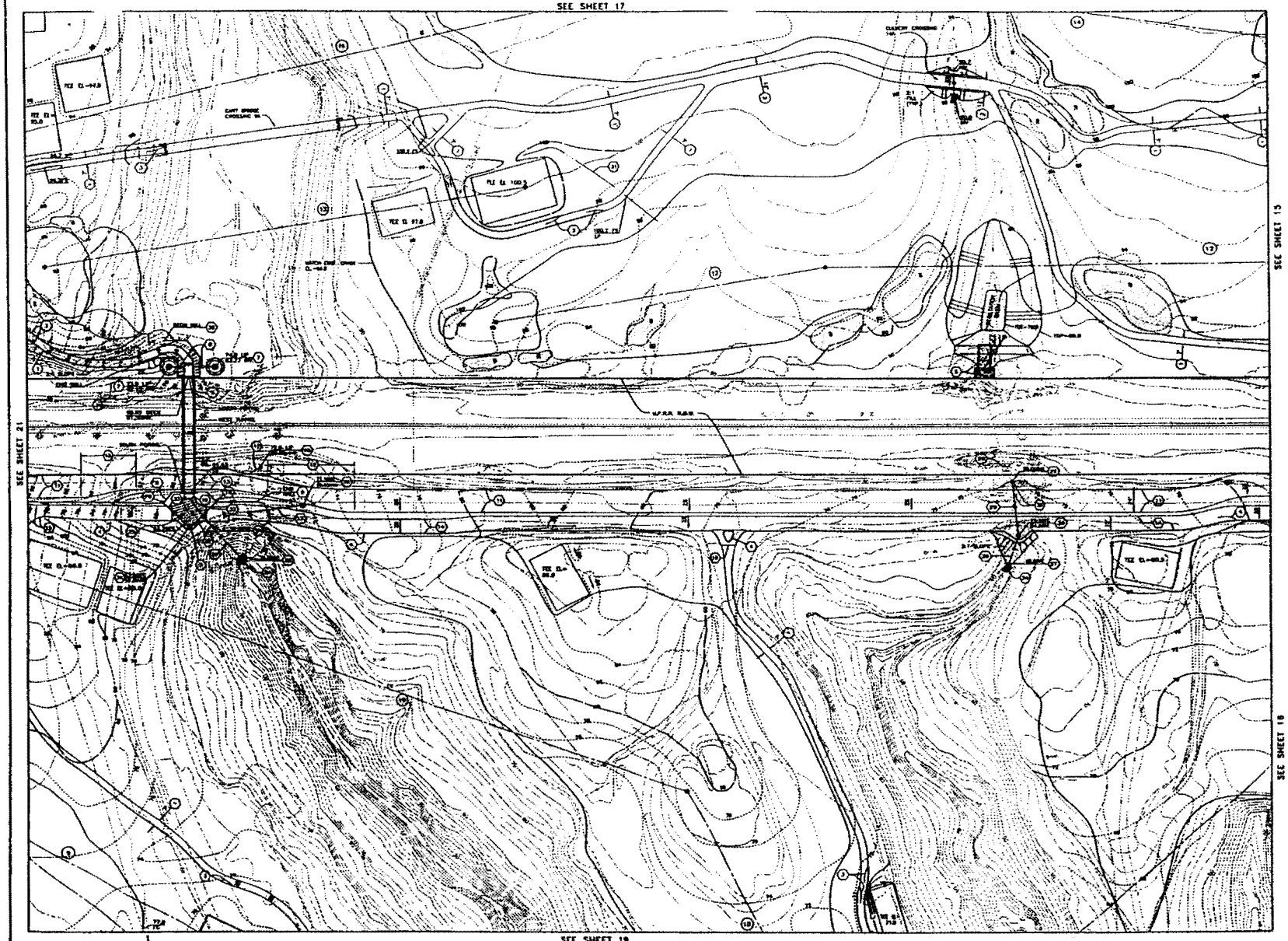
Crane & Consultants, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS • SURVEYORS

REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, GRADING DIVISION
DATE
FOR PUBLIC WORKS DEPARTMENT
DATE
FLOOD CONTROL ENGINEER, SURVEYOR

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

HORIZ. SCALE 1"=50'
SHEET G17 of SC
S.B. COUNTY T.



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GRADING AND DRAINAGE PLAN

DOS PUEBLOS GOLF LINKS

SANTA BARBARA COUNTY, CALIFORNIA

HOFFMAUR PLANNING DESIGN

Penfield & Smith

COUNTY OF SANTA BARBARA, CALIFORNIA

SEE SHEET 18

SEE SHEET 22

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CONSTRUCTION NOTES

GENERAL NOTES:

GRADING WITHIN ARCHAEOLOGICAL SITES

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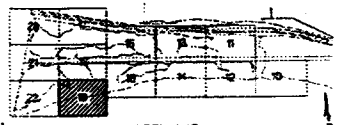

INDEX MAP
NOT TO SCALE

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REFERENCES:

Cleath & Associates, Inc.
HOFFMAN PLANNING DESIGN

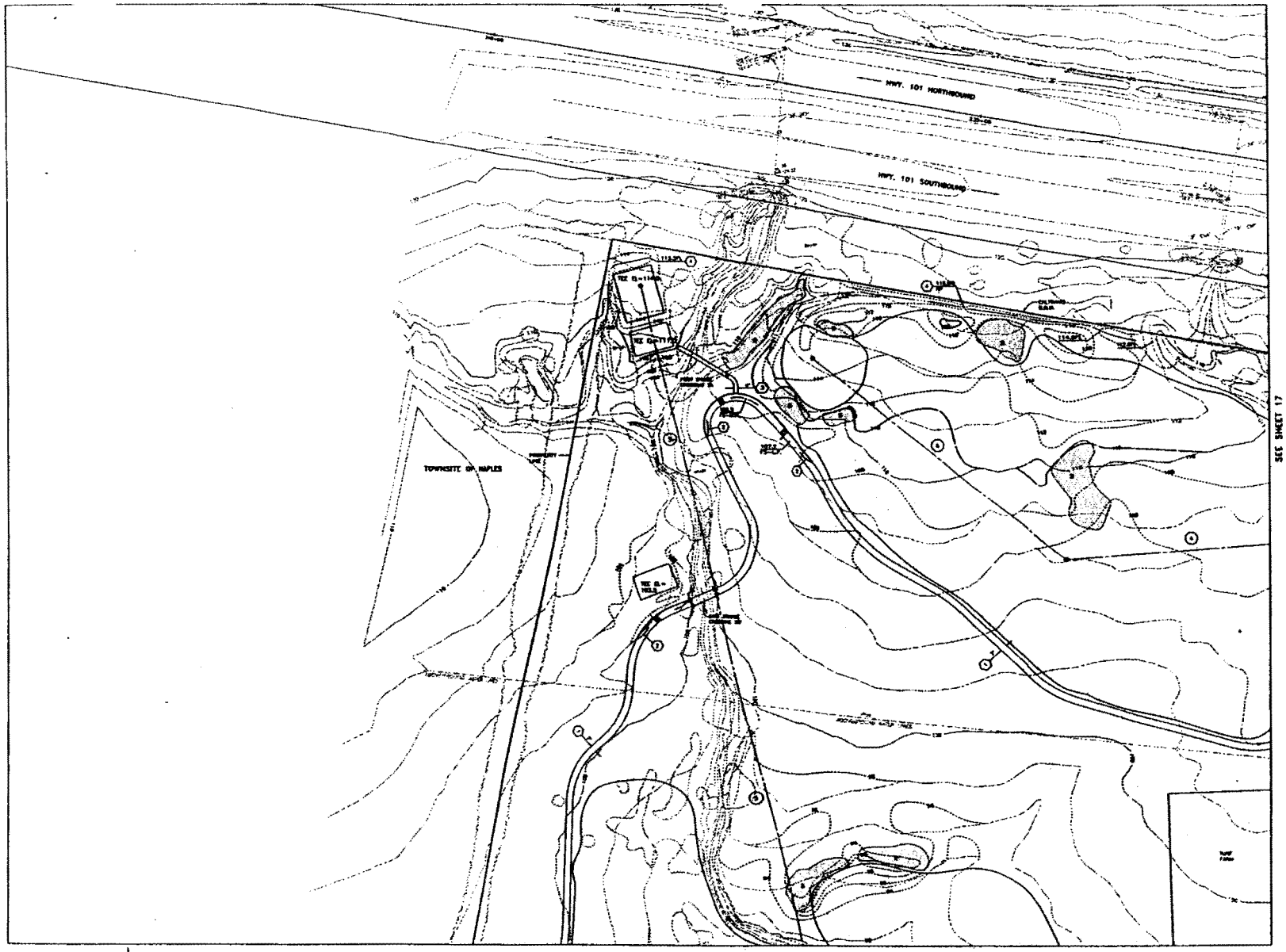
Penfield & Smith
ENGINEERS & SURVEYORS

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, ENGINEERING DIVISION

FOR PUBLIC WORKS DEPARTMENT

FLOOD CONTROL ENGINEER, SBCFCWCD



CONSTRUCTION NOTES

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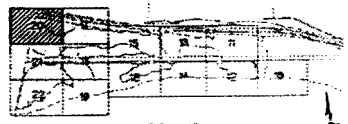


COUNTY OF SANTA BARBARA, CALIFORNIA

GRADING AND DRAINAGE PLAN

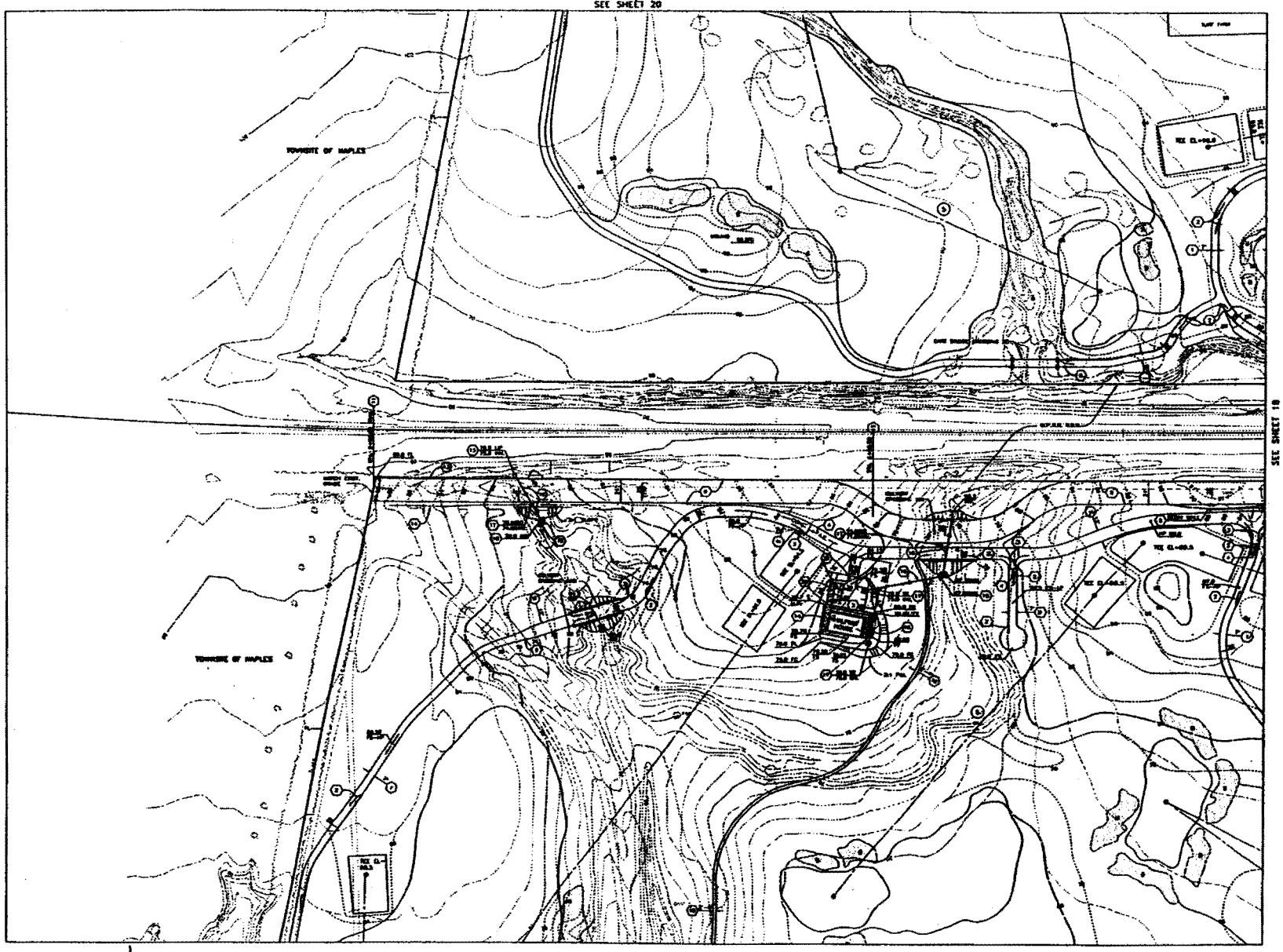
DOS PUEBLOS GOLF LINKS

SANTA BARBARA COUNTY, CALIFORNIA

Cleary & Associates, Inc.

HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS



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INDEX MAP

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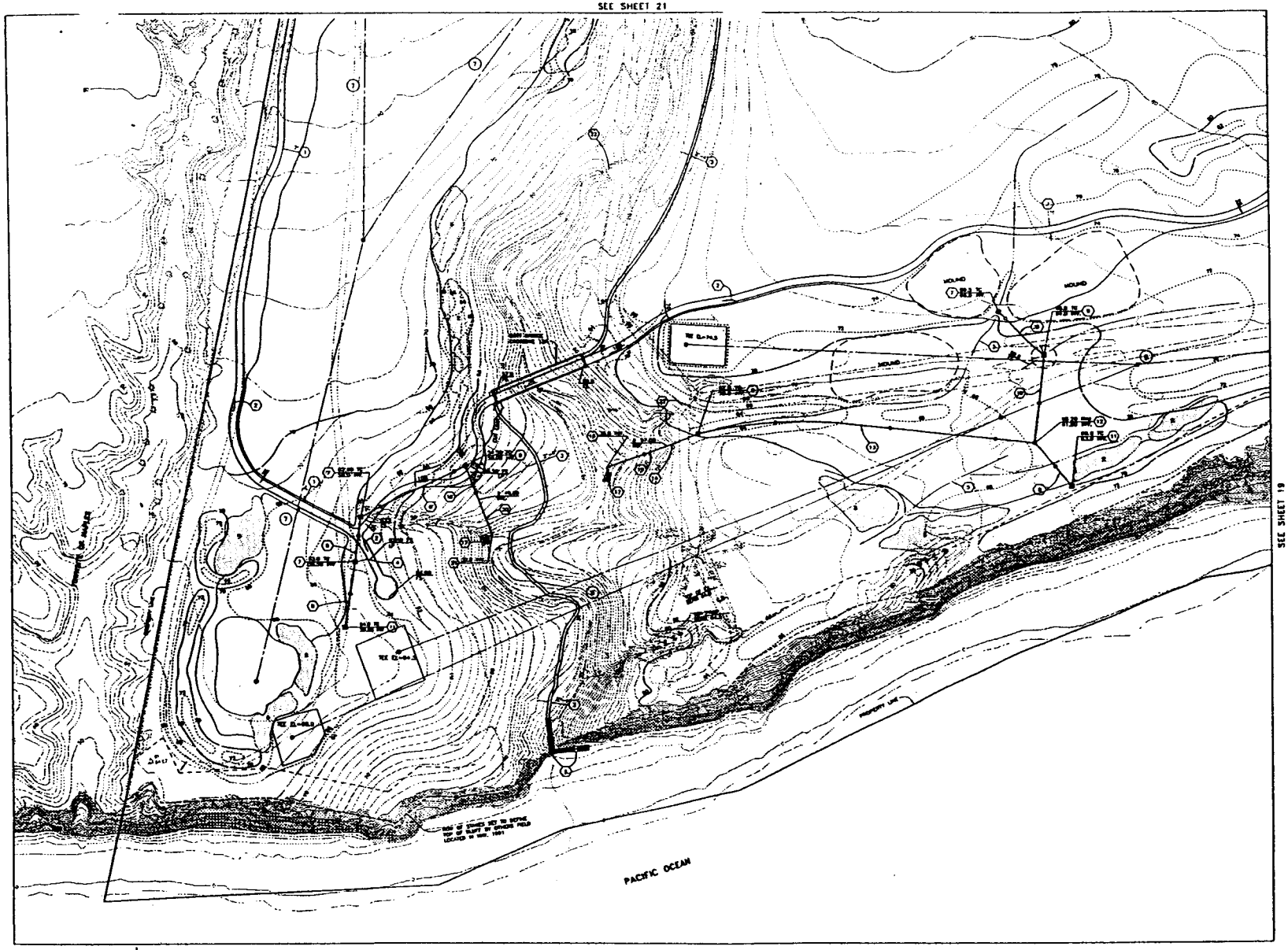
GRADING AND DRAINAGE PLAN
BOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

Cearnal & Cearnal, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

REVIEWED BY
COUNTY OF SANTA BARBARA, CALIFORNIA



CONSTRUCTION NOTES

1. CONSTRUCT 7' WIDE CONCRETE CART PATH.
2. CONSTRUCT 6" CONCRETE CURB.
3. CONSTRUCT CENTRAL BEACH ACCESS TRAIL, WIDTH VARIES, FROM 3' TO 4' BETWEEN RAILS AND EXISTING RETAINING WALL.
4. CONSTRUCT 12' WIDE OPENING IN CURB FOR DRAINAGE.
5. CONSTRUCT CURVED SWALE (TYP.).
6. CONSTRUCT CENTRAL BEACH ACCESS STAIRWAY.
7. CONSTRUCT 24" X 24" PRECAST CONCRETE CATCH BASIN WITH GRATED TOP.
8. CONSTRUCT 12" STORM DRAIN.
9. CONSTRUCT 24" X 28" PRECAST CONCRETE CATCH BASIN WITH GRATED TOP.
10. CONSTRUCT 18" STORM DRAIN.
11. CONSTRUCT 18" X 18" PRECAST CONCRETE CATCH BASIN WITH GRATED TOP.
12. CONSTRUCT 48" DIA. PRECAST CONCRETE MANHOLE.
13. CONSTRUCT 24" STORM DRAIN.
14. CONSTRUCT 24" CMP STORM DRAIN AT 25 MIN. SLOPE.
15. CONSTRUCT 24" CMP CATCH BASIN WITH ANCHOR ASSEMBLY PER CALTRANS STANDARD PLANS 2B3 TYP.
16. CONSTRUCT 24" CMP 90° BEND AT THE END OF THE CATCH BASIN DRAIN.
17. CONSTRUCT 90 LINEAL FT. 9' WIDE X 18" THICK RIBBON RIP-RAP ENERGY DISSIPATOR (1/2 MIN. DIA. ROCK).
18. REMOVE EXISTING VALVE AND CAP EXISTING 8" PIPE. CONCRETE HEADWALL SHALL REMAIN.
19. CONSTRUCT 12" CMP STORM DRAIN AT 25 MIN. SLOPE.
20. CONSTRUCT 12" CMP CATCH BASIN WITH ANCHOR ASSEMBLY PER CALTRANS STANDARD PLANS 2B3 TYP.
21. CONSTRUCT 12" CMP 90° BEND AT THE END OF THE CATCH BASIN DRAIN.
22. EXISTING CULVERT TO REMAIN.

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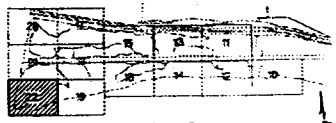

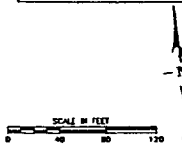

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MAP FILE:
PROJECT FILE:
PLOT MODE:
MAP NAME:
DATE: 02/10/99

XREF DRAWINGS

NO.	DATE	REVISIONS	APPD.

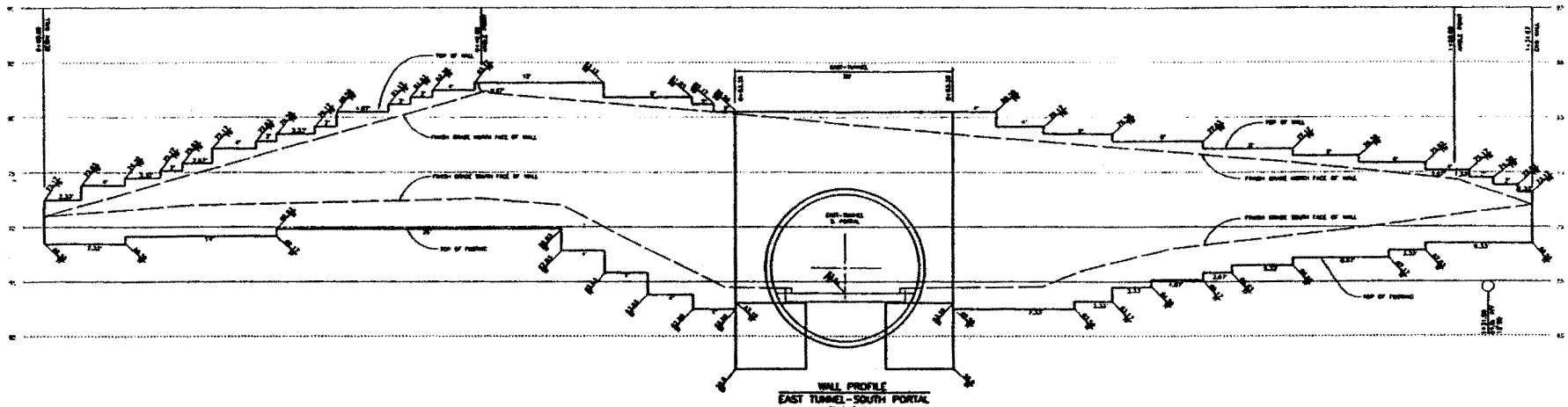
Cotton & Associates, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS • SURVEYORS
DESIGN:
DRAWN:
CHECKED:
PROJECT ENGINEER
DATE:
R.C.E. 43,803
EXP. 12/31/00

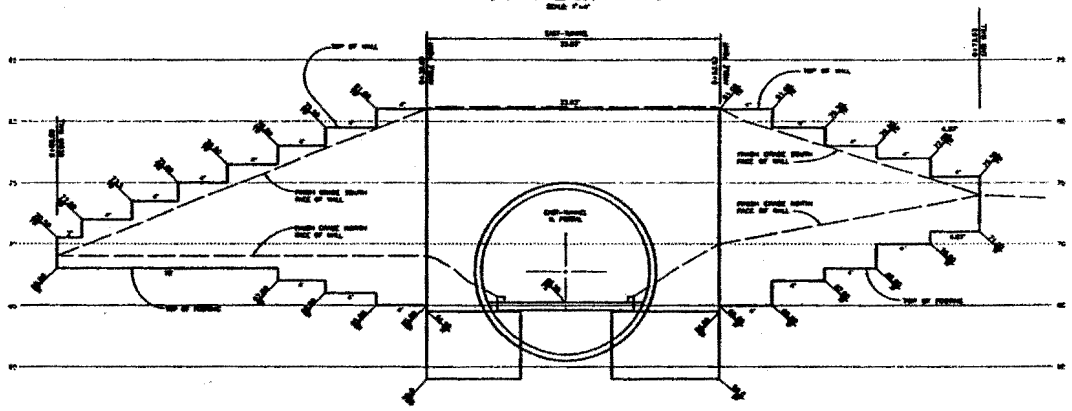
REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, GRADING DIVISION
DATE
FOR PUBLIC WORKS DEPARTMENT
DATE
FLOOD CONTROL ENGINEER
DATE

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12823-83
SHEET 622 OF 50



WALL PROFILE
EAST TUNNEL-SOUTH PORTAL



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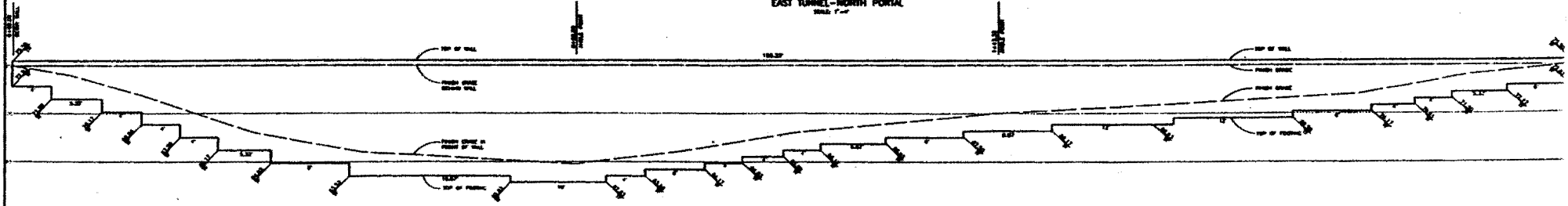

WALL PROFILE
RTE 17

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REFERENCES

NO.	DATE	REVISIONS	APVD.

Crown Consultants, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

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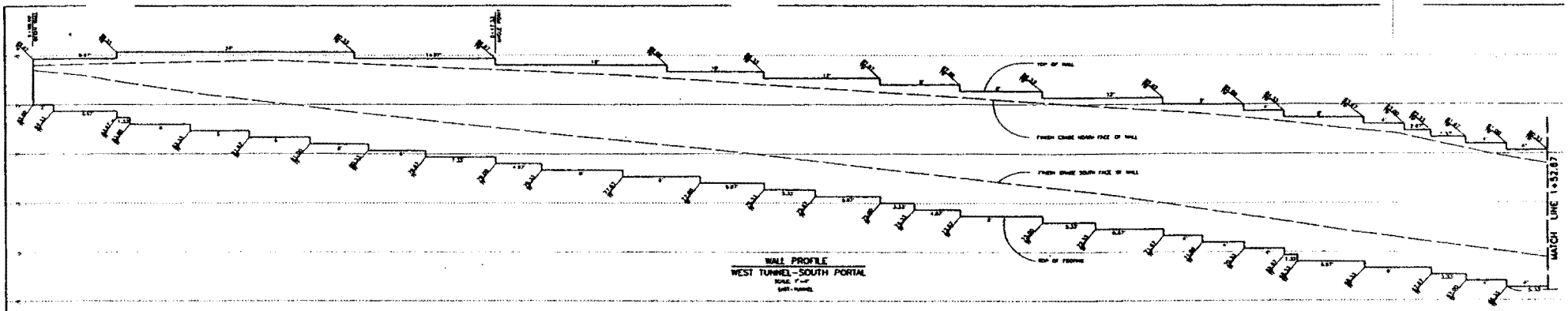
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, SANTA BARBARA DIVISION
DATE

REVIEWED BY:
FOR PUBLIC WORKS DEPARTMENT
DATE

FLOOD CONTROL ENGINEER APPROVED
DATE

GRADING AND DRAINAGE PLAN
RETAINING WALL PROFILES AND SECTIONS
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12825.83
SHEET G40 OF 50
S.B. COUNTY T-2



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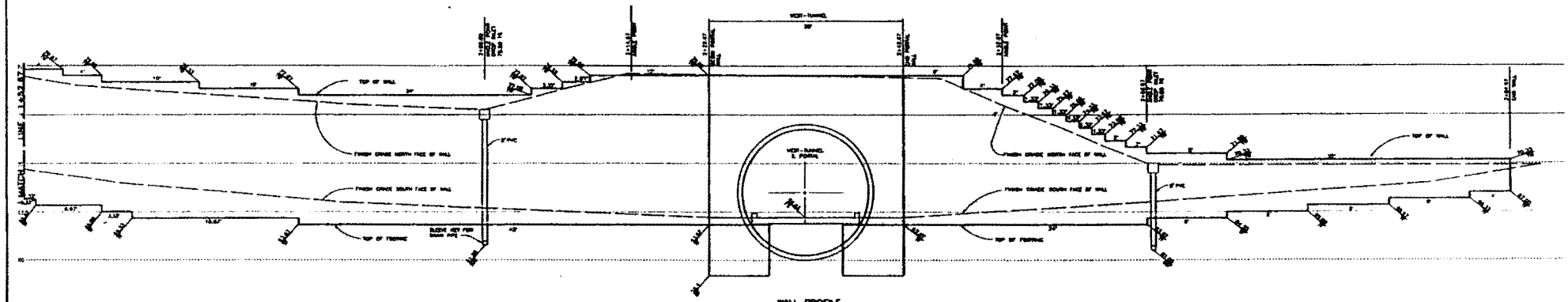
WEST TUNNEL-SOUTH PORTAL



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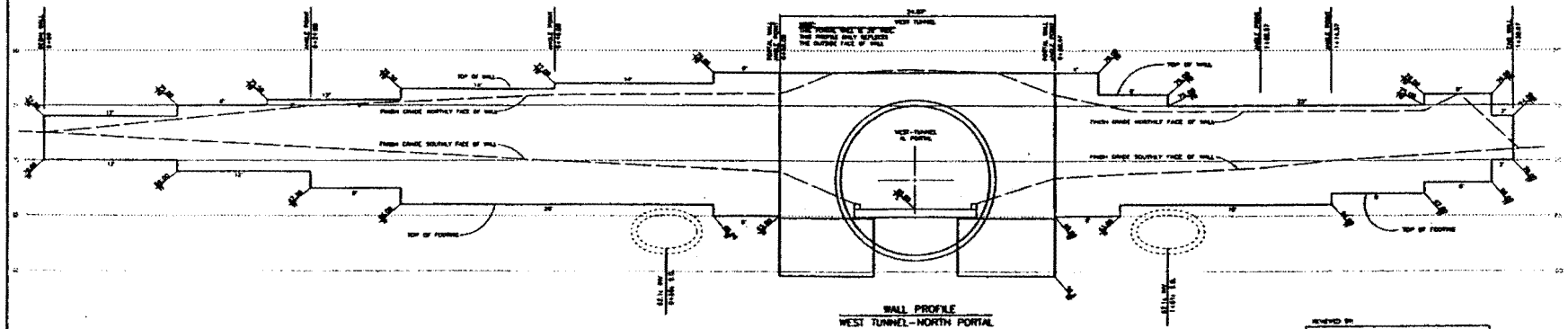

WALL PROFILE
WEST TUNNEL-NORTH PORTAL

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COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, BUILDING DIVISION

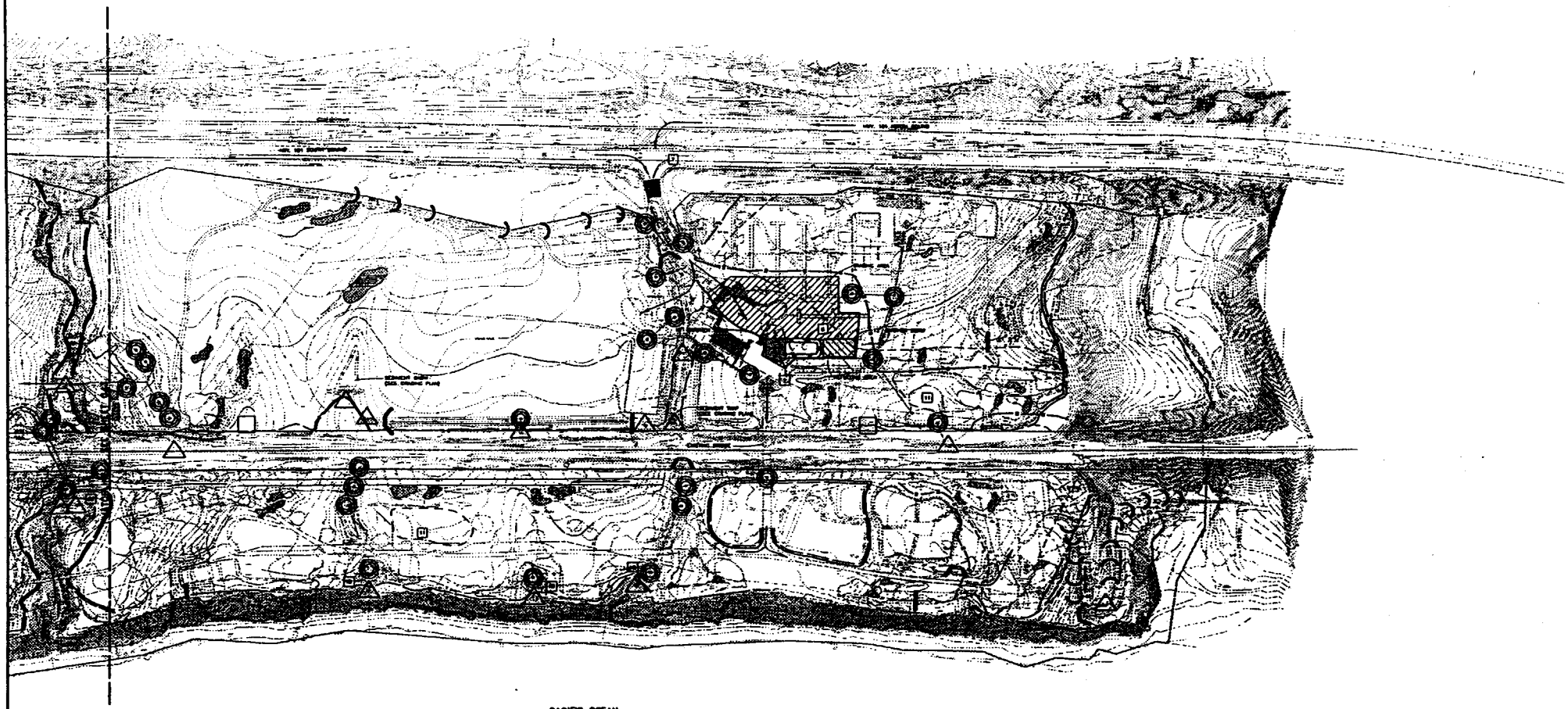
REVIEWED BY:
FOR PUBLIC WORKS DEPARTMENT

FLOOD CONTROL ENGINEER, HISTORICAL

Cearn & Cranham, Inc.
HOFFAUER PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

GRADING AND DRAINAGE PLAN
RETAINING WALL PROFILES AND SECTIONS
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA



CONSTRUCTION NOTES

GENERAL NOTES

LEGEND

SCALE IN FEET

0 100 200 300

N

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REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, ORIGINAL SIGNED
DATE
FOR PUBLIC WORKS DEPARTMENT
DATE
FLOOD CONTROL ENGINEER, SIGNATURE
DATE

Coont & Cheatham, Inc.
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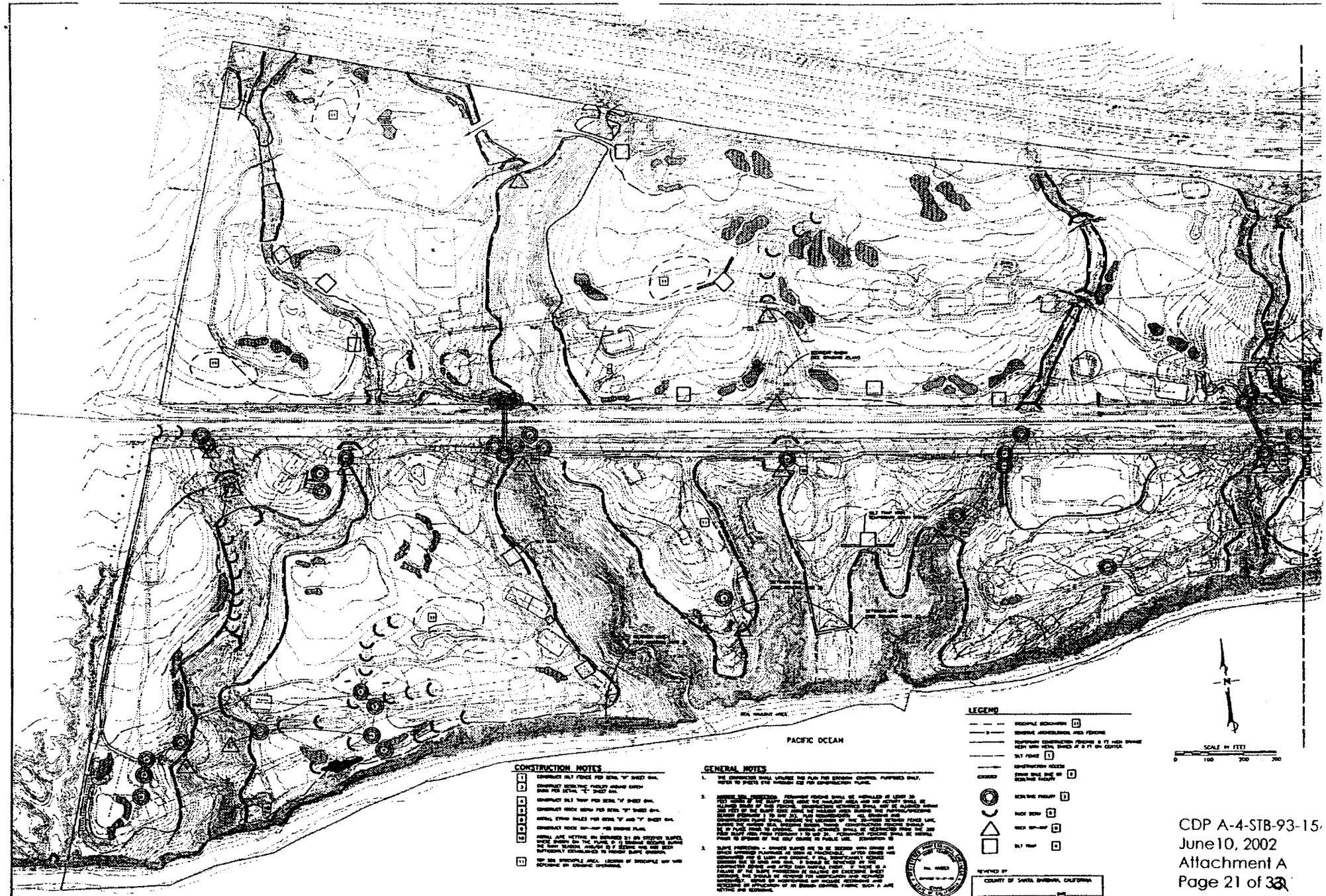
Penfield & Smith
ENGINEERS • SURVEYORS

EROSION CONTROL,
CONSTRUCTION FENCING & ACCESS PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12823-83
SHEET G42 OF 50
S.B. COUNTY PW



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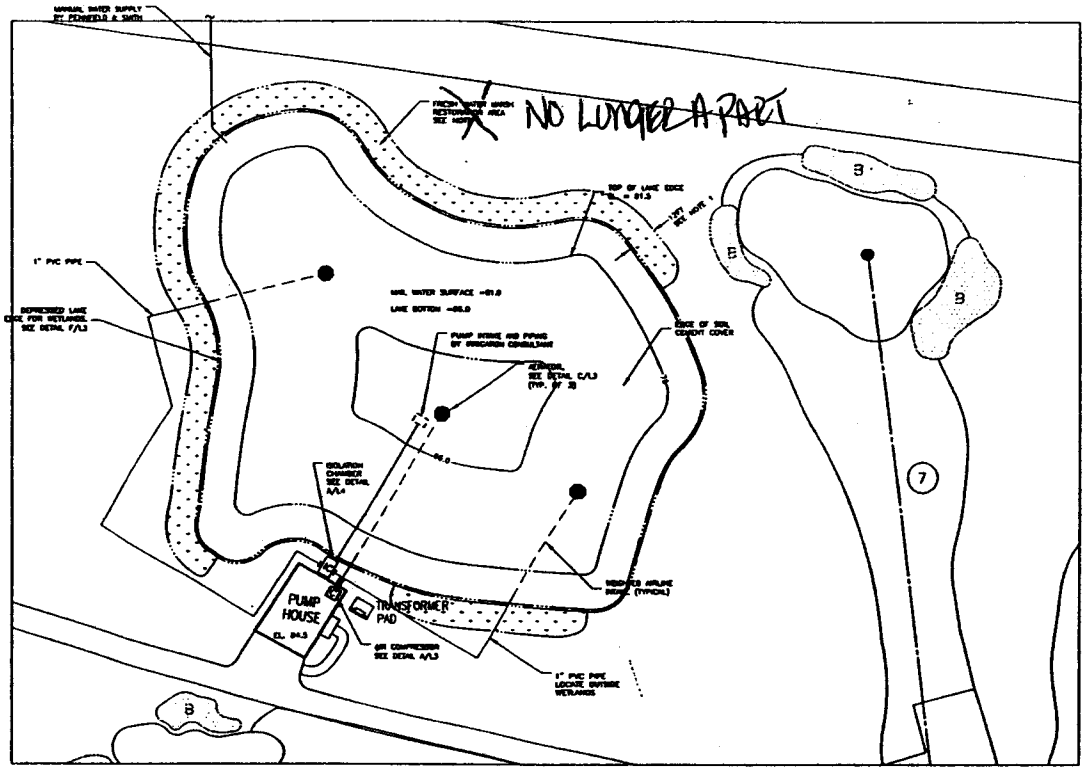
EROSION CONTROL,
CONSTRUCTION FENCING & ACCESS PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

Chow & Associates, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

COUNTY OF SANTA BARBARA, CALIFORNIA



GENERAL NOTES

(9)

1. All condition plan and plan fittings shall be Schedule 40 unless otherwise noted.
2. Written dimensions on drawings will have preference over scaled drawings.
3. All work shall conform to applicable codes.
4. Pipe line locations on plans are schematic. Pipe lines should be located in the most direct route possible from connection to distribution points. A copy of as-built conditions should be maintained on the job and delivered to Owner when construction is finished.
5. Contractor shall verify all grades, dimensions, and elevations and shall notify the Owner's representative immediately of any discrepancies.
6. Controlled components such as manifolds, valvebox, junction boxes, etc., are not shown on the Maintenance System construction plans. See Electrical Plans for details.
7. Contractor shall review drawings prior to start of construction and notify the Owner of any discrepancies.
8. Contractor shall verify location of existing utilities and underground features, and take steps to protect them prior to start of construction/excavation operations.
9. These plans shall not be used for grading or staking the irrigation systems. Rough Grading and/or staking per Civil Engineer's or Architect's plan without grading and/or staking Plan.
10. All steel pipe and pipe fittings shall be galvanized.
11. All buried galvanized steel pipe fittings shall be protected with a corrosion resistant wrapping as approved by the district U.F.C. and U.A.P.M.D. installation standards.
12. Horizontal underground pipe runs shall have 12" minimum cover under paved surfaces and 24" minimum cover under landscaped areas.
13. Compressor, and bottom holes locations indicated on the drawings are subject to minor relocations in field by the Landscape Architect.

Legend
- C COMPRESSOR
- AERATOR
- WEIGHTED LINE
- PVC PIPE
- WETLANDS
- IC ISOLATION CHAMBER

WET-A WETLANDS SIZE AND LOCATION PER KIRK O'NEILL HOGGINS & ASSOCIATES

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OVERALL LAKE PLAN

COUNTY OF SANTA BARBARA, CALIFORNIA

SCALE: 1" = 20'-0"

DOS PUEBLOS GOLF LINKS LAKE PLAN
SANTA BARBARA COUNTY, CALIFORNIA

Chow & Associates, Inc. — HOFFMAN PLANNING DESIGN
Penfield & Smith — ENGINEERS & SURVEYORS
J. Hagan Glow Engineers — WATER FEATURE ENGINEERS
PUBLIC ARTS & ASSOCIATES

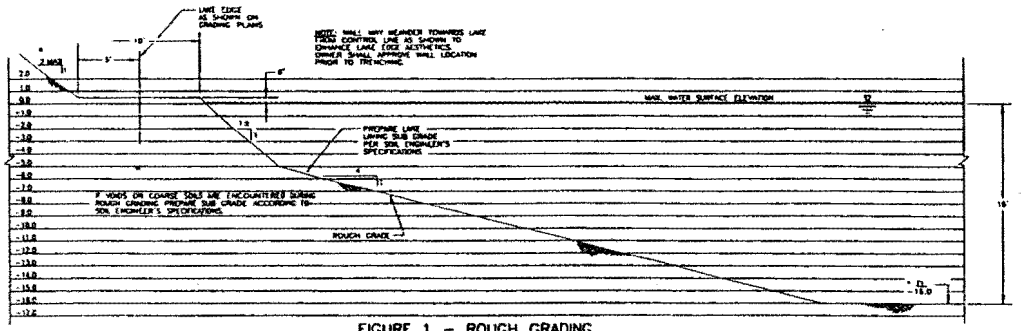


FIGURE 1 – ROUGH GRADING

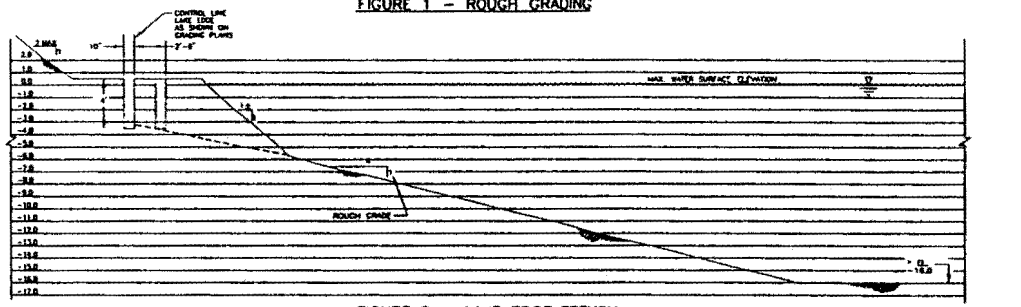


FIGURE 2 – LAKE EDGE TRENCH

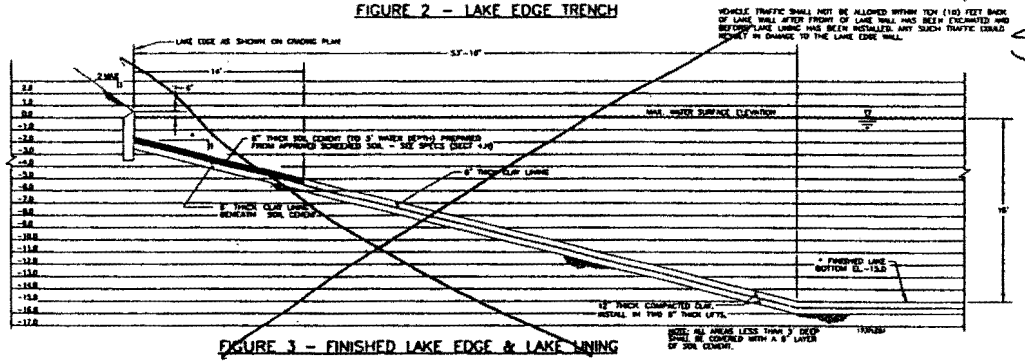
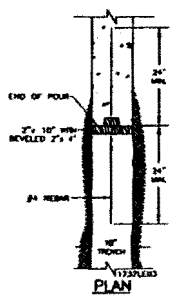


FIGURE 3 – FINISHED LAKE EDGE & LAKE LINING

ROUGH GRADE, BENCH & FINISHED LAKE EDGE — SCALE: 1/4" = 1'-0" | A



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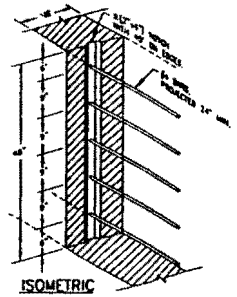
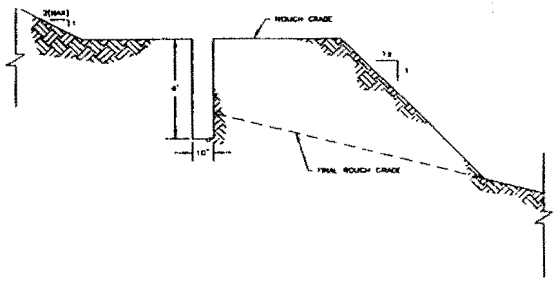
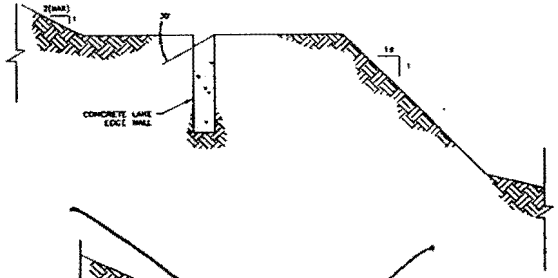
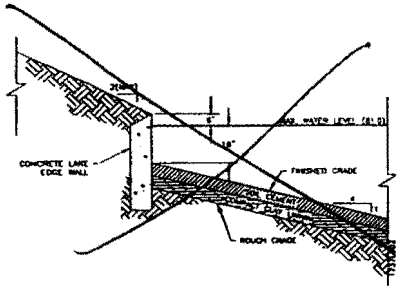


ISOMETRIC

CONSTRUCTION JOINT — SCALE: 1" = 1'-0" | C







LAKE EDGE CONSTRUCTION — SCALE: 1/2" = 1'-0"

SEE 612

SUGGESTED CONSTRUCTION PROCEDURES

A. PRELIMINARY OPERATIONS DURING ROUGH GRADING

1. THE LAKE SHALL BE EXCAVATED DURING THE ROUGH GRADING OPERATION AS SHOWN IN FIGURE 1 (PLUS OR MINUS 0.10 FOOT).

B. LAKE EDGE AND LINING CONSTRUCTION

1. COMPACT THE LAKE LINING SUBGRADE PER SOIL ENGINEER'S SPECIFICATIONS TO A MINIMUM 88% RELATIVE DENSITY, PER ASTM METHOD D-1557-78.
2. VERIFY ELEVATION OF BENCH. IF THE BENCH ELEVATION IS HIGH MEANS PLUS OR MINUS 0.10 FOOT OF THE MINIMUM WATER SURFACE ELEVATION SHOWN ON THE LAKE PLANS, THEN FINE GRADE TO WITHIN THE LIMITS.
3. STAKE CRITICAL POINTS SUCH AS EDGE TYPE CHANGES, PIPING PENETRATIONS, STRUCTURAL BULKHEAD WALLS, WALL TYPE CHANGES, ETC.
4. CHALK LAKE SIDE OF FREEFORM LAKE EDGE FOR APPROVAL BY OWNER OR AUTHORIZED REPRESENTATIVE. WALL SHALL MEANDER A MINIMUM OF 2.5 FEET FROM CONTROL LINE AS SHOWN ON PLANS.
5. DIG TEN (10) INCH WIDE BY FOUR (4) FOOT DEEP TRENCH ALONG THE CHALKED LINE. TRENCHES SHALL BE CAPABLE OF DIGGING A CURVED TRENCH WITH A FIFTEEN (15) FOOT RADIUS TURN WITHOUT EXCESSIVE WALLOWING, AND SHALL BE A TYPE APPROVED BY THE LAKE ENGINEER.
6. LAKE EDGE TRENCH MAY BE INCIDENTALLY ENLARGED TO INCREASE WALL CHARACTER. ENLARGEMENT SHALL BE UP TO TEN (10) INCHES IN WIDTH AT THE TOP OF THE TRENCH TO ZERO AT THE BOTTOM (18) INCH DEPTH, MINIMUM LENGTH OF THE ENLARGED AREA AT ANY ONE AREA SHALL BE FIVE (5) FEET ALONG THE LAKE EDGE.
7. THE TRENCH SHALL BE PREPARED FOR THE REQUIRED LAKE WALL FINISH AS SPECIFIED BELOW:
   A. ERODE LAKE SIDE OF TRENCH TO SIMULATE VERTICAL MUD BANK.
   B. PLACE FORM LINER FOR BULKHEAD EDGE IN CLUBHOUSE AREA.
8. PLACE LAKE WALL PIPING PENETRATIONS, ETC. AS SHOWN ON PLANS.
9. FILL TRENCH WITH CONCRETE, CLASS 560-C-2500 PER STANDARD SPECIFICATIONS, VIBRATE AND FINISH TOP AT A 30 ANGLE AS SHOWN UNLESS OTHERWISE INDICATED ON THE WALL SECTION OF DRAWINGS.

   SUBMIT CONCRETE MIX DESIGN FOR LAKE ENGINEER'S APPROVAL PRIOR TO PLACEMENT OF ANY SECTIONS OF LAKE WALL.

   A 20 FOOT SAMPLE SECTION OF THE LAKE EDGE SHALL BE PREPARED FOR THE OWNER'S APPROVAL PRIOR TO PERFORMING ADDITIONAL PORTIONS OF THE LAKE WALL. APPROVED SAMPLE SECTION SHALL SERVE AS BASIS OF ACCEPTANCE FOR ALL OTHER PORTIONS OF LAKE WALL.
10. EXCAVATE SOIL ON LAKE SIDE OF TRENCH. EXCAVATED SOIL SHALL BE SPREAD ON SUBGRADE OF LAKE BOTTOM AND USED FOR LAKE LINING MATERIAL.
11. INSTALL SELECT SOIL LINING IN TWO (2) SIX (6) INCH COMPACTED LIFTS, EACH TO AT LEAST 90% RELATIVE DENSITY, PER SECTION 6 OF LAKE SYSTEM SPECIFICATIONS.

    CONSTRUCTION OF SOIL CEMENT SLOPE PROTECTION (ITEM 13) SHALL BE DONE CONCURRENTLY WITH INSTALLATION OF SECOND SIX (6) INCH LIFT.
12. CONSTRUCT SIX (6) INCH THICK SOIL CEMENT SLOPE PROTECTION AS PER THE PLANS AND SPECIFICATIONS AND APPROVAL OF SOILS ENGINEER. ANY PORTION OF THE SOIL CEMENT LAYER SUBSEQUENTLY ALTERED OR DAMAGED BY CONSTRUCTION OPERATIONS SHALL BE REPLACED TO THE FULL SIX (6) INCH DEPTH WITH CLASS 520-A-2500 CONCRETE.
13. THE EXPOSED FREEFORM LAKE EDGE SHALL BE STAINED USING EARTH TONES WITH ACID CONCRETE STAIN, DILUTED ACRYLIC BASED STAINS OR FORMICA, TO BE APPROVED BY THE OWNER.
14. SAMPLE SECTIONS SHALL BE PREPARED FOR APPROVAL BY AN AUTHORIZED REPRESENTATIVE PRIOR TO STAINING THE ACTUAL LAKE EDGE BRAMWORK.

NOTE: ALL OF THE RELATED WORK TO APPROVE THE LAKE SOIL, COMPACTION OF EARTH FILL AND LAKE LINER INSTALLATION SHALL BE SUBJECT TO THE SOILS ENGINEER'S OBSERVATION AND TESTING.

IF VOIDS OR COARSE SOIL ARE ENCOUNTERED DUR ROUGH GRADING, PREPARE LAKE LINING SUBGRADE SOIL ENGINEER'S SPECIFICATIONS.

CONSTRUCTION NOTES — SCALE: NONE

CDP A-4-STB-9
June10, 2002
Attachment A
Page 23 of 33

REFERENCES: SPANISH FILE, SHIFT FILE, PROJECT FILE, WATER MAINS, MISC. DRAWINGS

DATE: 9-24-02

NO. | DATE | REVISIONS | APPD.

OWEN & CHANDLER, INC. — HOFFMAN PLANNING DESIGN

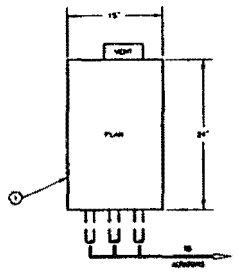
Penfield & Smith — ENGINEERS & SURVEYORS

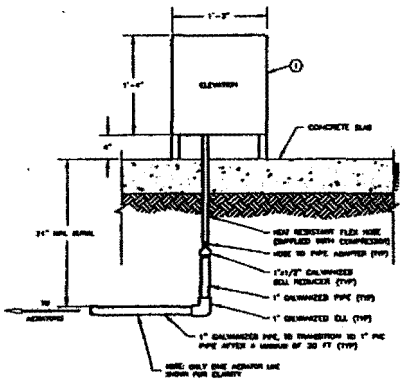
J. HAMILTON OLDHAM ENGINEERS — WATER TRANSPORTATION ENGINEERS — PUBLIC WORKS & ASSOCIATES

COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, RANDAL ROSEN — DATE
FOR PUBLIC WORKS DEPARTMENT — DATE
FLOOD CONTROL ENGINEER, SECTION — DATE

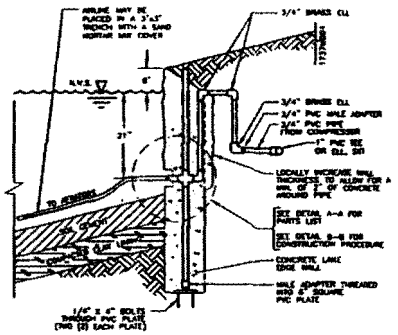
DOS PUEBLOS GOLF LINKS
LAKE EDGE CONSTRUCTION DETAILS
SANTA BARBARA COUNTY, CALIFORNIA

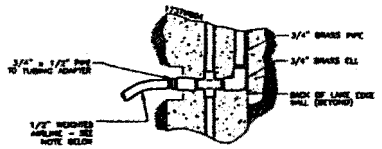
WORK ORDER
SHEET L2 OF FILE

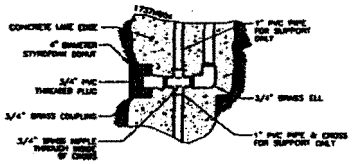




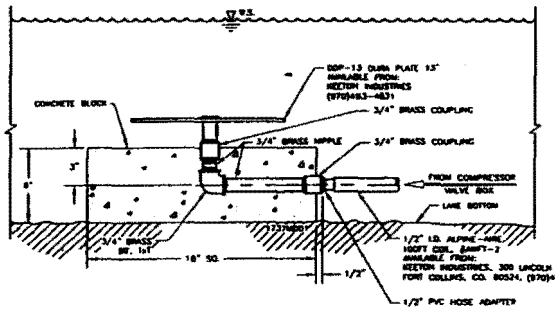
COMPRESSOR CABINET–DETAIL SCALE: 1-1/2" = 1'-0" | A







AIRLINE THRU LAKE EDGE SCALE: 1" = 1'-0" | B



AERATOR–DETAIL SCALE: 3" = 1'-0"

ELECTRICAL NOTES:

CONTRACTOR TO VERIFY (SINGLE/3Ø), VOLTAGE AND PHASE OF ELECTRICAL POWER AT WE SITE BEFORE ORDERING PUMPS.

THE OWNER IS RESPONSIBLE TO FURNISH POWER SUPPLY (CONDUIT, CONDUIT AND WIRE DISCONNECT) TO THE WATER FEATURE VAULT/HOUSE.

THE WATER FEATURE CONTRACTOR IS RESPONSIBLE TO CHARY CONDUIT AND WIRE FROM MAIN DISCONNECT SWITCH TO MOTOR CONTROL PANEL AND FROM MOTOR CONTROL PANEL AS FOLLOWS:

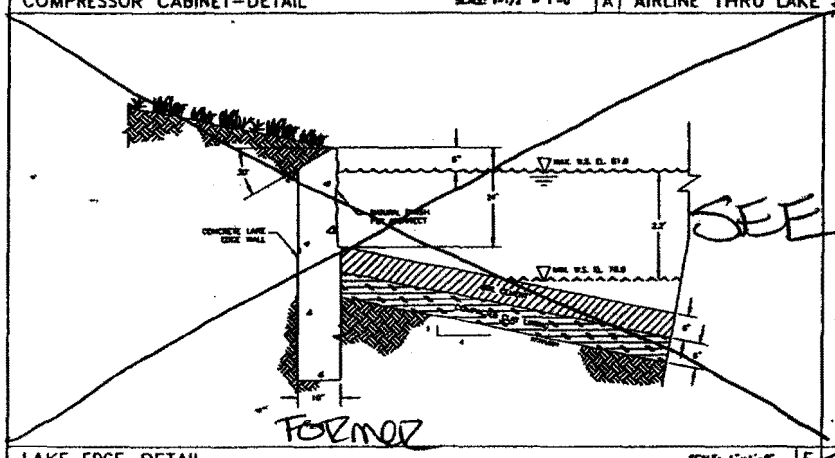
PANEL REQUIREMENTS:
NEMA 3R WEATHERPROOF ENCLOSURE AND COMPONENTS,
LOCKABLE, CIRCUIT BREAKER DISCONNECT,
PROPERLY SIZED CONTROL CIRCUIT TRANSFORMER, AS REQUIRED.

EACH MOTOR SHALL HAVE:
HOA SELECTOR SWITCH,
OVERLOAD PROTECTED MAGNETIC STARTER,
SHIELDED PROTECTION MIN HEATERS, EACH LEG,
3R HEAVY DUTY CLOCK CONTROL, 24 HOUR TIME CLOCK CONTROL, 24 HOUR ON COUR.

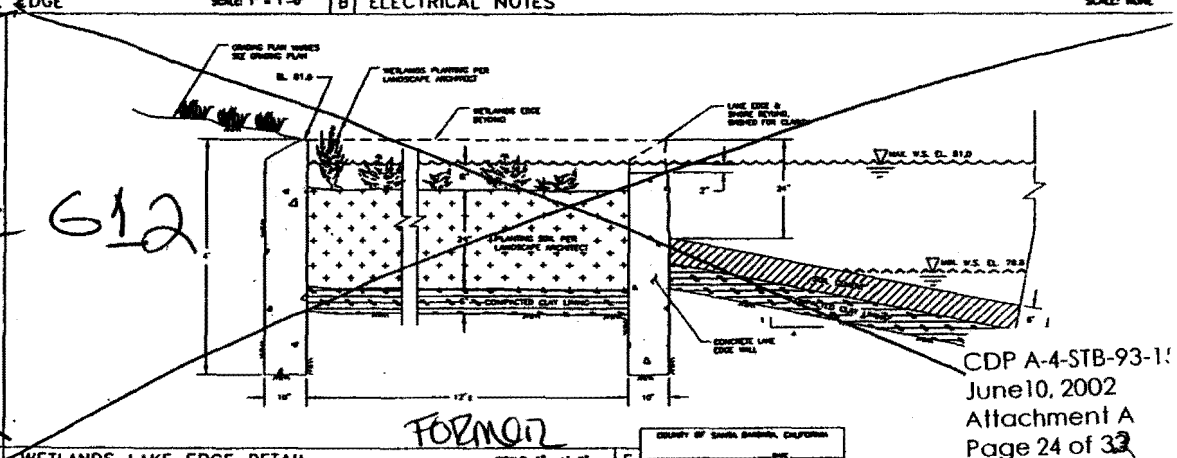
IN ADDITION, PANELS WHICH ARE LOCATED IN NON-RESTRICTED, PUBLIC ACCESS AREAS SHALL HAVE LOCKABLE, DEADFRONT CONSTRUCTION.

RECOMMENDED:
MOTOR CONTROL PANEL, AVAILABLE FROM PACIFIC ENGINEERING PRODUCTS,
(714) 366-9188
1500-3 PHASE CONVER
SAN JUAN CAPISTRANO, CA 92675

ELECTRICAL NOTES SCALE: NONE



LAKE EDGE–DETAIL SCALE: 1"=1'-0" | E



WETLANDS LAKE EDGE–DETAIL SCALE: 1" =1'-0" | F

SEE 612

FORMOR

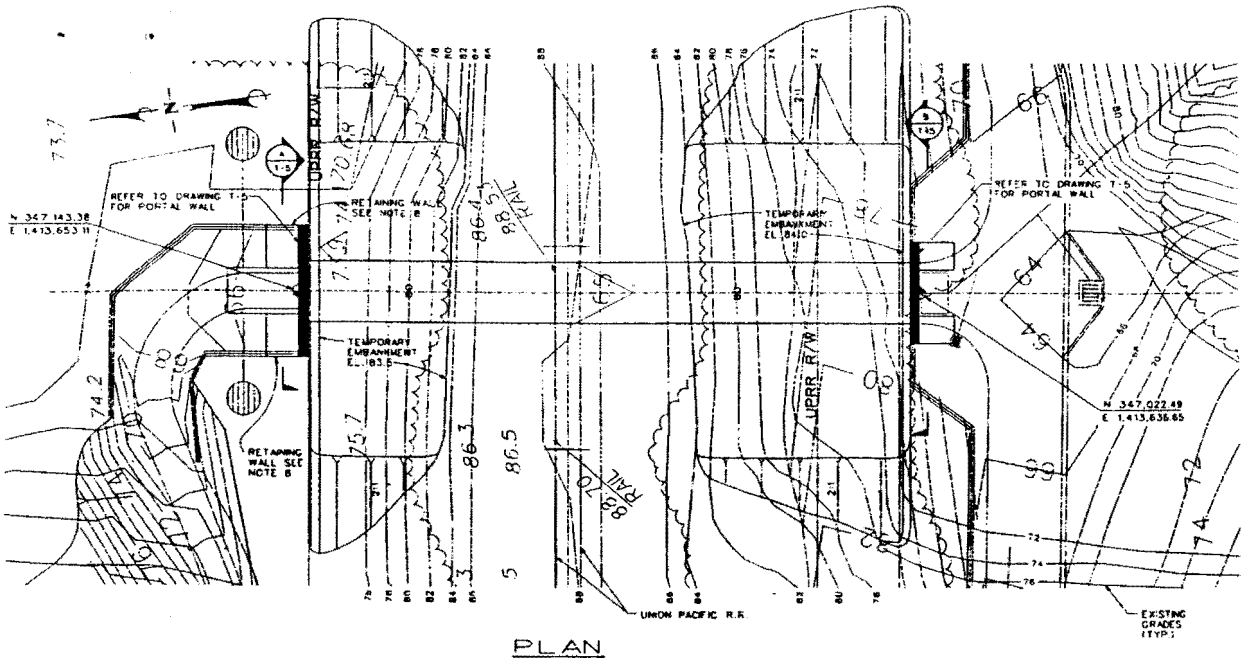
FORMOR

CDP A-4-STB-93-1
June10, 2002
Attachment A
Page 24 of 33

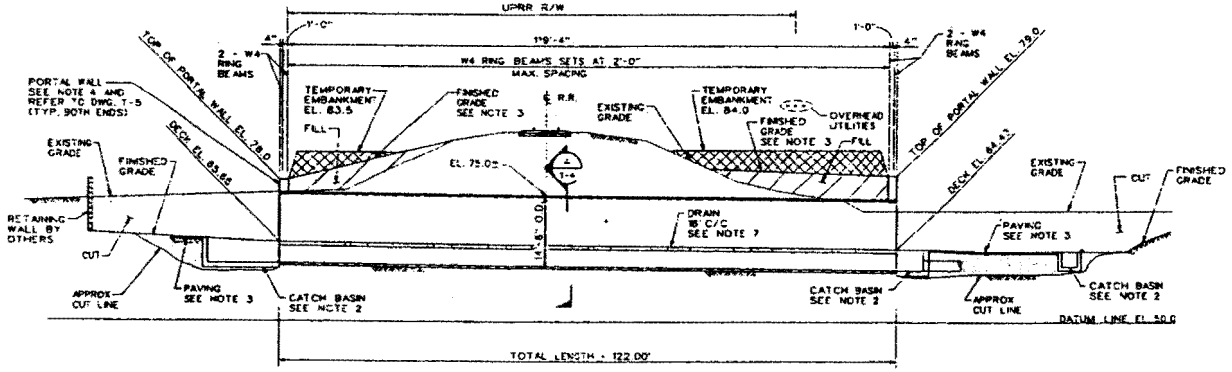
REFERENCES:

DOS PUEBLOS GOLF LINKS
LAKE DETAILS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER
SHEET L3 OF



PLAN



WEST TUNNEL PROFILE ALONG TUNNEL ℄

NOTES:

1. LOCATION BEARINGS SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE 5, NORTH AMERICAN DATUM OF 1927, DEFINED LOCALLY BY CALIFORNIA STATE LANDS COMMISSION ORDINARY HIGH WATER MARK SURVEY PER MAP FILED IN BOOK 35, PAGE 87 OF RECORD OF SURVEYS. THIS SURVEY TIED INTO CLSC POINTS "SIGNAL" AND "EAGLE" AS SHOWN ON SAID MAP. ALL DISTANCES AND STATIONING NOTED ARE EXPRESSED IN GROUND VALUES IN US SURVEY FEET UNITS. ELEVATIONS SHOWN ARE RELATIVE TO USC&GS BENCHMARK "Y858 1948", SET IN THE TOP OF THE EAST END OF A CONCRETE HEADWALL FOR AN 18" PIPE CULVERT UNDER THE RAILROAD TRACKS. THIS BENCHMARK IS LOCATED 7.6 FEET SOUTHERLY OF THE SOUTHERLY RAIL OF THE UPRR TRACKS AT STATION 14772-82.60. BENCHMARK ELEVATION IS 76.56 FEET NGVD 1929.
2. CATCH BASINS SHOWN ARE SIZED TO ACCOMMODATE TUNNEL INVERT AND CONCRETE DECK SUPPORT CONFIGURATIONS SHOWN ON DRAWING T-4. REFER TO GRADING PLANS FOR DRAINAGE CONNECTION DETAILS AND MINIMUM REQUIREMENTS.
3. CUT AND FILL LINES AND PAVEMENT SECTIONS ARE SHOWN GENERALLY TO REFLECT ANTICIPATED TUNNELLING SEQUENCE. FOR MINIMUM PAVEMENT THICKNESS AND BACKFILL REQUIREMENTS, REFER TO GRADING PLANS.
4. REINFORCED CONCRETE PORTAL WALL DETAILS ARE SHOWN ON DRAWING T-5. FOR ALL OTHER WALLS REFER TO LANDSCAPE AND GRADING DRAWINGS.
5. OVERHEAD UTILITIES ARE SHOWN GENERALLY FOR INFORMATION. FOR LOCATION OF ADDITIONAL UTILITIES, SUCH AS MCI AND AT&T BURIED COMMUNICATION LINES, REFER TO THE PROJECT GRADING PLAN. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ANY AND ALL UTILITIES THAT EXIST ABOVE THE TUNNEL ALIGNMENT.
6. STEEL RING BEAM SPACING IS SHOWN SPECIFICALLY AT EACH END OF THE TUNNEL IN ACCORDANCE WITH THE DETAILS SHOWN ON DRAWING T-5. RING BEAM SPACING ALONG THE TUNNEL BETWEEN PORTAL WALLS, SHOWN SCHEMATICALLY IN PROFILE, MAY VARY, BUT SHALL NOT BE GREATER THAN THE MAXIMUM INDICATED FOR EACH SECTION OF THE TUNNEL INDICATED.
7. THE CONCRETE DECK SHALL HAVE VERTICAL DRAINS PLACED AT 16 FT. CENTERS TO ALLOW FOR SURFACE DRAINAGE AND PRESSURE RELIEF FROM BELOW. REFER TO DRAWING T-4.
8. CONSTRUCT FOOTING OF RETAINING WALL WHERE FOOTING OVERLAPS PORTAL WALL FOOTING. SEE GRADING PLANS.
9. SEE LANDSCAPE DRAWINGS FOR FENCE ALONG RAILROAD RIGHT-OF-WAY.

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June 10, 2002
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0 10 20 30 40

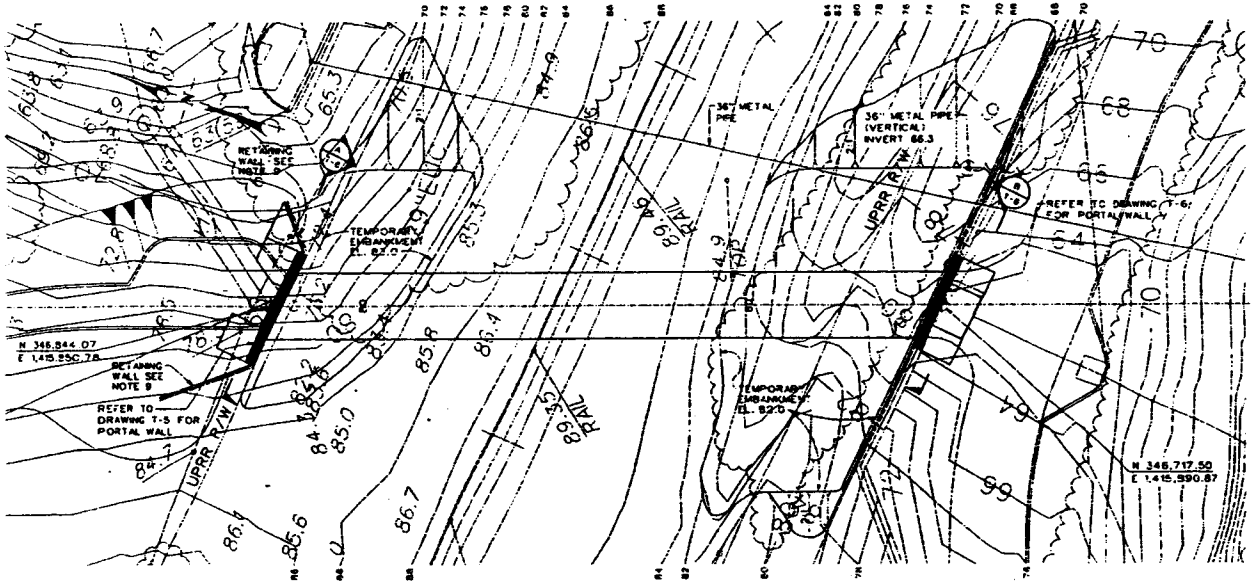
SCALE: 1"=10'-0" HORIZ. & VERT.

REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT - GRADING DIVISION
FOR PUBLIC WORKS DEPARTMENT
FLOOD CONTROL ENGINEER, RECEIVED

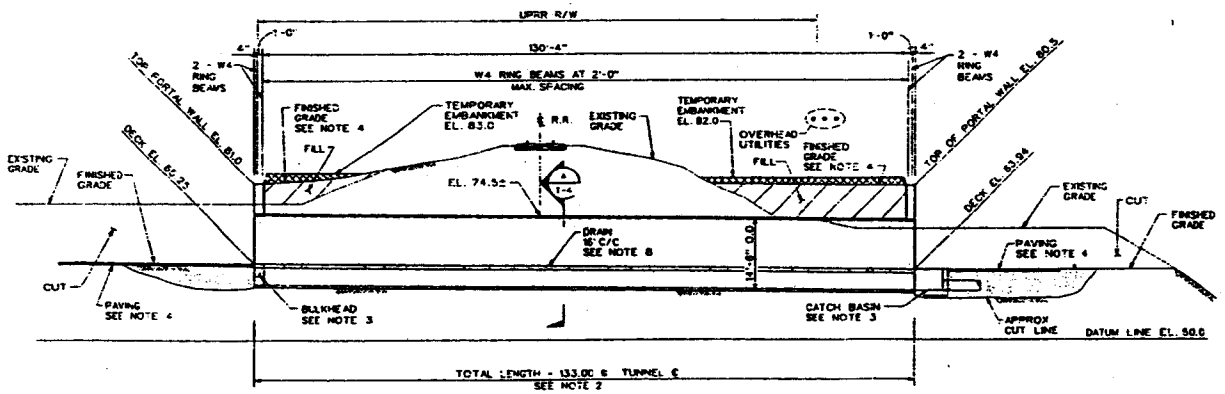
Penfield & Smith
ENGINEERS - SURVEYORS
ACCES ASSOCIATES

WEST TUNNEL
PLAN & PROFILE
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

12925-03
SHEET 7 OF 7



PLAN



EAST TUNNEL PROFILE ALONG TUNNEL ℄

NOTES:

1. LOCATION BEARINGS SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE 5, NORTH AMERICAN DATUM OF 1927, DEFINED LOCALLY BY CALIFORNIA STATE LANDS COMMISSION ORDINARY HIGH WATER MARK SURVEY PER MAP FILED IN BOOK 35, PAGE 87 OF RECORD OF SURVEYS. THIS SURVEY TIED INTO CLSC POINTS "SIGNAL" AND "EAGLE" AS SHOWN ON SAID MAP. ALL DISTANCES AND STATIONING NOTED ARE EXPRESSED IN GROUND VALUES IN US SURVEY FEET UNITS. ELEVATIONS SHOWN ARE RELATIVE TO USC&GS BENCHMARK "V658 1948", SET IN THE TOP OF THE EAST END OF A CONCRETE HEADWALL FOR AN 18" PIPE CULVERT UNDER THE RAILROAD TRACKS. THIS BENCHMARK IS LOCATED 7.8 FEET SOUTHERLY OF THE SOUTHERLY RAIL OF THE UPRR TRACKS AT STATION 14772+82.60. BENCHMARK ELEVATION IS 78.56 FEET NGVD 1929.
2. PROFILE VIEW SHOWN IS ALONG CENTERLINE OF TUNNEL. BECAUSE OF SKEWED PORTAL WALL, ACTUAL LENGTH OF TUNNEL CONSTRUCTED PRIOR TO INSTALLATION OF THE PORTAL WALL WILL BE APPROXIMATELY 136.5 FT. UPON COMPLETION OF TUNNELING, PORTAL DEVELOPMENT WILL REQUIRE EXCAVATION ABOVE TUNNEL AND PARTIAL REMOVAL OF THE FIRST 4 STEEL SETS (RING BEAMS AND LAGGING BETWEEN THEM) ON EACH END TO ACHIEVE THE SKEWED TUNNEL APPROACHES. CONTRACTOR SHALL SUBMIT PORTAL WALL CONSTRUCTION SEQUENCE DETAILS TO PENFIELD & SMITH FOR APPROVAL.
3. THE CATCH BASIN AND BULKHEAD SHOWN ARE SIZED TO ACCOMMODATE TUNNEL INVERT AND CONCRETE DECK SUPPORT CONFIGURATIONS SHOWN ON DRAWING T-4. REFER TO GRADING PLANS FOR DRAINAGE CONNECTION DETAILS AND MINIMUM REQUIREMENTS.
4. CUT AND FILL LINES, AND PAVEMENT SECTIONS ARE SHOWN GENERALLY TO REFLECT ANTICIPATED TUNNELLING SEQUENCE. FOR MINIMUM PAVEMENT THICKNESS AND BACKFILL REQUIREMENTS, REFER TO GRADING PLANS.
5. REINFORCED CONCRETE PORTAL WALL DETAILS ARE SHOWN ON DRAWING T-5. DIMENSIONS FOR THE NORTH PORTAL WALL FOOTINGS ARE SHOWN ON T-6. FOR ALL OTHER WALLS REFER TO LANDSCAPE AND GRADING DRAWINGS.
6. STEEL RING BEAM SPACING IS SHOWN SPECIFICALLY AT EACH END OF THE TUNNEL IN ACCORDANCE WITH THE DETAILS SHOWN ON DRAWINGS T-5 & T-6. RING BEAM SPACING ALONG THE TUNNEL BETWEEN PORTAL WALLS SHOWN SCHEMATICALLY IN PROFILE, MAY VARY, BUT SHALL NOT BE GREATER THAN THE MAXIMUM INDICATED FOR EACH SECTION OF THE TUNNEL INDICATED.
7. OVERHEAD UTILITIES ARE SHOWN GENERALLY FOR INFORMATION. FOR LOCATION OF ADDITIONAL UTILITIES, SUCH AS MCI AND AT&T BURIED COMMUNICATION LINES, REFER TO THE PROJECT GRADING PLAN. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ANY AND ALL UTILITIES THAT EXIST ABOVE THE TUNNEL ALIGNMENT.
8. THE CONCRETE DECK SHALL HAVE VERTICAL DRAINS PLACED AT 16 FT. CENTERS TO ALLOW FOR SURFACE DRAINAGE AND PRESSURE RELIEF FROM BELOW. REFER TO DRAWING T-4.
9. CONSTRUCT FOOTING OF RETAINING WALL WHERE FOOTING OVERLAPS PORTAL WALL FOOTING. SEE GRADING PLANS.
10. SEE CIVIL DRAWINGS FOR FENCE ALONG RAILROAD RIGHT-OF-WAY.

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June10, 2002
Attachment A
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0 10 20 30 40
SCALE 1"=10'-0" HORIZ. & VERT.

REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
DATE
PLANNING & DEVELOPMENT, GRADING DIVISION
FOR PUBLIC WORKS DEPARTMENT DATE
FLOOD CONTROL ENGINEER DATE

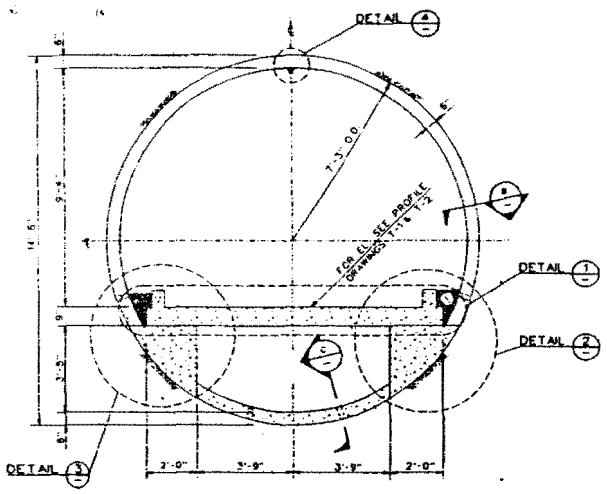
NO.	DATE	REVISIONS	APPD.

Penfield & Smith
ENGINEERS-SURVEYORS
101 E. VICTORIA ST. SANTA BARBARA
(805) 963-9532 CALIF. 93101

DESIGN DL CHECKED DL
DRAWN JP
DATE
PROJECT ENGINEER

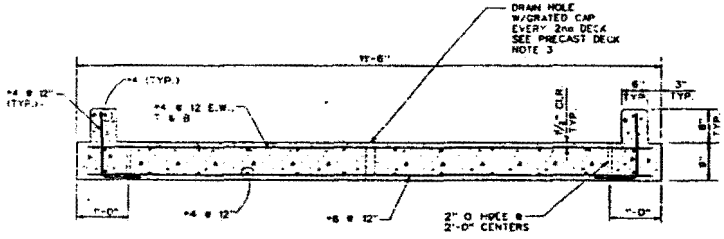
EAST TUNNEL
PLAN & PROFILE
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12975.03
SHEET T-7
7 OF 7
S.B. COUNTY FILE



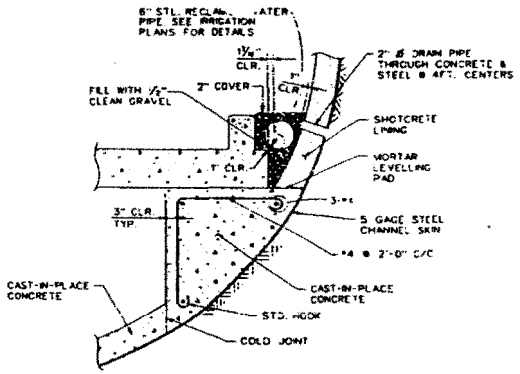
TYPICAL TUNNEL CROSS SECTION

SECTION (A) T-1 & T-2



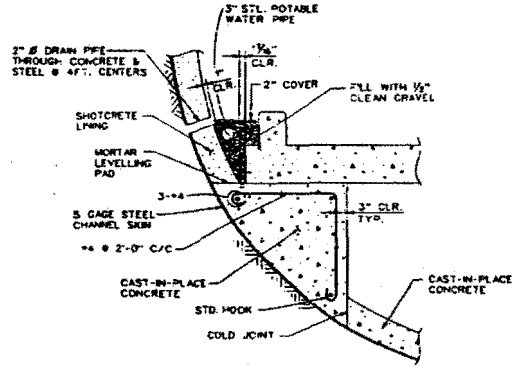
SECTION THROUGH 8'-0" LONG PRECAST DECK UNIT

DETAIL (1) SCALE: 1"=1'-0"



CORBEL DETAIL

DETAIL (2) SCALE: 1"=1'-0"



CORBEL DETAIL

DETAIL (3) SCALE: 1"=1'-0"

LINING SEQUENCE NOTES

1. FOLLOWING THE COMPLETION OF TUNNELING, THE CONTRACTOR SHALL REMOVE ALL MUCK FROM WITHIN THE INVERT AND CLEAN, WITH AIR OR WATER, THE INSIDE SURFACE OF THE STEEL RING BEAM AND CHANNEL LAGGING. CLEAN RING BEAMS AND CHANNEL LAGGING OF ALL LOOSE MATERIALS, MUCK, CEMENT, AND OTHER DELETERIOUS MATERIAL PRIOR TO PLACEMENT OF ANY FINAL LINING CONCRETE OR SHOTCRETE.
2. THE 6-INCH THICK CONCRETE INVERT SHALL THEN BE CAST IN PLACE. A FORMED COLD JOINT SHALL BE CREATED AT THE LOCATIONS INDICATED ON THE DRAWING. SCREED THE CONCRETE SURFACE TO ACHIEVE THE CURVED SHAPE INDICATED ON THE DRAWINGS.
3. FOLLOWING THE INVERT CONCRETE, THE CONTRACTOR SHALL CAST THE PRE-CAST DECK SUPPORT CORBELS, ADJUST THE HEIGHT OF FOUR TO ACHIEVE THE DECK GRADES SHOWN ON DRAWINGS T-1 AND T-2.
4. FOLLOWING COMPLETION OF THE DECK CORBEL CONCRETE, PLACE TEMPORARY STEEL OR TIMBER DECK ON CORBELS TO PROTECT THE TUNNEL INVERT. WITH PROTECTIVE DECK IN PLACE, SPRAY SHOTCRETE ONTO THE REMAINING FULL CIRCUMFERENCE OF THE TUNNEL TO ACHIEVE THE MINIMUM CONCRETE THICKNESS SHOWN ON DETAIL B OVER THE WHOLE LINING.
5. CLEAN UP OVERSPRAY, REMOVE TEMPORARY DECK/INVERT PROTECTION, AND PLACE 11'-6" PRE-CAST DECK BEAMS FULL LENGTH OF THE TUNNEL. USE MORTAR-LEVELING PAD, WHERE REQUIRED, TO ACHIEVE FINAL GRADE. CHECK THAT EVERY SECOND DECK'S GRATED DRAIN HOLE IS CLEAR ONCE EACH DECK IS PLACED AND GRADE IS CONFIRMED, DOWEL DECK INTO CORBEL WITH 18-INCH LONG NO. 14 BARS, FULLY GROUT ENCAPSULATED.

FINAL LINING GENERAL REQUIREMENTS:

1. CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM 28 DAY UNCONFINED COMPRESSIVE STRENGTH OF 2500 PSI AND SHALL BE MIXED, HANDLED, AND PLACED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. REINFORCING STEEL SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM A 615, GRADE 60 OR BETTER.
3. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED.
4. SHOTCRETE SHALL HAVE A MINIMUM 28 DAY UNCONFINED COMPRESSIVE STRENGTH OF 4000 PSI. ALL SHOTCRETE SHALL BE MIXED, HANDLED, AND APPLIED IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE'S ACI506 GUIDE TO SHOTCRETE. SHOTCRETE MIX DESIGN, APPLICATION PROCEDURES, AND EQUIPMENT SHALL BE SUBMITTED TO PENFIELD AND SMITH FOR APPROVAL PRIOR WORK COMMENCING.
5. HANDLE PRE-CAST CONCRETE DECK BEAMS CAREFULLY TO AVOID CRACKING, BREAKING AND DAMAGE.

TUNNEL LINING PLACEMENT TOLERANCES:

CONCRETE DECK PANELS SHALL BE PLACED TO WITHIN 2 INCHES OF THE GRADE INDICATED ON THE DRAWINGS T-1 AND T-2. ADDITIONALLY, THE CLEAR SPACE SHOWN BETWEEN THE TOP OF PRE-CAST DECK AND INSIDE SURFACE OF THE TUNNEL LINING AT THE TUNNEL CROWN SHALL BE WITHIN 3" OF THE DISTANCE SHOWN ON THE DRAWINGS ALONG THE ENTIRE TUNNEL ALIGNMENT.

PRECAST CONCRETE DECK NOTES:

1. CONCRETE USED FOR PRECAST DECK UNITS SHALL HAVE A MINIMUM 28 DAY UNCONFINED COMPRESSIVE STRENGTH OF 4000 PSI.
2. PRECAST CONCRETE DECK PANELS SHALL BE LIFTED ON AT LEAST 2 POINTS AT EACH END LOCATED WITHIN 2 FEET 6 INCHES FROM THE SIDES OF THE PANEL.
3. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND PLACEMENT OF DRAIN HOLES WITHIN PRECAST DECK PANELS. DETAILS OF THE DRAINS SHALL BE SUBMITTED TO PENFIELD AND SMITH FOR APPROVAL PRIOR TO PRECASTING.
4. PRECAST CONCRETE DECK PANELS SHALL BE SUPPORTED ALONG A LINE WITHIN 2 FEET 6 INCHES OF ALL SIDES OF THE PANEL BY WOOD BLOCKS DURING TRANSPORTATION.

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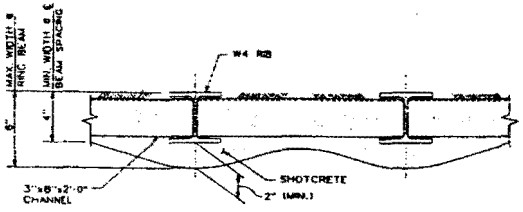
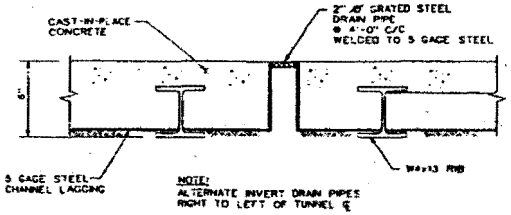
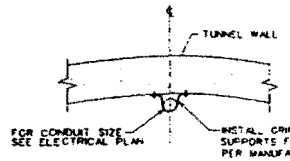


SECTION (B) SCALE: 3"=1'-0"



SECTION (C) SCALE: 3"=1'-0"



ELECTRICAL CONDUIT SUPPORT DETAIL

DETAIL (3) SCALE: ½"=1'-0"

REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
PLANNING & DEVELOPMENT, GRADING DIVISION
DATE

Penfield & Smith ENGINEERS-SURVEYORS 101 E. VICTORIA ST. SANTA BARBARA (805) 963-9532 CA. LIC. 33181

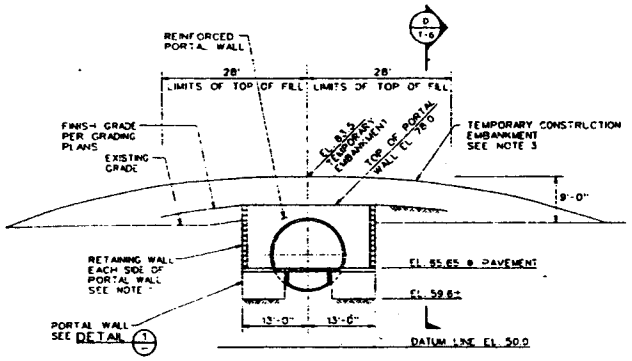
ROSS ASSOCIATES

DESIGN R. CHECKED R.
DRAWN D.
DANIEL P. ADAMS PROJECT ENGINEER DATE

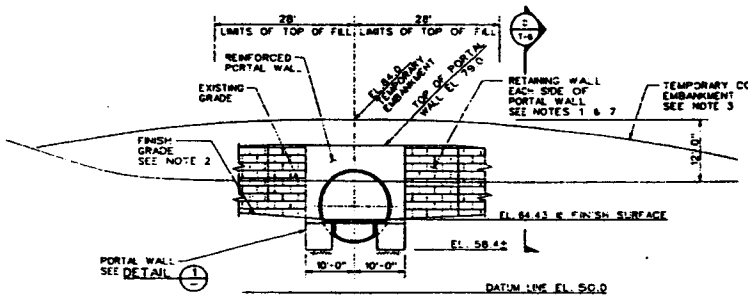
FOR PUBLIC WORKS DEPARTMENT DATE
FLOOD CONTROL ENGINEER DATE

EAST & WEST TUNNELS
FINAL LINING
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

JOB NUMBER 12825.03
SHEET T-6
4 OF 7
S.B. COUNTY T116



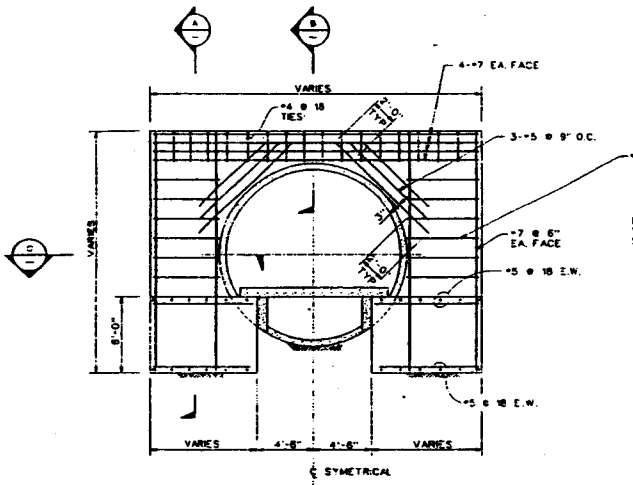
SECTION (A) NORTH PORTAL
SCALE: 1"=10'-0"



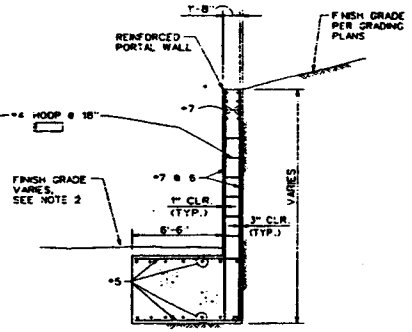
SECTION (B) SOUTH PORTAL
SCALE: 1"=10'-0"

NOTES:

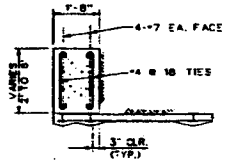
1. WALLS TO EACH SIDE OF TUNNEL PORTAL ARE SHOWN SCHEMATICALLY ONLY. REFER TO SITE GRADING PLANS FOR DETAILS.
2. FOR FINISH GRADING AND PAVEMENT REQUIREMENTS, SEE GRADING PLANS.
3. FOR DETAILS OF TEMPORARY CONSTRUCTION EMBANKMENT REFER TO SECTION D AND SEQUENCE NOTES ON DRAWING T-6.
4. ALL CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 psi AT 28 DAYS.
5. ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.
6. LAP SPLICES SHALL BE 24" FOR #5 BARS AND 42" FOR #7 BARS.
7. WHERE RETAINING WALL FOOTINGS OVERLAP INTO PORTAL WALL, FOOTINGS THE CONTRACTOR SHALL CONSTRUCT FOOTING FOR RETAINING WALL. SEE GRADING PLANS.



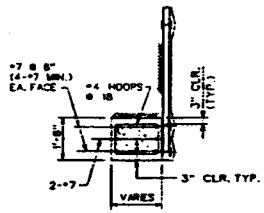
DETAIL (1)
SCALE: 1/4"=1'-0"



SECTION (A)
SCALE: 1/4"=1'-0"



SECTION (B)
SCALE: 1/2"=1'-0"



SECTION (C)
SCALE: 1/2"=1'-0"

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June10, 2002
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REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
DATE
PLANNING & DEVELOPMENT, GRADING DIVISION

DESIGN TL CHECKED SA
DRAWN JP
DANIEL L. ADAMS DATE
PROJECT ENGINEER

DATE
FOR PUBLIC WORKS DEPARTMENT

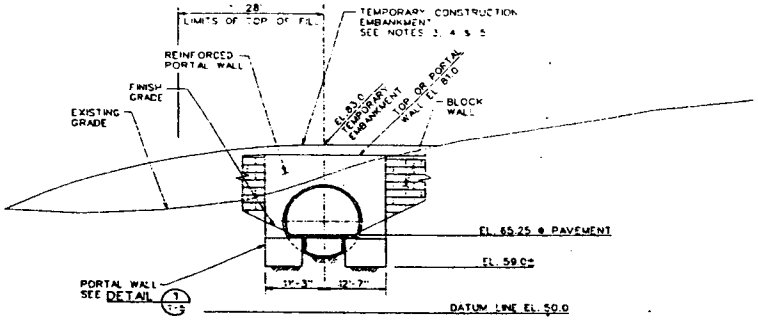
DATE
FLOOD CONTROL ENGINEER, APPROVED

Penfield & Smith
ENGINEERS • SURVEYORS
101 E. VICTORIA ST. SANTA BARBARA
(805) 963-9532
CAL. ST. 10th

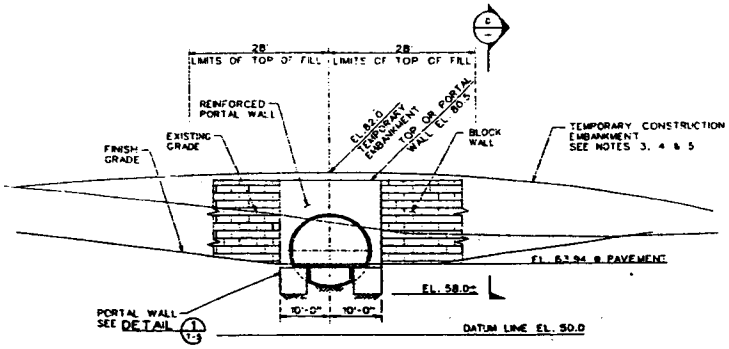
REVISIONS

WEST TUNNEL PORTALS
DETAILS & SECTIONS
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

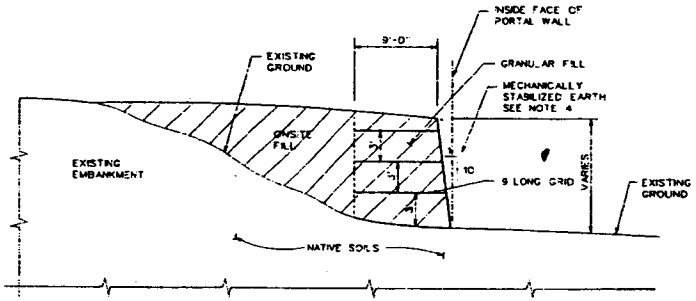
JOB NO. 12025.03
SHEET T-5
S.B. COUNTY T&E



SECTION (A/T-2) NORTH PORTAL
SCALE: 1"=10'-0"

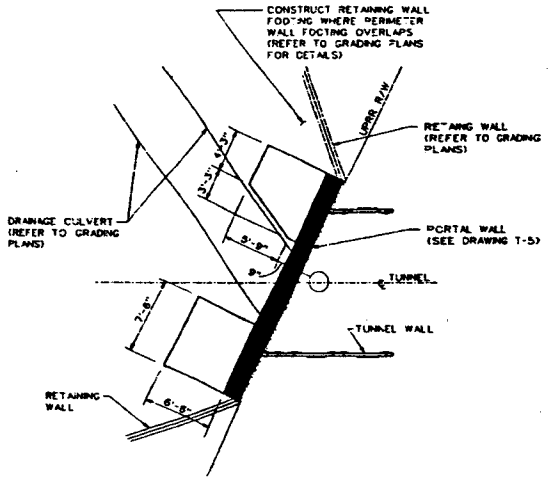


SECTION (B/T-2) SOUTH PORTAL
SCALE: 1"=10'-0"



TYPICAL PROFILE OF TEMPORARY CONSTRUCTION EMBANKMENT

SECTION (D/-)
SCALE: N.T.S.



PLAN VIEW SHOWING NORTH PORTAL WALL FOOTINGS
SCALE: 1"=5'-0"

NOTES:

1. RETAINING WALLS TO THE EAST & WEST OF TUNNEL PORTALS ARE SHOWN SCHEMATICALLY ONLY. REFER TO SITE GRADING PLANS FOR DETAILS, INCLUDING FOOTING SIZES AND BACKFILL REQUIREMENTS.
2. FOR FINISH GRADING AND PAVEMENT REQUIREMENTS, SEE GRADING PLANS.
3. PRIOR TO TUNNEL EXCAVATION, A TEMPORARY CONSTRUCTION EMBANKMENT SHALL BE PLACED OVER THE EXISTING GROUND SURFACE ABOVE THE PROPOSED TUNNEL ALIGNMENT. THE HEIGHT, WIDTH, AND LENGTH OF THE TEMPORARY EMBANKMENTS MAY VARY, HOWEVER, THE MINIMUM HEIGHT AND WIDTH SHALL BE AS REQUIRED TO MEET THE ELEVATION AND WIDTH DIMENSIONS SHOWN ON EACH PORTAL PROFILE. THE EMBANKMENT SHALL BE PLACED PRIOR TO COMMENCEMENT OF TUNNEL EXCAVATION.
4. THE TEMPORARY EMBANKMENT SHOWN IN PROFILE D-D CONSISTS OF A MECHANICALLY STABILIZED EARTH WALL. MECHANICAL STABILIZATION CONSISTS OF 9FT. LONG, CONTINUOUS TENSAR UX 1200 GRIDS PLACED @ 3FT. CENTERS VERTICALLY, AND WRAPPED OVER THE FACE OF THE EMBANKMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN AND PLACEMENT OF THE TEMPORARY CONSTRUCTION EMBANKMENT.
5. UPON SUCCESSFUL COMPLETION OF TUNNELING, REMOVE THE CONSTRUCTION EMBANKMENT AS REQUIRED TO MEET FINAL GRADING REQUIREMENTS. REFER TO SITE GRADING PLANS FOR FINISH GRADE REQUIREMENTS.

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June10, 2002
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REVIEWED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA
DATE
PLANNING & DEVELOPMENT, GRADING DIVISION

NO. | DATE | REVISIONS | APPD.

Penfield & Smith
ENGINEERS · SURVEYORS
101 E. VICTORIA ST. SANTA BARBARA
(805) 963-9532 FAX 963-9101

ROSS ASSOCIATES

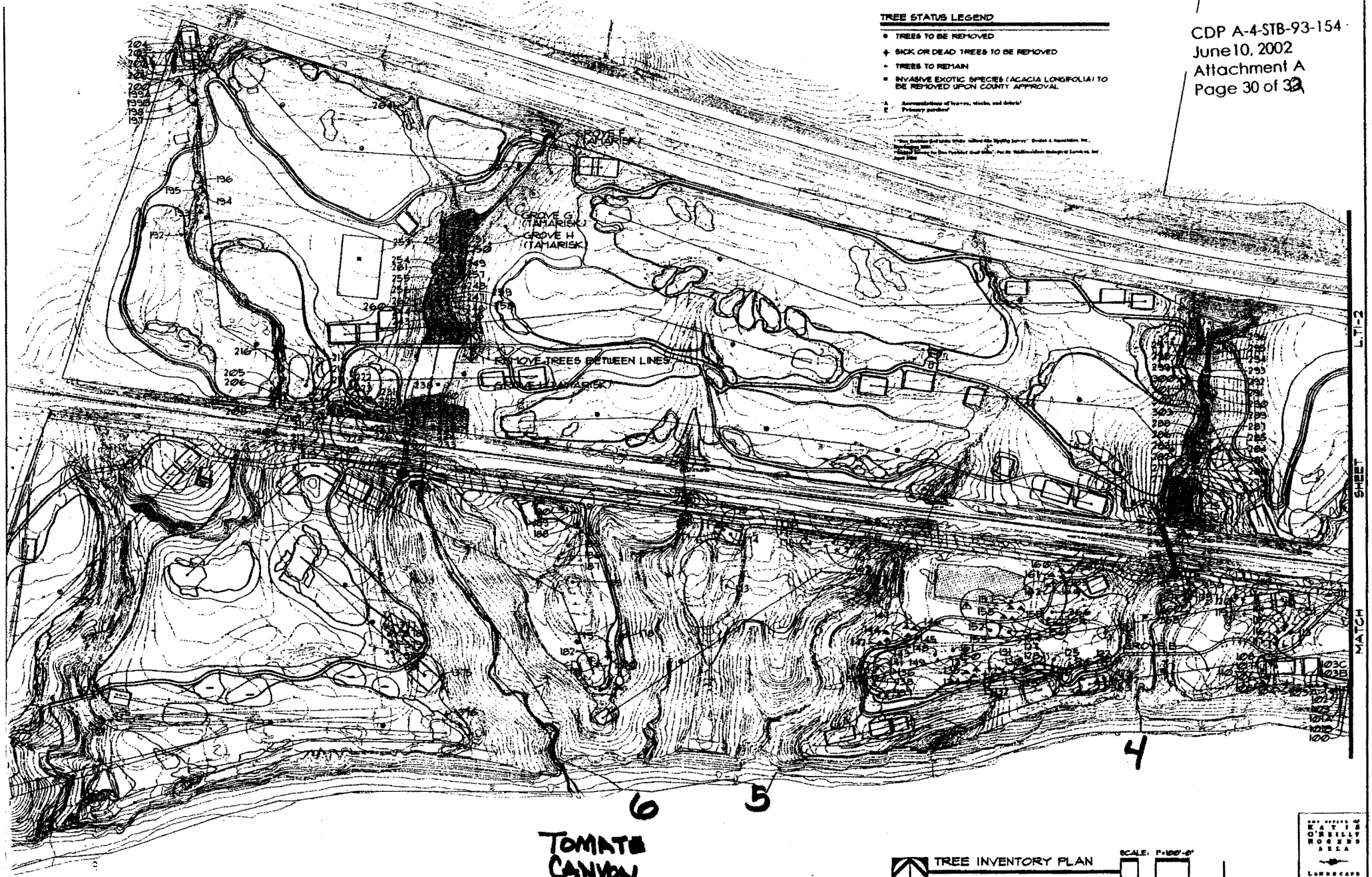
DESIGN: BR DRAWN: BP CHECKED: BR
DANIEL R. ADAMS PROJECT ENGINEER DATE

FOR PUBLIC WORKS DEPARTMENT DATE

FLOOD CONTROL ENGINEER - SURVEYOR DATE

EAST TUNNEL PORTALS
PROFILE & SEQUENCE
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

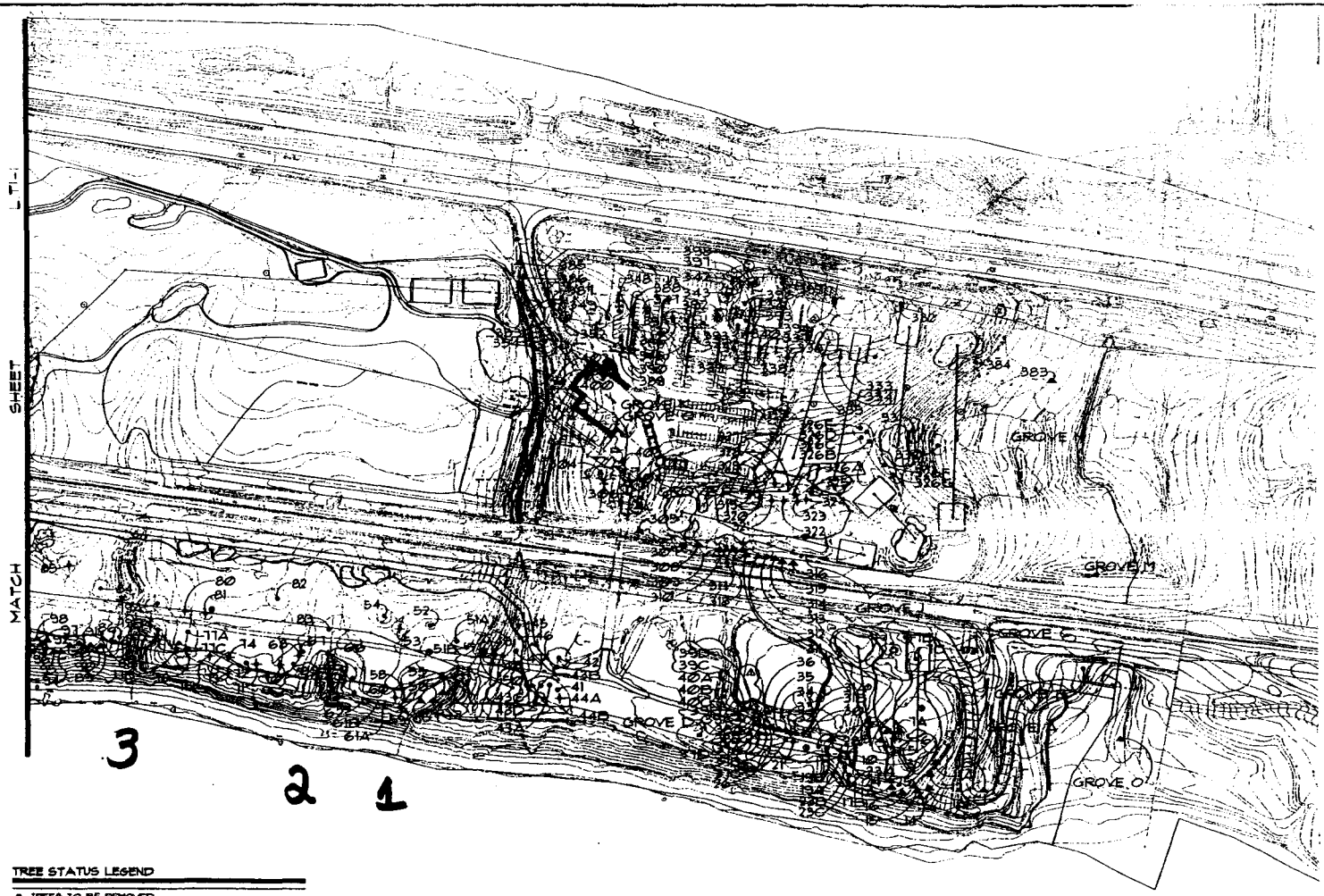
JOB NUMBER 12925.03
SHEET T-6
6 OF 7
U.S. COUNTY 7 SHEETS



TREE INVENTORY PLAN

SCALE: 1"=100'-0"

Cotton, Shires & Associates, Inc. — Civil Engineers & Land Surveyors	Penfield & Smith — Engineers & Surveyors	County of Santa Barbara, California — For Public Works Department	TREE INVENTORY PLAN — DOS PUEBLOS GOLF LINKS — Santa Barbara County, California	Job No. 12825.01 — Sheet LT-1 of 2
HOFFMAN PLANNING DESIGN	Project Engineer — Date — R.C.E. 45,823 — Exp. 12/31/98	Flood Control Engineer — Recommended — Date		



EAGLE CANYON

TREE STATUS LEGEND

- TREES TO BE REMOVED
- SICK OR DEAD TREES TO BE REMOVED
- TREES TO REMAIN
- INVASIVE EXOTIC SPECIES (ACACIA LONGIFOLIA) TO BE REMOVED UPON COUNTY APPROVAL

A Accumulations of leaves, sticks, and debris*
P Primary purchase*

* "Dos Pueblos Golf Links, White-tailed Kite Nesting Survey", Dudek & Associates, Inc., November 2001.
* Raptor Survey For Dos Pueblos Golf Links", Pacific Southwestern Biological Services, Inc., April 2002

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TREE INVENTORY PLAN SCALE: 1"=100'-0"

NORTH

KATIE O'REILLY ROGERS ASLA
LANDSCAPE ARCHITECT CA. 2988

REFERENCES:
DRAWING FILE: PL2 - 12086 DRB
DATA FILE:
PROJECT FILE:
VIEW NAME:
XREF NAME (S):
DATE: 4/20/98

NO	DATE	REVISION
1	6/28/99	HOFFMAN PLANNING DESIGN COMMENTS
2	10/5/99	COUNTY COMMENTS
3	10/15/99	PENFIELD & SMITH COMMENTS
4	2/5/98	RIVER REVISION
5	3/15/98	ROUTING CHANGE
6	4/15/98	COUNTY COMMENTS
7	5/26/98	DRIVER REVISIONS (TREES STATUS UPDATED)

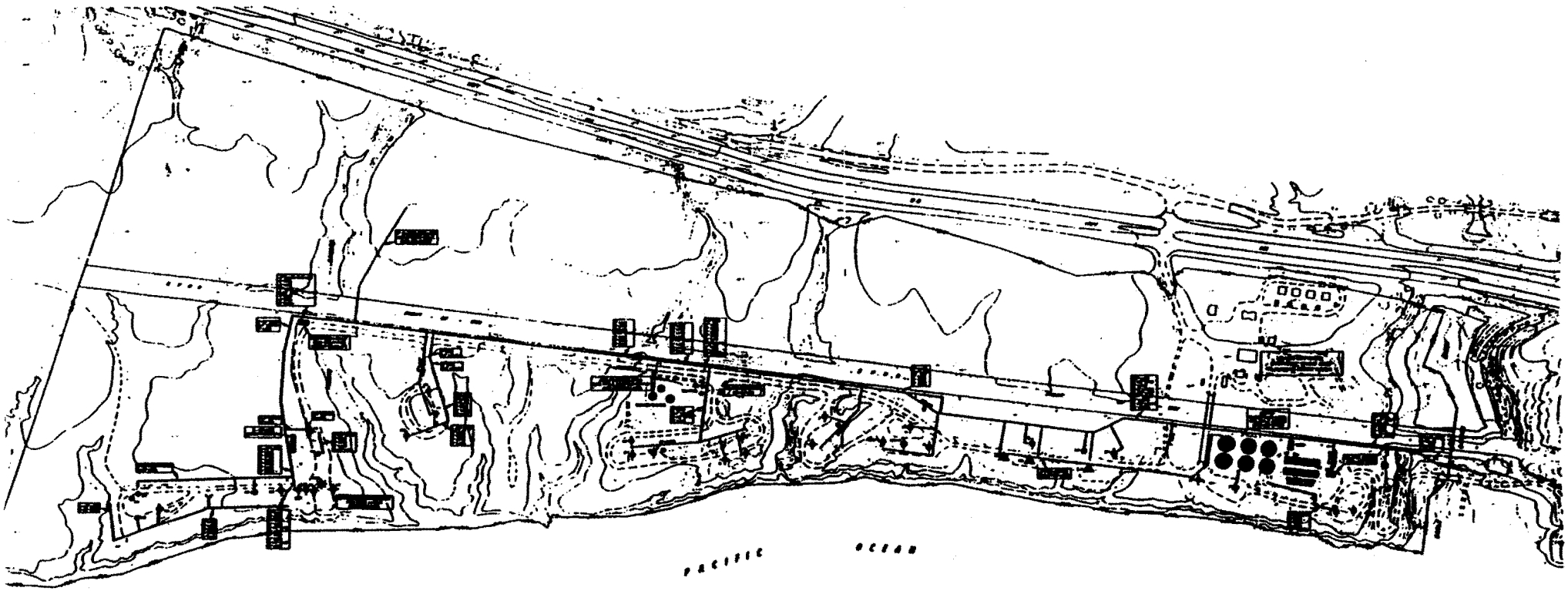
Coon & Crenshaw, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS = SURVEYORS
101 E. VICTORIA ST. SANTA BARBARA CALIF. 93101
(805) 963-9532
MAILING ADDRESS: P.O. BOX 98 (93102)
DESIGN _____ CHECKED _____
DRAWN _____
PROJECT ENGINEER _____ DATE _____
R.C.E. 45,823 (EXP. 12/31/98)

COUNTY OF SANTA BARBARA, CALIFORNIA
FOR PUBLIC WORKS DEPARTMENT _____ DATE _____
FLOOD CONTROL ENGINEER _____ DATE _____

TREE INVENTORY PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12825.01
SHEET LTI-2 of 2



Arco Oil and Gas Company
Coore & Crenshaw, Incorporated
Hoffpauir Planning Design
Interface Planning and Counseling Corporation
Lee & Sakahara Associates, AIA
R.E.P. Consulting
Larry Rodgers Design Group
P&D Technologies

LEGEND

— ABOVE GROUND PIPELINES
— BURIED PIPELINES (1'-3' BELOW GRADE, TYPICAL)

NORTH

0 400
FEET

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EXISTING FACILITIES MAP

FIGURE 3.3-

CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST AREA
89 S. CALIFORNIA STREET, SUITE 200
VENTURA, CA 93001-2801
(805) 641-0142

Filed:	09/30/93
Staff:	DSL/cm
Staff Report:	01/11/95
Revised Report:	02/06/95
Hearing Date:	11/16/94
Hearing Date for Revised Findings:	02/08/95
Final Staff Report with Revised Findings of 2/8/95 Comm. Mtg.	2/22/95 1679P
Comm. Action:	Approval with Conditions

Adopted 3/8/95 VCR

FINAL REVISED FINDINGS

LOCAL GOVERNMENT: County of Santa Barbara

DECISION: Approval

APPEAL NO.: A-4-STB-93-154

APPLICANT: ARCO Oil and Gas Company AGENT: R.W. Hollis, Jr.

PROJECT LOCATION: Naples Area, ± three miles west of Goleta, Route 1, Box 275, Goleta

PROJECT DESCRIPTION: Removal of existing oil and gas production facilities, public 18-hole and 9-hole golf course and appurtenant facilities; ±154,000 cubic yards of grading; extension of an eight inch water line ±5,200 feet from Goleta to the site; construction of a 4 acre-foot pond; and dedication, construction, operation and maintenance of various access improvements, landscaping and merger of all 23 lots into two parcels.

APPELLANTS: Surfrider Foundation

COMMISSIONERS ELIGIBLE TO VOTE: Calcagno, Cervantes, Doo, Flemming, Moulton-Patterson, Malcolm, Wright, Williams

SUBSTANTIVE FILE DOCUMENTS: Conditional Use Permit 91-CP-85; Final Environmental Impact Report for ARCO Dos Pueblos Golf Links Project, March 1993 (92-EIR); Santa Barbara County Local Coastal Program; Adopted Findings for denial of A-4-93-154 (April 1, 1994) and associated administrative record; ARCO Oil and Gas Company Request for Reconsideration; amendments to project description by applicant dated October 23, 1994 and November 14, 1994.

11-21-02

EXHIBIT NO. 4
APPLICATION NO.
~~Item:~~
COP A-4-STB-93-154 RC-A
Final Revised Findings

TABLE OF CONTENTS

EXECUTIVE SUMMARY

PROJECT AND SETTING

This appeal involves the proposal by the ARCO Oil & Gas Company to replace oil and gas facilities with two golf courses, appurtenant facilities and public access amenities on a 200 acre bluff top, ocean fronting site situated along the rural, agricultural Gaviota Coast in Santa Barbara County. The site is currently zoned AG-II. All of the soils are classified as either prime agricultural soil, or non-prime based upon the County and the Commission's soil classification. Most of the surrounding parcels are large agriculturally zoned parcels supporting a variety of farming activities, including cattle grazing, hay, and avocados on the steeper slopes.

Approximately half of the parcel has been used in the past for oil extraction and processing facilities, while the other half has remained in open space or used periodically for (dry farming and cattle grazing). The historic oil extraction and processing facilities remain largely in place. Oil production continued until 1993 and was suspended following County approval of the project. The oil and gas facilities remain operable. According to the State of California, Division of Oil and Gas Records, the site produced an average of 6,000 barrels of oil a month in 1993.

The project description has been amended by the applicant to include significant beneficial modifications to the access and habitat protection provisions originally approved by the County and to provide for the merger of the 23 parcels which make up the ±200 acre site. These modifications are responsive to the analysis which formed a part of the basis of the Commission's previous denial of the project.

BASIS OF APPEAL

The project was originally appealed by the Surfrider Foundation on the grounds that the project was inconsistent with the County's agricultural zoning requirements and agricultural protection policies, as well as the County's policies providing for the protection and provision of public coastal access, habitat protection and other issues.

STANDARD OF REVIEW

The standard of review for this appeal are the existing provisions of the County's certified Local Coastal Program, including the County's zoning requirements, and pertinent resource protection policies. Additionally, because the proposed golf course would be situated between the first road paralleling the sea and the shoreline, the project must conform with the public access and recreation policies of the Coastal Act. (Public Resources Code Section 30603 and 30604(c)).

EXHIBIT 1	SITE PHOTOGRAPH
EXHIBIT 2	CONDITIONAL USE PERMIT
EXHIBIT 3	HISTORICAL AGRICULTURAL LAND USE CHRONOLOGY
EXHIBIT 4	NOV 2, 1994 LETTER W.D. HERR
EXHIBIT 5	ACCESS PLAN
EXHIBIT 6	AUG 18, 1993 LETTER CAL TRANS
EXHIBIT 7	LAND USE POLICIES
EXHIBIT 8	STANDARD CONDITIONS
EXHIBIT 9	SANTA BARBARA COUNTY BOARD OF SUPERVISORS REVISED FINDINGS, AUG 17, 1993

LCP POLICIES AND ORDINANCES

The County Local Program designates the site as AG II, a designation used to protect agricultural lands and promote agricultural uses. Permitted uses in the AG II zone district are low intensity and predominantly agriculturally related. Non-agricultural uses are conditionally allowed under the major conditional use permit provision in the AG-II zone, but must not adversely affect neighboring or on site agricultural use or require the expansion of urban services.

County zoning does, however, include a separate ordinance which allows for a variety of uses, including golf courses, to be located in any zone district provided the appropriate findings can be made. This Major Conditional Use procedure was the one used by the County to approve this project. In order to approve this project, the findings which must be made include 1) the project is not inconsistent with the purpose of the zone district in which it will be located and 2) the project is consistent with all applicable LCP provisions.

HISTORY OF THE COMMISSION'S REVIEW OF THE PROJECT

This appeal was filed on September 17, 1993. The public hearing was opened and continued at the October 13, 1993 Commission meeting to allow adequate time to review the file materials and prepare a staff report and recommendation regarding the question of whether any substantial issues were raised by the appeal. Substantial Issue was determined by the Commission at its November 17, 1993 meeting, and the Commission took jurisdiction over the project. The de novo public hearing was continued to the next available Commission meeting. The hearing was subsequently continued at the request of the applicant to allow additional time to respond to the Commission staff's report and recommendation. On April 13, 1994, the Commission conducted a public hearing on the appeal and voted to deny the project. Subsequently, the applicant requested a reconsideration of the Commission's action, and the Commission, on July 13, 1994, voted to reconsider their previous denial. The item was re-filed and scheduled for the November hearing in San Diego. On October 14, 1994, the applicant formally amended the project to include a variety of access and habitat improvements and dedications. The project now before the Commission, therefore, includes the proposed access and habitat improvements and the findings are based on this amended version. Prior to the November 16, 1994 hearing, the applicant also amended the project description to include the merger of the twenty three lot, including 21 Naples lots, which make up the ±200 acre site. The applicant further indicated that a deed restriction to preclude future subdivision of the merged parcel would be an acceptable condition.

I. APPEAL HEARING PROCEDURES

Section 30603 (b) and 30604(c) of the Coastal Act and California Administrative Code Section 13115 provide the standard of review for projects which have been appealed and found to present a substantial issue. Section 30603(b) and 30604(c) requires consistency with the certified Local Coastal

Program (LCP), and also requires that any development located between the first public road and the sea or the shoreline of any body of water located within the Coastal Zone must conform with the public access and recreation policies of the Coastal Act.

II. STAFF RECOMMENDATION

The staff recommends that the Commission, after public hearing, adopt the following resolution:

Approval with Conditions.

The Commission hereby grants a permit for the proposed development on the grounds that the development will be in conformity with the provisions of the certified Santa Barbara County Local Coastal Program, is in conformance with the public access policies of Chapter 3 of the Coastal Act, and will not have any significant adverse impacts on the environment within the meaning of the California Environmental Quality Act.

MOTION

I move that the Commission approve the revised findings for the project (A-4-STB-93-154) as approved by the County of Santa Barbara, and as subsequently amended by the applicant on October 14, 1994 and November 14, 1994.

III. CONDITIONS

Standard Conditions. See Exhibit 7.

Special Conditions. (1S 8)

1. The project shall be subject to all conditions attached to County approval (91-CP-085) except as specifically modified by subsequent amendments to the project description. Any deviations or conflicts shall be reviewed by the Executive Director to determine whether an amendment to the Coastal Permit is required.

2. The applicant shall submit a deed restriction to the Executive Director for review and approval which irrevocably precludes the re-subdivision of the lots merged as proposed in the amended project description (amendment dated November 14, 1994). The approved deed restriction shall be recorded within sixty days of recordation of the lot merger.

   The document shall run with the land, binding all successors and assigns and shall be recorded free of prior liens and encumbrances which the Executive Director determines may affect the interest being conveyed.

IV. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. PROJECT LOCATION AND DESCRIPTION

The project as approved and conditioned by the County will be located on ±101 acres of a 202 acre bluff-top site on the Gaviota Coast approximately 3 miles west of the community of Goleta. The project consists of two golf courses; an 18-hole public course encompassing 72.4 acres; and a 9-hole course on 8 acres. The 18-hole course would have a concrete cart path servicing the entire course. An existing service road located south of the railroad right-of way bisecting the property, in addition six, short bridges would provide access throughout the parcel (Exhibit 1).

The two golf courses would be supported by the following appurtenant facilities: driving range (9.5 acres), club house, including pro shop and grill, administrative offices, meeting rooms and restrooms (9,290 square feet), a cart barn (8,012 square feet), maintenance building (7,974 square feet), service building (800 square feet), turf farm (±3 acres), half-way house, including snack bar (700 square feet), a 275 car parking area (6.8 acres), and several restrooms and shelters along the course routes. The maximum height of any building is 22 feet above finished grade. The layout of the golf courses would require crossing the Southern Pacific Railroad right-of-way three times; this will be accomplished using an existing wooden bridge, and two new tunnel crossings. All structural developments will be set back a minimum of 55 feet from the bluff edge, and except for public access trails, all other non-structural development (greens, fairways, tee-boxs), a minimum of 30 feet from the bluff edge. The entire parcel will be fenced to control access to and from the property.

The project includes a landscaping plan (in addition to installation of turf) which involves the removal of most non-native species of trees and extensive replanting with native species. All facilities are set back the required 100 feet distance from environmentally sensitive habitats, including the one stream on the east side of the property (Eagle Creek), a drainage swale on the west side of the property (Tomate Canyon), and a vernal pool.

The project requires 154,470 cubic yards of cut and and fill, over approximately 57% of the site; the cut and fill is to be balanced on site. The maximum elevation changes will occur near hole number seven and will increase the existing elevation from 50 to 75 feet; this change in elevation is the result of filling in an erosional feature on the southern side of the Southern Pacific Railroad line to accommodate the fairway for hole number seven.

In the intervening period since the project was approved by the County, the applicant has amended their proposal to include the improvement, maintenance and operation of substantial public access facilities and a program to protect

and monitor a seal haulout and rookery located on the western portion of the site. The applicant has also amended the application to provide for the merger of the twenty-three individual parcels that comprise the site.

The applicant has indicated that reclaimed water purchased from the Goleta Water District will be used to irrigate the golf courses, turf farm and for all other uses where non-potable water is acceptable. The golf courses will require ±221 acre feet of irrigation water annually. This water will be delivered to the site via a ±5,200 foot extension of an 8 inch water line from Goleta. Potable water to serve the clubhouse needs will, according to the applicant, be provided by the Goleta Water District.

Construction of the golf facilities will require the removal of the remaining, substantial oil and gas facilities which include five single family homes, 19 other buildings, 23 wells, two large tanks and miles of oil and gas pipelines. These oil and gas production facilities are located mainly on a portion of the site south of the Southern Pacific Railroad tracks. The removal of this development and any necessary clean-up will be addressed in a separate locally issued coastal permit to be processed by the County's energy division.

The golf course will be operated as a public facility from 350 to 360 days per year, and is expected to accommodate 50,000 to 60,000 rounds of golf per year on the 18-hole course, and 20,000 rounds on the 9-hole course. The County and the amended project require that conversion of any portion of the golf facilities to private or restricted use would entail additional discretionary review and approval. Approximately 32 full-time employees will be required for golf course operation and maintenance.

B. PROJECT SITE HISTORY

The project site has been in continuous use for oil and gas production for the last ±50 years. The principal oil and gas facilities are located on the south half of the project site, (seaward of the Southern Pacific Railroad lines). Most of these facilities remain on-site and operable. In the last decade a limited amount of cattle grazing has been undertaken on a seasonal basis on the property, principally as a grass/weed control measure and in conjunction with neighboring agricultural uses but has been discontinued. The site has never been a "stand alone" farm. Aerial photographs and field observation indicate that its occasional use for dry farming (hay) and grazing has always been as an adjunct to the neighboring ranch.

The site was originally given a Coastal Dependent Industry (M-CD) land use and zoning designation in the Santa Barbara County LCP, which was certified in 1982. This designation was largely based upon the existing industrial facilities on the site, and the long-standing use for oil and gas production dating from the mid-1940's. In 1991, however, the site was redesignated and re-zoned Agriculture II (AG-II) at the County's request as part of major Amendment 3-90 which consolidated oil and gas facilities sites to other

locations within the South Coast Consolidation Planning Area. This redesignation and re-zone to Agriculture was precipitated by the County's desire to consolidate the energy facilities along the Gaviota coast into two sites over time.

The County considered several possible land use designations, including, Recreation (REC), Rural Residential (RR), Resort/Visitor Serving Commercial (C-V), and Resource Management (RES). The EIR prepared for the energy facilities consolidation amendments identified Resource Management as the designation most protective of coastal resources, but also identified numerous trade-offs between the various potential land-use/zoning designations. In an attempt to balance these trade-offs, the EIR proposed a split between AG-II and REC which would provide a balance between these uses. Ultimately, the County choose to designate/rezone the entire parcel as AG-II, and the Commission certified the designation as consistent with the agricultural protection policies of the Coastal Act.

At the time the Commission considered Amendment 3-90, the ARCO representatives indicated to the Commission that it was their intention to develop the site, once its oil and gas operations had ceased, as a golf course, and expressed an interest in having the property designated Recreation (REC) to accommodate such a use. The EIR for the 1990 re-zone and LCP amendment had recommended a split Recreation/Agriculture re-zone for the subject parcel. The County, however, did not support the Recreational designation at that time because of the wide range of recreational uses allowed under a Recreational designation, and the potentially greater impacts (e.g., traffic, etc.) which might be generated by a high intensity recreational use, such as a recreational vehicle park, under the County's existing LCP Land Use Plan Recreational designation.

At the time the Commission re-zoned the subject parcel from M-CD to Agriculture, the County did, however indicate that it was not their intent to preclude some future non-agricultural use of the site. Specifically, the County indicated that an evaluation of a future golf course project "should be based on its own merits at the time of proposal." It should be emphasized that the County itself recognized that a non-agricultural use of the site must be evaluated on a case by case basis for conformity with the applicable provision of the County's certified Local Coastal Program.

At the time the Commission considered Amendment 3-90, no specific proposal for a golf course had been developed that would allow either the County or the Commission to evaluate the specific relative impacts of a golf course versus agricultural uses, or other recreational uses. However, in certifying the Agricultural land-use and zoning designation for the property the Commission acknowledged the intent of ARCO to develop a golf facility on the site, and specifically indicated that its action to redesignate the land as Agriculture was not meant to preclude the possible future use of the site for a golf facility as described in the following excerpt from the findings prepared for the amendment.

"It should be noted that ARCO has discussed with the County a proposal for the construction of a golf course as part of the Dos Pueblos site. At this time, that proposal has been discussed in concept only and no specific detailed golf course project has been submitted to the County for review. The County's decision to change the land use designation to Agriculture II, versus the split designation of Recreation/Agriculture II, is not intended to bias any future specific golf course project which ARCO may propose for this site, even if it requires a change in the land use designation. Rather, the County believed it was premature, at this time, to make the decision that a Recreation land use designation was the most appropriate designation for the site without having the specific merits of the proposed golf course project and its potential impacts to the site to fully evaluate. It should also be noted that a golf course is a conditionally permitted use in the County's LCP in the AG-II zone ..."

C. LOCAL GOVERNMENT ACTION

In August 17, 1993, the County Board of Supervisors issued a Conditional Use Permit (#93-CP-85) for the two 18 and 9 hole golf courses and appurtenant facilities as described above. The Conditional Use Permit contained a number of Special Conditions. Those relating to the issues raised in this appeal include: (a) a Biological Enhancement Plan to address specific environmental resources on the site (e.g., Harbor seals, Monarch Butterfly, vernal pools, and riparian tree species); (b) Restricted Access Implementation Plan for the protection of a Harbor seal haul-out site adjacent to the project site; (c) an Access Plan that requires offers-to-dedicate both lateral and vertical access trails and initial trail improvements; (d) a Landscaping Plan to replace loss of existing trees; and (e) an Integrated Pest Management Plan to control the use of pesticides and herbicides. (Please see Exhibit 2, County Permit conditions.)

D. LCP PROCEDURAL REQUIREMENTS

The County has essentially three options for permitting a major golf course proposal on an agriculturally zoned parcel: (1) rezone the parcel from AG-II to Recreation (or create a new zone to accommodate golf courses or other similar recreational uses) and, following certification of the rezone amendment, process an application for a Coastal Development Permit; (2) modify the existing permitting requirements under the Major Conditional Use Permit process in (Sec. 35.69.4 of the certified LCP) to remove some of the procedural requirements, and following certification of these amendments, process an application for a Coastal Development Permit; or (3) retain the present AG-II land use and zone designation, and process an application for a Coastal Development Permit for the proposed golf course using the Major Conditional Use Permit process which provides for the consideration of a variety of uses in all zone districts (Sec. 35.172.5), and make all of the findings required under this provision.

In this case, the County chose to process the application according to scenario three described in the previous paragraph, rather than rezoning the parcel to either an existing, or newly created non-agricultural zone designation, or modifying current permitting requirements by Amendment to the LCP.

The County processed the application for a Major Conditional Use Permit under the provisions of Section 35-172.5.2 of the County's LCP Zoning Ordinance. Section 35-172.5 of the County's LCP provides for a variety of institutional, public service and recreational uses that may be permitted in any zone district subject to a use permit.

> The following uses may be permitted in any district that they are not otherwise permitted, with a Major Conditional Use Permit:
>
> a. Airstrip - temporary
> b. Animals, use of property for animals different in kind or greater in number than otherwise permitted in this Article
> c. Cemetery
> d. Church
> e. Drive-through facilities for a use otherwise permitted in the zone district subject to the provisions of Sec. 35-172.11
> f. Educational facilities, including nursery schools and day nurseries
> g. Electrical substations subject to the district requirements of the Public Utilities District, Sec. 35.88
> h. Electrical transmission lines, except in areas with the View Corridor Overlay subject to the provisions of Sec. 35-172.11
> i. Eleemosynary and philanthropic institutions (except when human beings are housed under restraint)
> j. Extraction, processing, storage, bottling, selling and shipping of natural waters.
> k. Fairgrounds
> l. Golf courses and driving ranges
> m. Helistops
> n. Master television antennae system subject to the provisions of Sec. 35-172.11
> o. Mining, extraction and quarring of natural resources, except gas, oil and other hydrocarbons subject to the provisions of Sec. 35-177 (Reclamation Plans)
> p. Polo fields and playing fields for outdoor sports
> q. Rodeo
> r. Sea walls, revetments, groins and other shoreline structures subject to the provisions of Sec. 35-172.11
> s. Stable, commercial (including riding and boarding)

Most zoning ordinances contain comparable provisions to maximize opportunities for siting these types of uses. The fact that they are allowed for consideration as a use in all zone districts does not, however, mean that they are exempt from the requirements of the particular zone district in which a

project proponent may wish to locate a development, or that all of the uses are appropriate in all zone districts. As an example, a cemetery may be a completely compatible use in a rural residential area on a large parcel of land, but would not be appropriate on a half-city block site in a downtown location.

Among the enumerated findings required by Section 35.172.8 are two which are critical to a review of the proposed golf facilities in this location:

> 6. That the project is in conformance with the applicable provisions and policies of this Article [LCP Zoning & Implementation Ordinance/ and the Coastal Land Use Plan].
>
> 9. That the proposed use is not inconsistent with the intent of the zone district.

As detailed in the following section, the Commission finds that the proposed project, as approved by the County and subsequently amended by the applicant, is consistent with these requirements. In addition, the County has adopted findings which address the remaining items found in Sec. 35.172.8 as well as other provisions of the LCP not specifically discussed in these findings. To the extent that the County's findings and conditions do not conflict with the Commission's, they are adopted as further support for the Commission's decision. (Please see Exhibit 9)

E. COASTAL AGRICULTURE

1. INTRODUCTION

The project site is located between Highway 101 and the sea on the eastern end of the Gaviota coast approximately ±2400 feet from the western/urban rural boundary along the south coast of Santa Barbara beyond the unincorporated town of Goleta. The site is comprised of twenty-three lots which range in size from 1/4th acre to 78 acres. For the past ± 50 years, the ±200 acre site has been used for gas and oil production. Most of the structures and wells associated with this use remain, but will be removed to accommodate the project. The Southern Pacific Railroad bisects the site from east to west.

Soils on the site include ±60 acres of Class II Diablo Clay as well as non-prime agricultural soil. The Class II prime soils, however, occur in 16 disjunct patches located on various individual parcels and separated by drainage swales, slopes, environmentally sensitive habitats, railroad tracks and oil facilities. These isolated patches of prime soil vary in size from ±17 acres to ±8000 square feet with most areas under 2 acres.

Although there has been past agricultural use of portions of the site (dry farming and cattle grazing), it has been very sporadic and conducted in conjunction with the larger, on-going farming operation on the neighboring

Rancho Dos Pueblos. (Please see Exhibit 3 for past agricultural history of the site). As an added constraint, this site, unlike neighboring agricultural operations, does not have any on-site water for irrigation.

Land uses in the vicinity of the project site include grazing lands to the north and west and orchards (avocado and citrus) approximately 3/4 mile to the northwest, inland of Highway 101. An undeveloped 40 acre rural residential parcel subdivision (40 ac. minimum lot size) bounds the site on the east. The Hyatt Hotel site lies further to the east towards Goleta and marks the urban/rural boundary in this area. The undeveloped Naples area occupies a portion of the site and extends west and north of the site.

2. LCP SUBSTANTIVE REQUIREMENTS

In order to find that the proposed project is consistent with the relevant agriculture policies and implementing ordinances of the LCP, the following standards must be met:

1) The project is not inconsistent with the intent of the underlying Zone District (Section 35.172.8.9, Zoning Ordinance).

2) The project is in conformance with the applicable provisions of the LCP (policies and zoning) (Section 35.172.8.6, Zoning Ordinance).

The following analysis discusses why the proposed project can be found to be not inconsistent with the intent of the Agricultural Zone District in which it will be located and with the applicable agricultural protection policies and ordinances of the certified LCP.

THE PROJECT IS "NOT INCONSISTENT" WITH
THE PURPOSE OF THE AG II ZONE DISTRICT

The underlying zone district of the project parcels is AG II. The purpose of the zone district, as stated in the ordinance, is two-fold.

1) To establish agricultural use for large parcels with prime and non-prime land.

2) To preserve prime and non-prime soils for long term agricultural use.

The first purpose of the AG II District as stated in the ordinance is to establish agricultural uses on large parcels which contain prime and non-prime agricultural soils. ARCO has proposed to merge the 23 lots which comprise the ±200 acre site. The proposed merger of the 23 lots on the site into two parcels of roughly 100 acres each will serve to support the underlying intent of the AG II zone by consolidating small holdings into parcels compatible with

an agricultural use. At present the developability of the 23 lots is uncertain. Without the merger, according to to the certified LCP, if each of these lots could be developed with a single-family home, a residential density for the site of one dwelling unit per 10 acres could result. The proposed non-agricultural use is not inconsistent with the intent of the ordinance to establish agricultural uses on the large holdings more typical of the Gaviota Coast.

The Commission further notes that the establishment of an agricultural use or uses would be very difficult because of existing conditions such as the scattered distribution of prime soils, lack of water for irrigation and the inherent conflicts due to the permitted residential density if each parcel was developed with a single family home.

The proposed project is also not inconsistent with the second goal of the AG II District, which is to preserve prime and non-prime soils for long term agricultural use. Golf courses, unlike most non-agricultural development, result in minimal site coverage (in this case only 4 1/2 acres of the land will be built on or paved*) and need good soil to operate. The applicant indicates that all prime soils will be stockpiled during the initial grading process. These soils will be amended to improve fertility and re-distributed on the site to serve as the growing medium for the course turf. Because healthy turf is essential to a golf course, the soils will be maintained in proper condition and irrigated. Furthermore, a pest management plan will be prepared and implemented to assure the proper use of pesticides, herbicides and fertilizers. Thus, although the use will not be agricultural, the agricultural soils on the site, with the exception of the minimal areas covered by buildings and paving will be retained and possibly enhanced consistent with potential agricultural uses.

In the alternative, the site could be returned to oil and gas production without any additional permits or potentially developed with twenty-three single family homes and attendant road improvements. Under either of these scenarios, greater site coverage would occur and there would be no inducement to maintain or improve the existing agricultural soils found on the site. The proposed project is, therefore, not inconsistent with the goal to preserve prime and non-prime soils.

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* This coverage includes all buildings, parking lot, access trails and cartpaths.

THE PROJECT IS IN CONFORMANCE WITH ALL APPLICABLE LCP PROVISIONS

LUP POLICY 8-2 This policy is applicable to the project because it directly addresses the issue of conversion of land designated for agricultural use posed by the development.

POLICY 8-2: If a parcel is designated for agricultural use and is located in a rural area not contiguous with the urban/rural boundary, conversion to non-agricultural use shall not be permitted unless such conversion of the entire parcel would allow for another priority use under the Coastal Act, e.g., coastal dependent industry, recreation and access, or protection of an environmentally sensitive habitat. Such conversion shall not be in conflict with contiguous agricultural operations in the area, and shall be consistent with Section 30241 and 30242 of the Coastal Act.

This policy allows the conversion of agricultural land if the following three criteria can be met:

1) The replacement use must be a priority use under the Coastal Act.

2) The conversion must not conflict with nearby agricultural uses in the area.

3) The conversion must meet the criteria of PRC 30241 (prime soils) and 30242 (non-prime soils)

THE PROJECT PROVIDES FOR TWO COASTAL ACT PRIORITY USES

According to PRC Section 30001.5(c), and 30210, public access to and along the shoreline is one of the highest priorities of the Coastal Act. Likewise, the preservation and protection of environmentally sensitive habitats receives a high ranking (PRC 30240). Although the protection of coastal agricultural lands is an important Coastal Act goal as evidenced by the strong resource protection policies of PRC Sections 30241 and 30242, this land use may, in this case, according to the LCP, be displaced by public access to the shoreline or the need to preserve an environmentally sensitive habitat. As discussed in detail in the respective findings on Environmentally Sensitive Habitats and Public Access, the project as amended by the applicant, includes significant access and habitat protection components of a magnitude sufficient to allow for the development of the proposed non-agricultural use on half of the site.

THERE ARE NO CONFLICTS WITH
CONTIGUOUS AGRICULTURAL OPERATIONS

To the east, the project site borders the Eagle Canyon Ranch, which has an LUP designation of rural residential with 40-acre minimum parcel sizes. The closest operating ranch is within 1/4 mile to the west of the project site. The Commission finds that because the maintenance activities proposed in

connection with the golf course are similar to those of agriculture, no operational conflicts will occur with respect to the neighboring cattle operation west of the site.

An important issue raised by the application is whether approval of the project will create an adverse precedent or threat to agricultural lands on the Gaviota coast. The Commission finds that, as conditioned, this particular golf course project will create no such adverse precedent or threat because no site on the Gaviota coast shares all the same characteristics of the applicant's property.

The site has been an operating oil field for the past 50 years. It was rezoned from Coastal Dependent Industry to AG-II only recently, with the understanding that a golf course use was being proposed for the property. The property contains 23 Naples lots totalling 65 acres, or approximately 1/3 of the project site, the development potential of which would be extinguished by the project. The project would replace the existing oil and gas facilities with a public golf course, substantial public beach access and a coastal trail system. The Class II Diablo Clay soils on site are located in small isolated pockets, separated by site features such as railroad tracks, vegetated drainages, environmentally sensitive habitat areas and grassland. The property has never been a "stand alone" agricultural operation, has no commercial agricultural irrigation water supply, and would utilize reclaimed water under a County condition which prohibits any water service from the reclaimed water line to any parcel other than the project site. The Commission further notes that the project is located at the extreme southernmost end of the Gaviota Coast, within approximately 2000 feet of a Commission-approved resort hotel, the Hyatt, and within 1/3 mile of the urban/rural boundary.

THE PROJECT IS CONSISTENT WITH THE STANDARDS OF PRC 30241 AND 30242

The proposed use must, however, also comply with the standards found in PRC Sections 30241 and 30242 if these are found applicable to the project. These criteria are as follows:

Section 30241.

The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas agricultural economy, and conflicts shall be minimized between agricultural and urban land uses through all of the following:

(a) By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban land uses.

(b) By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses or where the conversion of the lands would complete a logical and viable neighborhood and contribute to the establishment of a stable limit to urban development.

(c) By permitting the conversion of agricultural land surrounded by urban uses where the conversion of the land would be consistent with Section 30250.

(d) By developing available lands not suited for agriculture prior to the conversion of agricultural lands.

(e) By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality.

(f) By assuring that all divisions of prime agricultural lands, except those conversions approved pursuant to subdivision (b), and all development adjacent to prime agricultural lands shall not diminish the productivity of such prime agricultural lands.

Section 30242.

All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (1) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.

PRC Code 30241 requires that the maximum amount of prime agricultural land shall be maintained in agricultural production. The purpose of this policy is clearly to preserve and maintain valuable, prime agricultural holdings in order to avoid the wholesale loss of an area's agricultural economy through attrition. The statute does not require that the holding be continuously in production, but must have the potential to be feasibly farmed. While prime soils are certainly a factor in making the determination regarding the farmability of agricultural land, other, site specific criteria must also be considered.

In the case of the proposed project, the ±200 a.c. site does contain ±60 acres of prime Diablo Clay soils. An initial analysis would indicate that a 200 acre site which is 30% prime soil would generally be of an adequate size to be

ner chose to do so. This initial analysis is
nd adjacent to the ARCO site on the west and,
is in agricultural production.

sed by project opponents that the land was
e facts of the subject site distinguishes its
hat of neighboring ranches. The prime soils on
een separate areas. The largest single
±17 acres with most patches being under ±2 acres
s no on site water for irrigation. Given these
e site for the proposed golf course does not have
mmercially and thus the requirements of PRC
this project.

n-prime agricultural land by limiting the
requiring that any permitted conversions not
ricultural uses. Applying the same analysis as
iscussion regarding PRC 30241, it is apparent
uncertainties inherent in this site could result
o small to be farmed.

that the proposed project will not adversely
al uses and may provide some modest benefits.
ble with agriculture than many other types of
cause they are low in intensity, need minimal
ter soil maintenance using practices similar to
ners and growers. This particular golf course
efits to agriculture in the area because its
ll preclude the development of a twenty-three
cent to existing agricultural uses. As
restriction to preclude future subdivision and
of the merger will be retained, the project is
rement to avoid adverse impacts on surrounding
ct will also free up the rights to 40 acre feet
Rancho dos Pueblo. Currently, the site is
cre feet of water per year from this adjoining
ion submitted by the applicant, this entitlement
, but can only be used to support the industrial
laced. (Please see Exhibit 4 letter of Nov. 2,
David Fainer). Presumably, this water will then
ultural activities elsewhere on the Gaviota
noted that development of the project will not
tural use. The project will, however, result in
al use, oil and gas production to a recreational

proposed project is consistent with County
designated for Agriculture because the conversion
ion is permitted by the LCP, the lack of water,

the existing lot pattern coupled with the inability to unilaterally merge the parcels results in a lot size and development potential which would make farming very difficult and the project will not adversely affect surrounding agricultural lands.

F. PUBLIC ACCESS

1. INTRODUCTION

The proposed project will be located on a blufftop site with ±1.5 miles of ocean frontage. This section of the coast is bounded on the landward side by sheer bluffs approximately 100' in height bordered by short, narrow pocket beaches. The closest existing public access points are ±3 miles up-coast at El Capitan Beach State Park and ±6 miles downcoast at Isla Vista.

A primary benefit of the project is a comprehensive access program which will give the public undisputed use of the shoreline and also provide a trail system. The access provided by this project is particularly important because, although the Gaviota Coast offers many areas suitable for public, coastal recreation, much of the shoreline is unavailable to the public due to large, private holdings between the highway and the sea. Most of the large holdings are fenced and beach-goers attempting to cross the sites are viewed as trespassers by the property owners. The project also ensures that all golf facilities will be open to the public. The golf courses are expected to provide approximately 80,000 rounds of golf per year, thus giving golfers as well as beach visitors, hikers and surfers access to and along the shoreline.

Even though the ARCO site has been fenced, there is however, historic evidence that surfing enthusiasts in particular have used this site to gain access to two, well known surf breaks known as "Naples" and "Naples Reef." The appellants of this project have provided copies of the 1963 Surfers Guide to Southern California as evidence of the public's long term use of trails across the site to gain access to these surfing areas. In addition to surfers, there is also evidence of the use of the trails by hikers and beach visitors.

Trails across the parcel are visible in the aerial photos taken in April of 1986 and March of 1987 and on file in the Commission's Ventura office. The use of these surfing destinations also was observed by County staff during site visits conducted as part of the County's review of the project. Further evidence of historic and current use of the site to gain access to the adjoining beaches is indicated by the existence of worn trails to the beaches observed by the Commission staff during its analysis of the appeal. The County's administrative record for this project also includes testimony on the part of the the appellants of the use of the property to gain access to the beaches along this section of the coast.

In opposition to the appellants contention that historic public access has, and continues to occur on the site, the applicant has offered affidavits from oil company personnel for the period from the mid-1940's to the present which

indicate that a continuous and effective effort has been made over the years to exclude trespassers from the site. Evidence supplied by the applicant also shows that the site has been fenced and signed for "No Trespassing" during this same fifty year period.

It is thus unknown whether the historic public use has been sufficient to override the property owner's efforts to exclude the public, therefore giving rise to a prescriptive right of access or, conversely, if the owner's security program has effectively stymied the perfection of such a right. In any event, the Commission is not required to resolve this issue because the project description has been amended to provide extensive public access through the site to and along the shoreline. The access component provides for physical improvements, operation and maintenance as described in the following section.

2. PROPOSED REVISED ACCESS PROGRAM

The original access provisions approved by the County as part of the Conditional Use permit for this project have been modified by the applicant to address the access issues identified in the original staff recommendation for denial of the project. The principal change in the proposed access program is the applicant's offer to construct, operate and maintain the public accessways on a permanent basis, concurrently with the operation of the golf facilities.

The project now includes a significant access component in addition to the requirements contained in the County's Conditional Use Permit. The following items (1-5) constitute the applicant's proposal for the establishment and maintenance of public access on the site.

1. Agree to Improve, Operate and Maintain Public Access Facilities

Prior to the issuance of a coastal development permit, the applicant shall enter into an agreement with the Coastal Commission and the County of Santa Barbara, or other public or non-profit entity acceptable to the Executive Director, wherein the applicant agrees to irrevocably offer to dedicate, improve, operate and maintain all public access features of the development. The agreement shall be in the form and content acceptable to the Executive Director and shall include the following provisions:

a. Prior to issuance of the coastal development permit, the applicant shall comply with all requirements for dedication of public accessways contained within conditions 7, 8 and 16 of the County of Santa Barbara's conditional use permit No. 91-CP-085, approved August 17, 1993. All offers of dedication required therein shall be in the form of grants or access easements in favor of the People of the State of California and shall include legal descriptions of both the entire parcel and the easement areas.

b. Prior to issuance of the coastal development permit, the applicant shall submit, for the review and approval of the Execuitve Director, detailed plans for construction of the public access improvements required by conditions 7, 8, and 16 of the County Santa Barbara conditional use permit No. 91-CP-085, approved August 17, 1993. Any deviation from the Executive Director-approved plans shall be reported to the Executive Director. Any changes that the Executive Director determines to be substantial shall require an amendment to the coastal development permit.

c. The applicant shall be financially responsible for completion and construction of all public access improvements required by conditions 7, 8, and 16 of the County of Santa Barbara conditional use permit No. 91-CP-085, approved August 17, 1993.

d. Prior to the issuance of the coastal development permit, the applicant shall submit, for the review and approval of the Executive Director, in consultation with the California Department of Fish and Game, and the National Marine Fisheries Service, a Restricted Access Implementation Plan for the purpose of ensuring protection of the on-site harbor seal haul-out. The plan shall include the following provisions:

1. During the seal pupping/breeding season (February 1 to May 31): (a) access to the beach at the vertical coastal access point at Eagle Canyon shall be prohibited, and (b) access eastward along the beach from the vertical coastal access point west of Tomate Canyon shall be prohibited.

2. Locking gates shall be installed at the vertical access trails to implement any restrictions on access to the beach under the Restricted Access Implementation Plan.

3. No dogs shall be allowed on the vertical access trails or on the beach.

4. Signs informing users of access restrictions and relevant Marine Mammal Protection requirements shall be posted at the golf course parking lot, at the bridge stairway to the coastal access trail, at the terminus of the trail at Eagle Canyon, at the terminus of the vertical access trail west of Tomate Canyon and, if allowable, on the beach bluff east and west of the haul-out area. Interpretive signing shall also be provided at these locations. The content of the interpretive signs shall be subject to the review and approval of the Executive Director.

Signs informing users of alternative access locations during restricted access periods shall be posted at the golf course parking lot and at the bridge stairway to the lateral access. The content of such signs shall be subject to the review and approval of the Executive Director.

5. The Restricted Access Implementation Plan shall include a monitoring component (such as provision of an on-site monitor/course steward) to assure that the above restrictions are enforced and that the seals are not being harassed.

6. The Restricted Access Implementation Plan shall include provisions for the harbor seal haul-out to be monitored by the National Marine Fisheries Service (NMFS) and/or the California Department of Fish and Game (DFG) for the purpose of determining the effect of use of the public access features of the development on the seals. If NMFS or DFG determines that the harbor seals are being deterimentally affected by users of the vertical accessways, the applicant shall see an emergency coastal development permit from the California Coastal Commission to further regulate use of the vertical accessways to avoid jeopardizing the harbor sea. Approval of such additional access reegulation shall be consistent with all applicable provisions of the certified County of Santa Barbara Local Coastal Program, the California Coastal Act, and the Federal Marine Mammal Protection Act.

e. Construction of all public access features required by conditions 7, 8, and 16 of County of Santa Barbara conditional use permit No. 91-CP-085, approved August 17, 1993, shall be completed prior to issuance of an occupany permit from the County of Santa Barbara, except that completion of lateral trail improvements west of the Tomate Canyon vertical accessway may be deferred until final alignment of the Coastal Trail has been established by the County of Santa Barbara.

f. The applicant shall provide for the permanent operation and maintenance of all public access improvements required under conditions 7, 8 and 16 of County of Santa Barbara conditional use permit No. 91-CP-085, approved August 17, 1993, including the on-site public access monitor/course steward required to enforce access regulations of the Restricted Access Implementation Plan required above.

The agreement shall include a legal description of the affected property and shall be recorded free of prior liens and any other encumbrances which may affect the terms of the agreement. The agreement shall run with the land for the benefit of the People of the State of California, binding all successors and assignees for the life of the golf facility approved in the coastal development permit.

2. Compliance with County of Santa Barbara's Conditions of Approval

Except as explicitly modified by the terms of the coastal development permit, all development shall comply with the conditions of the County of Santa Barbara conditional use permit No. 91-CP-085, approved August 17, 1993. Any deviations or conflicts shall be reviewed by the Executive Director ofthe Commission to determine whether an amendment to the coastal development is required as a result.

3. Public Rights

By acceptance of a coastal development permit, the applicant acknowledges, on behalf of itself and its successors in interest, that issuance of the permit shall not constitute a waiver of any public rights which may exist on the property. The applicant shall also acknowledge that issuance of the permit and construction of the permitted development shall not be used or be construed to interfere with any public prescriptive or public trust rights that may exist on the property.

4. Assumption of Risk

Prior to the issuance of the coastal development permit, the applicant shall execute and record a deed restriction, in a form and of content acceptable to the Executive Director, which shall provide that: (a) the applicant understand that the site may be subject to extraordinary hazard from storm waves, and (b) the applicant hereby waives any future claims of liability against the Commission or its successors in interest for damage from such hazards. The document shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens.

5. Public Availability of Facilities

Prior to issuance of the coastal development permit, the applicant shall execute and record a deed restriction, in a form and content acceptable to the Executive Director, which provides: (1) that all recreational golf facilities, including the clubhouse, will be open to the general public; (2) that, except for occasional tournament play, no club arrangement that would restrict use of the golf course by the general public shall be permitted; and (3) that conversion of any portion of the facilities to private or members-only use, or the implementation of any program to allow extended or exclusive use or occupany of the facilities by an individual or limited group or segment of the public is specifically not authorized and would require an amendment to the coastal development permit or a new permit and/or amendment to the certified LCP in order to be effective. The document shall be recorded free of prior liens which the Executive Director determines may affect the interest being conveyed, and free of any other encumbrances which may affect said interest. The deed restriction shall run with the land in favor of the People of the State of California, binding all successors and assigns, for the life of the facility approved in the coastal development permits.

3. LCP AND COASTAL ACT SUBSTANTIVE REQUIREMENTS

The standard of review for projects, such as this one, located between the first public road and the sea, is in conformance with both the certified LCP and the public access and recreation policies of the Coastal Act. For the reasons detailed in the following sections, the Commission finds that the project, as amended by the applicant on October 14, 1994, is consistent with the public access and recreation requirements of both the Certified Santa Barbara County LCP and the relevant access policies of the Coastal Act.

ACCESS PROVISIONS ARE CONSISTENT WITH THE POLICIES AND IMPLEMENTING ORDINANCES OF THE LCP

The Certified LCP contains the following access policies and implementing ordinance applicable to the ARCO project:

Policy 7-1 stipulates that:

> The County shall take all necessary steps to protect and defend the public's constitutionally guaranteed rights of access to and along the shoreline. At a minimum, County actions shall include:
>
> a) Initiating legal action to acquire easements to beaches and access corridors for which prescriptive rights exist consistent with the availability of staff and funds.
>
> b) Accepting offers of dedication which will increase opportunities for public access and recreation consistent with the County's ability to assume liability and maintenance costs.
>
> c) Actively seeking other public or private agencies to accept offers of dedications, having them assume liability and maintenance responsibilities, and allowing such agencies to initiate legal action to pursue beach access.

Policy 7-2 stipulates that:

> For all development* between the first public road and the ocean granting of an easement to allow vertical access to the mean high tide line shall be mandatory unless:
>
> a) Another more suitable public access corridor is available or proposed by the Land Use Plan within a reasonable distance of the site measured along the shoreline, or
> b) Access at the site would result in unmitigatable adverse impacts on areas designed as "Habitat Areas" by the Land Use Plan, or

c) Findings are made, consistent with Section 30212 of the Coastal Act, that access is inconsistent with public safety, military security needs, or that agriculture would be adversely affected, or
d) The parcel is too narrow to allow for an adequate vertical access corridor without adversely affecting the privacy of the property owner. In no case, however, shall development interfere with the public's right of access to the sea where acquired through use unless an equivalent access to the same beach area is guaranteed.

The County may also require the applicant to improve the access corridor and provide bike racks, signs, parking, etc.

Policy 7-3 stipulates, in part, that:

For all new development between the first public road and the ocean, granting of lateral easements to allow for public access along the shoreline shall be mandatory. In coastal areas, where the bluffs exceed five feet in height, all beach seaward of the base of the bluff shall be dedicated.

Policy 7-25 stipulates that:

Easements for [coastal] trails shall be required as a condition of project approval for that portion of the trail crossing the parcel upon which the project is proposed.

Section 35-63 of the County's LCP Zoning Ordinance stipulates that:

Easements for trails shown on the Santa Barbara County Comprehensive Plan Parks, Recreation Trails (non-motorized) maps, shall be required as a condition of project approval for that portion of the trail crossing the lot upon which the project is proposed.

The Commission notes that LCP Policy 7.1(a) is not applicable to this project because, as discussed in the preceding paragraphs, it is unclear whether public prescriptive rights to access through the site exist due to conflicting evidence on the issue. In any event, only a court can establish prescriptive rights although the Commission does, if necessary, have an obligation under Section 30211 of the Coastal Act to ensure that new development does not interfere with whatever rights to access the public may have at a given site. Finally, it is not necessary to reach this issue because the amended project provides adequate public access.

The proposed project is consistent with LUP Policy 7.1(b) because it includes an offer to dedicate all designated public accessways (vertical trails, all beach/shoreline area between the mean high tide and the base of the bluffs, etc.) in favor of the people of California. This offer may be accepted on behalf of the people of the County of Santa Barbara or another governmental or

non-profit entity acceptable to the Executive Director. The proposal is consistent with LUP Policy 7.1(c) because it provides for liability and maintenance of the access by the applicant.

LUP Policy 7.2 requires that new shoreline development, with few exceptions, shall provide a vertical trail from the nearest public road to the sea. The policy further indicates that additional access improvements such as parking, signs and bike racks may also be required. The proposed project includes a two-pronged vertical access trail through the site. (Please see Exhibit 5). Given the site's remote location and lack of safe parking (Caltrans letter, Exhibit 6), additional access support improvements are necessary in this case. These improvements are provided and include a 15 space parking area, bike rack and horse tie-up. Signs directing the public to trails and parking are also proposed. All improvements will be constructed and open for public use prior to occupancy of the golf course. The project, therefore, as amended by the applicant is consistent with LUP policy 7.2.

Policy 7.3 requires that new development between the first public road and the sea offer lateral easements for public access for shoreline areas seaward of the base of a coastal bluff. As proposed, the project provides for an offer to dedicate the entire shoreline area of the site to the public and thus complies with this policy.

Both LUP Policy 7.25 and Section 3.5-63 of the Certified Implementation Plan require that new development provide easements for coastal trails identified in the LCP. The LCP shows a lateral trail alignment across this property. Although the draft "Santa Barbara Comprehensive Access Plan" indicates a continuous trail westward (up-coast) from the site, the County's access planning efforts have not yet established the specific preferred alignment of the Santa Barbara County Coastal Trail in this area. The proposed project, however, provides for the trail alignment through the site and for the connecting alignment up-coast to be constructed consistent with the future approved route. The Commission notes that the trail route has been reviewed and accepted by County Planning staff, Parks and Recreation staff, the Planning Commission and the Board of Supervisors.

ACCESS PROVISIONS ARE CONSISTENT WITH THE ACCESS AND RECREATION POLICIES OF THE COASTAL ACT

A primary goal of the Coastal Act is to preserve and enhance access opportunities for the public to and along the California coast. In order to implement this goal, the statute provides several access and recreation policies, which are relevant to this project.

Coastal Act Section 30210.

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Coastal Act Section 30211.

Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Coastal Act Section 30212(a).

(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:

(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,

(2) adequate access exists nearby, or,

(3) agriculture would be adversely affected. Dedicated accessway shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.

Coastal Act Section 30213.

Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.

The commission shall not: (1) require that overnight room rentals be fixed at an amount certain for any privately owned and operated hotel, motel, or other similar visitor-serving facility located on either public or private lands; or (2) establish or approve any method for the identification of low or moderate income persons for the purpose of determining eligibility for overnight room rentals in any such facilities.

Coastal Act Section 30220.

Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Coastal Act Section 30221.

Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and forseeable future demand for public or commercial recreational activities that could be accomodated on the property is already adequately provided for in the area.

Coastal Act Section 30223.

Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

The proposed project is consistent with the foregoing policies because of the substantial commitment made to public use by the applicant's access component as previously indicated. The proposed project offers a comprehensive access program which will provide trail access through the length of the site, vertical access to the shoreline, dedication of the entire shoreline to the public and critical support facilities -- parking, signs, bike racks, etc., in addition to the recreation/access opportunities provided by the golf courses. These access improvements will be constructed, operated and maintained by the applicant. Finally, all access facilities will be completed and open for public use at the same time the golf course opens. The public will be able to use the access anytime the golf course is open, which is anticipated to be ±360 days out of the year. The proposed program maximizes the access opportunities on this site by ensuring that the public will be able to reach the beaches and surfing areas and view the entire shoreline from the trails and vista points.

The proposal is also consistent with the portion of PRC 30210 which requires that access be safe and that natural areas shall be protected from over-use. As proposed, the access component provides for a 15 space parking area adjacent to the clubhouse and bike racks and horse tie-ups. These improvements are necessary because the only available existing parking is located on the shoulder of Highway 101. Caltrans has indicated that this practice is not only illegal but dangerous. Although only a few cars park along the Highway currently, once the access on this site is opened, an increase in beachgoers can be expected and parking difficulties exacerbated. In order to avoid this potential problem and safely accommodate beachgoers, the parking area on site is an important component of the access program.

The site also contains a natural area which requires protection from over-use. Near the west end of the sites' shoreline there is a small beach used as a haul-out and rookery by harbor seals. Access to this area will be restricted and interpretive signs placed at appropriate points to advise the public of the nature of the habitat. The access facilities will also be supervised by the applicant to ensure that the seals are not disturbed. Under the Restricted Access Implementation Plan, if the National Marine Fisheries

Service and/or the Department of Fish and Game determines that the harbor seals are being detrimentally affected by users of the vertical accessways, the applicant may seek an emergency coastal development permit from the Commission to further regulate the use of the vertical accessways to avoid jeopardizing the harbor seal. As proposed, however, the Commission is not bound to issue an emergency permit and follow-up permits but, depending on the situation could require a regular coastal permit. In either event, such a request would require a further public hearing to address appropriate measures to regulate impacts to the haulout area, and would have to be consistent with the County's certified LCP, the Coastal Act, and Federal Marine Mammal Protection Act.

In conclusion, the Commission finds that the proposed access program complies with the relevant access and recreation policies of the Coastal Act and the LCP. Furthermore, because of the scope of the access improvements coupled with the extensive measures taken to protect environmentally sensitive habitats on the site, the project is also consistent with LUP policy 8-2 which permits non-agricultural development of land designated for agriculture if the conversion supports a coastal priority use. In this case, two Coastal Act priority uses are supported, substantial access opportunities and, as detailed in the Finding on Environmentally Sensitive Habitats, significant habitat protection.

G. DEVELOPMENT

1. INTRODUCTION

The existing oil and gas facility has historically obtained potable water from two sources -- the Goleta Water District and the Dos Pueblos Ranch. The proposed golf course and turf farm will require ±221 acre feet of water for irrigation per year and ±5 acre feet of potable water to serve the Clubhouse needs. (An acre foot is equivalent to 326,000 gallons of water.) As there is no on-site water, the applicant plans to purchase reclaimed water from the Goleta Water District to serve the irrigation needs of the project. This water will be delivered via a new eight inch line to be constructed between the Sandpiper Golf Course and the site, a distance of ± one mile. Potable water will also be supplied by the Goleta Water District. As of this date, the applicant has no binding commitment from the water district, but is confident that the necessary water will be obtained.

2. LCP SUBSTANTIVE REQUIREMENTS

The Certified LCP includes the following policies relevant to the proposal to extend a waterline to the site:

Coastal Act Section 30241(a):

The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas agricultural economy, and conflicts shall be minimized between agricultural and urban land uses through all of the following:

The project is also conditioned to be consistent with LUP policy 2-6. This policy requires that before a coastal permit will be issued to allow construction, the applicant must demonstrate that all required public or private utility services are available and adequate to serve the needs of the project. The County has conditioned their permit to this effect and will not issue the coastal permit until adequate services are demonstrated.

In conclusion, the Commission finds that the proposed project is consistent with the relevant development policies which require the preservation of stable urban boundaries and ensure that any new development will have adequate utility services.

H. ENVIRONMENTALLY SENSITIVE HABITATS

1. INTRODUCTION

The golf course site has been disturbed by oil and gas production over the years, but does include a variety of environmentally sensitive habitats (ESH). Two areas of riparian habitat are found on the site in Tomate Canyon and Eagle Canyon. Both of these canyons are designated ESH in the County LCP. Tomate Canyon is located in the western portion of the site and contains an intermittent stream and associated riparian vegetaton. Eagle Canyon lies along the eastern boundary of the site and contains a blue line stream -- Eagle Canyon Creek -- and associated riparian habitat. A vernal pond is located in the south-eastern part of the property midway between the railroad tracks and the edge of the coastal bluff. The site also includes small, scattered patches of native bunch grass. Native grasslands are considered to be environmentally sensitive in this area because they are becoming increasingly rare.

The site also contains an environmentally sensitive marine habitat. A well established harbor seal haul-out and rookery (pupping area/nursery) is located on the beach, at the base of the steep bluffs on the west end of the site. This habitat qualifies as ESH because harbor seals have been designated as a "protected species" under the Federal Marine Mammal Act.

2. LCP AND COASTAL ACT SUBSTANTIVE REQUIREMENTS

The standard of review for this project is conformance with both the policies and ordinances of the Certified Local Coastal Plan and the public access and recreation policies of the Coastal Act. For the reasons discussed in the following paragraphs, the Commission finds that the project, as conditioned by the County and subsequently amended by the applicant is consistent with both the County LCP and the public access and recreation policies of the Coastal Act.

(a) By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban land uses.

POLICY 2-6: Prior to the issuance of a development permit, the County shall make the finding, based on information provided by environmental documents, staff analysis, and the applicant, that adequate public or private services and resources (i.e., water, sewer, roads, etc.) are available to serve the proposed development. The applicant shall assume full responsibility for costs incurred in service extensions or improvements that are required as a result of the proposed project. Lack of available public or private services or resources shall be grounds for denial of the project or reduction in the density otherwise indicated in the land use plan.

The first policy, PRC 30241(a), is directed at maintaining a stable urban boundary by limiting the extension of urban services into rural areas. A stable urban boundary is critical to the achievement of two important goals of the Coastal Act; 1) the avoidance of urban sprawl by the concentration of development in urban areas, and 2) the protection of agricultural areas by prohibiting the extension of urban services thus reducing the pressure to convert to urban uses.

LUP Policy 2-6 is more project specific in scope and is directed to simply ensure that any given development will have adequate public or private utility services to support it (water, sewer, etc.).

THE PROPOSED PROJECT IS
CONSISTENT WITH LCP REQUIREMENTS

Although the project requires the extension of an eight inch water line ±2400 feet beyond the urban boundary, it is not inconsistent with PRC 30241(a) because it will not destabilize the existing boundary. The proposed line is sized only to serve the project and will carry only reclaimed water. Reclaimed water cannot be used to serve most types of urban development because it is not potable and is only suitable for irrigation. In this case, the water will be used to irrigate the golf course, turf farm and on-site small nursery. Reclaimed water could, as is the case in other areas, be used to irrigate agricultural crops, thus the extension of this particular "urban service", a reclaimed water line does not place pressure on agricultural lands, like those adjacent to the golf course site, to develop with more intensive land uses. In addition, the reclaimed water line could not be converted to carry potable water because that would violate the County permit and is not allowed by the water district. The proposed line extension is therefore consistent with the policy direction of PRC 30241(a) to preserve stable urban boundaries.

PROJECT IS CONSISTENT WITH THE POLICIES AND IMPLEMENTING ORDINANCES OF THE LCP

The Santa Barbara County LCP includes numerous policies relevant to the protection of Environmentally Sensitive Habitats. Due to the number and length of the ESH policies, they are attached as Exhibit 8.

Riparian Areas

The ESH policies relevant to the protection of riparian habitat are PRC 30231, 30240, 2-11, 9-1, 9-9, 9-37, 9-38, 9-40, 9-41 and 9-42. The site contains two riparian areas -- Tomate Canyon, an intermittent drainage area, and Eagle Canyon Creek which is defined as a major stream in the certified LCP. The proposed project as conditioned by the County is consistent with the applicable policies because adequate buffers from the stream corridors are included in the project and the limited uses (public trails and drainage culverts) permitted within these corridors are consistent with LUP policy 9-38. The County has also required the preparation and implementation on an Integrated Pest Management Plan to ensure compliance with LUP policies which require that run-off from the proposed development and mosquito abatement practices will not degrade habitat values. Finally, all site grading near the stream corridors must be done using non-mechanical equipment and shall avoid disruption of the habitat. If any habitat is disturbed, the affected areas must be immediately replanted. A more detailed account of the mitigation measures required by the County are found on pages 30-37 of the County staff report for this project.

Wetlands

The site contains a vernal pool in the south-eastern corner of the site. Vernal pools are identified in the Certified LCP as wetlands and thus any development near them must observe the requirements of the LCP relevant to this habitat type.

The applicable LUP policies require that all development avoid vernal pools, that a 100' buffer area around the habitat be provided and that grass cutting shall be avoided in and immediately adjacent to theses pools. These policies are specifically directed to the protection of vernal pools and are in addition to the more general policies which limit uses within habitat areas and prohibit run-off which could degrade environmentally sensitive natural features.

The project does not propose any development within the vernal pool and provides for a 100' buffer consistent with LUP policy 9-9. A cart path will, however, be located within the buffer as will a split-rail fence to discourage golfers from entering the habitat. These minimal uses are allowed by the terms of policy 9-9 which permits structures of a minor nature and those

needed to protect habitat values. The County has conditioned their permit to limit grass cutting in the vernal pond and buffer area. An integrated pest management plan is also required to ensure that run-off will not degrade the wetland. Finally, the project is consistent with LUP Policy 9-13 because neither vehicular or pedestrian access to the vernal pool will be allowed.

Native Grasslands

The site includes many small patches of native bunch grass. These patches are scattered throughout the entire site. According to a biological evaluation prepared for the project, the golf course development will displace several hundred square feet of native grassland. This vegetative community is considered to be an environmentally sensitive habitat according to the LCP because it is becoming increasingly rare in Santa Barbara County.

LUP policy 9-18 requires that new development shall be sited and designed to protect native grasslands. Although the project has been designed to avoid most of the native grassland, it will result in the loss of several hundred square feet of this habitat. Mitigation measures, however, require the restoration of a significantly greater area of the site to native grassland. The net result is that development of the project will result in a substantial enlargement of this habitat on the site and thus is consistent with LUP policy 9-18.

SEAL HAUL-OUT AND ROOKERY

A harbor seal haul-out and rookery is located on a narrow beach below the steep bluffs near the west end of the site. This well established habitat is used by the seals year round as a haul-out (resting) area. During the late winter and spring, the beach provides a sheltered location for mating, pupping and pup care. Harbor seals are a protected species under the terms of the Federal Marine Mammal Act and their terrestial habitat is considered environmentally sensitive. The Marine Mammal Act prohibits any activities which kill or harass protected species such as the harbor seal.

The Certified LUP includes two policies directed to the protection of these animals and their habitat. Policy 9-24 indicates that recreational activity near haul-outs must be monitored to avoid disruption of the habitat by human activities. LUP Policy 9-25 requires that rookeries must not be disturbed by any type of development during the breeding season.

The proposed project is consistent with these policies because recreational activities will be well separated from the habitat and a monitoring program will be implemented concurrently with the opening of the golf course to ensure that the haul-out will not be disturbed by golfers or beach visitors. The golf course has been designed to ensure that golfers will not be visible to the seals and the incidence of errant golf balls landing on the beach is limited. Likewise, the proposed access trail closest to the habitat is routed

to avoid disruption and will be closed altogether during the pupping and breeding season (February 1 to May 31). An interpretive signing program is also proposed to advise all visitors of this habitat and its requirements. Finally, no grading within 300' of the bluff edge will be permitted during the breeding season.

In conclusion, the project as conditioned by the County and subsequently amended by the applicant is consistent with the numerous, stringent provisions in the LCP directed to protecting the various environmentally sensitive habitats found on this site.

PROJECT IS CONSISTENT WITH THE PUBLIC ACCESS POLICIES OF THE COASTAL ACT

The Coastal Act includes the following three policies relevant to the habitat preservation aspect of this project:

Section 30001.5(c)

The Legislature further finds and declares that the basic goals of the state for the coastal zone are to:

(c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.

Section 30210.

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30212(a).

(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:

(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,

(2) adequate access exists nearby, or,

(3) agriculture would be adversely affected. Dedicated accessway shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.

The thrust of these policies is to maximize public access to and along the California coast in a manner which ensures that natural resource areas, like the harbor seal haul-out/rookery, will not be overused or otherwise adversely affected. The proposed access program strikes this balance by siting the trails to adequately separate beach visitors from the seals, signing and supervising the trails to alert visitors to the needs of the habitat and limiting access during the critical mating/pupping period. The proposed program is therefore consistent with Coastal Act policies to provide access while respecting habitats.

I. LCP/CEQA

The proposed project site lies within the County of Santa Barbara. The Commission has certified a Local Coastal Program for the County of Santa Barbara (Land Use Plan and Implementation Ordinances) which contain policies for the Gaviota Planning Area. As conditioned by both the County and the Coastal Commission and amended by the applicant, the proposed development is consistent with the applicable policies of the County's certified Local Coastal Program and the Coastal Act, including those regarding the preservation of agricultural lands and public access facilities.

The Coastal Commission's permit process has been designated as the functional equivalent of CEQA. CEQA requires the consideration of less environmentally damaging alternatives and mitigation measures to lessen significant environmental impacts to a level of insignificance. This project was the subject of an environmental impact report at the County level. The EIR provided a thorough discussion of alternatives to the proposed project including a no project alternative, a reduced project alternative, and two alternative project locations (Naples site and Patterson site). (See County Revised Findings for Project Approval) In addition, the Commission has considered an on-site agricultural alternative which would convert the project site to an agricultural use. However, as previously stated, agricultural use of the site is presently not possible because the lot and development uncertainties inherent in the site could result in lots that are too small to be farmed and the site has no commercial agricultural irrigation water supply.

Based on the information submitted, the Commission finds that there is no alternative available that will further reduce any adverse environmental impacts created by the project. Further, there are no negative impacts caused by the project which have not been adequately mitigated. The County imposed 79 conditions in its approval of a Conditional Use Permit for the golf course project. As amended by the applicant and further conditioned by the Commission, the proposed development is therefore consistent with the provisions of CEQA, the certified LCP and the access and recreation policies of the Coastal Act.

EXHIBIT NO. 1
APPLICATION NO.
A-4-93-154
ARCO APPEAL
Revised Findings

4-STB-93-41

County of Santa Barbara

RESOURCE MANAGEMENT DEPARTMENT

John Patton, Director
Phil Overeynder, Assistant Director

9/17/93

NOTICE OF FINAL ACTION ON A CONDITIONAL USE PERMIT

This is to inform you that a Conditional Use Permit has been issued for the project described below. This is an appealable development as defined under Section 30603 (a) of the Coastal Act and Santa Barbara County Coastal Zoning Ordinance (Article II, Section 35-182.4, therefore the County's action on the Conditional Use Permit may be appealed to the Coastal Commission.

EXHIBIT NO. # 9
APPLICATION NO. A 4-93-154
Arco Appeal

Sincerely,
JOHN PATTON, Director

By: Steve Goggia

STEVE GOGGIA, Planner
Development Review

RECEIVED
SEP - 2 1993
CALIFORNIA
COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

APPLICANT: R.W. Hollis, Jr. ARCO Oil and Gas Company

PROJECT ADDRESS: Route 1, BOX 275, Goleta, CA 93117

CASE NUMBER: 91-CP-085

APN: 079-180-05,-16,-18; 079-200-04,-08

DATE OF BOARD OF SUPERVISOR'S ACTION: August 17, 1993

PROJECT DESCRIPTION: Approval of a Conditional Use Permit to allow for the development of a public day-fee 18-hole "links" style golf course, nine-hole par three golf course, driving range, putting green, clubhouse, cart barn, maintenance building, and accessory uses/structures. Irrigation water is to be provided through the extension of a reclaimed water line to the site. The existing oil and gas production facilities currently located on the site would be abandoned.

Please refer to the attached Conditional Use Permit approved by the Santa Barbara County Board of Supervisors, dated August 17, 1993 for a complete project description and conditions of approval.

ARCO: REVISED FINDINGS
EXHIBIT 2

123 E. Anapamu Street, Santa Barbara, CA 93101-2058
PHONE (805) 568-2000 FAX (805) 568-2030

SUMMARY OF ACTIONS: On August 17, 1993, the Santa Barbara County Board of Supervisors took the following actions:

Adopted the CEQA findings and the Statement of Overriding Consideration, dated August 17, 1993; and

Adopted findings for approval of the Conditional Use Permit pursuant to Section 35-172.8 of Article II and the findings for denial of the Surfrider Foundation appeal; and

Adopted monitoring program; and

Denied the appeal and upheld the action of the Planning Commission subject to the Planning Commission approved the Conditional Use Permit dated May 26, 1993, with an amendment to condition #8 as presented in CEQA addendum dated August 17, 1993.

cp\let\lcp085.NFA

Board of Supervisors
August 17, 1993

SANTA BARBARA COUNTY CONDITIONAL USE PERMIT

ARTICLE II, CHAPTER 35

CASE NO. 91-CP-085

I. A Conditional Use Permit is Hereby Granted:

TO: ARCO Oil and Gas Company

APN: 079-180-05, -16, -18 and 079-200-04, -08

ZONE: AG-II-100

AREA/DISTRICT: Gaviota/Third

FOR: The development of a public day-fee 18-hole "links" style golf course, nine-hole par three golf course, driving range, putting green, clubhouse, cart barn, maintenance building, and accessory uses/structures and extension of a reclaimed water line on and off site. In addition, oil and gas production facilities currently located on the site would be abandoned.

Irrigation water shall be provided through the private extension of the Goleta Sanitary District/Goleta Water District reclaimed water line to the site.

II. This Conditional Use Permit approval [91-CP-85] is based upon and limited to compliance with the project description, Planning Commission Exhibit A, (the site plan marked reclaimed option) dated May 26 1993, and conditions of approval set forth below. Any deviations from the project description or the conditions must be reviewed and approved by the Director of the Resource Management Department for conformity with this approval. Deviations from the project description or conditions of approval may require a modification to 91-CP-85 and further environmental review.

1. The project description is as follows:

~~The 200-acre project site currently supports~~ ARCO's Dos Pueblos oil and gas production facility which would be entirely abandoned with the development of the Golf Links Project. Wells and facilities abandonment would involve the following components: plugging and abandonment of wells other than water

EXHIBIT 2

disposal wells; cleaning of hydrocarbons from oil and gas pipelines; cleaning of main gathering lines; removal of liquids from separators; emptying wash tank, oil tanks, and wastewater tanks; removal and disposal of tanks, vessels, pipelines, and equipment; purging of gas from pipelines between the tank farm and the sales gas compressor; removal and disposal of vessels and equipment in the sales gas compressor, gas chiller/knockout, and sulfacheck areas; removal and disposal of all above ground pipelines and supports; removal of the Southern California Gas Company's metering facilities; and removal of buried pipelines only as necessary to allow golf course grading and construction (additional detail is provided in Appendix 3.0 of 92-EIR-16).

The links component of the project, comprised of 18 holes, encompasses 72.4 acres of the 202-acre project site and is designed as a sea-side course which is reminiscent of the classic course design of the 1930's. The course routing has been planned based upon the topography and shape of the land; environmental sensitivities; the fact that the course is to be operated as a public daily-fee facility; and the architect's preferred style.

The 18-hole course would have an earthtone concrete cart path servicing the entire course. Six-inch, stand-up, concrete curbing would extend a short distance around all tees, greens and other locations for maintenance and safety. An existing service road located south of the railroad right-of-way would, along with the cart path system and turf surfaces, provide maintenance vehicles access to the entire property. Six short bridges are proposed throughout the course on the cart paths.

In addition to the 18-hole public daily fee links, the project also includes a par-three course located on the eastern edge of the property. This course consists of nine holes, measuring 150-yards or less. The par-three course is designed to complement the 18-hole course by allowing golfers the opportunity to sharpen their "short game". It is designed to be walked and no electric golf carts would be allowed. This component of the project would occupy approximately 8.7 acres of the project site. The golf links and par-three course together would occupy approximately 54 percent of the site.

The clubhouse, cart barn, maintenance area and parking lot would occupy approximately 7 acres. These facilities would be located on the present site of ARCO's production offices, warehouse and storage yards.

The 9,290 square foot clubhouse would be the focal point of the site. The building height of the clubhouse is 17 feet with a central atrium at 22 feet. It would consist of a pro shop, grill, administrative offices, meeting room, and restrooms. Food service is intended for golfers during daylight hours only and is not intended or programmed to compete with local restaurants.

Given the golf links routing, golfers would not return to the clubhouse until their round is completed. Therefore, a half-way house between the ninth and tenth holes is proposed. The half-way house would include a 700-square-foot snack bar, restroom facility and starters station. Along with the half-way house, another restroom and three additional shelters would be located on the golf links to provide comfort and protection from the elements.

The 8,012 square foot cart barn, located north of the clubhouse, would enclose all of the golf cart storage, maintenance, cleaning and range operations. The 7,974 square foot maintenance building would house all of the equipment and machinery necessary to maintain the golf course, as well as offices and employee facilities. This building would be located east of the clubhouse and would serve to screen the service yard. The service yard would be screened to the west by a serpentine wall. An 800-square-foot storage building would be located north of the service yard.

A driving range, putting green and turf farm are also proposed. The driving range is proposed to be located west of the clubhouse. The putting green is proposed to be located between the driving range, the first hole's tee, and the clubhouse. To support the turf needs of the golf links and par-three course, a turf farm of approximately one-half acre would be located near the northwestern corner of the site.

The routing of the golf links course requires crossing of the Southern Pacific Railroad right-of-way three times. The crossings would be accommodated by the existing wooden bridge, located immediately south of the existing ARCO facilities, and the creation of two new tunnel crossings. The tunnel crossings would be finished with gunite or textured plaster to aesthetically conform to the architectural and golf course character of the 1930s. The tunnels would be approximately 100 feet in length with a height to ceiling of 10 feet.

Perimeter fencing and railroad right-of-way fencing would be constructed from rustic wood and possibly cable, no chain link or modern reflective materials would be used. All utilities including those presently located on the site, would be placed under ground.

The course is anticipated to operate from 350 to 360 days per year. An estimated 50,000 to 60,000 rounds of golf per year would be played on the 18-hole course and 20,000 rounds would be played on the nine-hole course. Hours of operation would be from dawn to dusk for the course. Restaurant service would close one-half hour after dusk. A maximum of two professional and/or amateur events which would draw galleries would be held at the site per year. The project applicant estimates that 32 full-time equivalent employees would be required for golf course operation. This would result in a net increase of 17 new employees at the site.

The project would involve 154,470 cubic yards of cut and 154,470 cubic yards of fill, to be balanced on-site. Some offsite grading would be required for the installation of pipelines and proposed addition of the acceleration and deceleration lanes. The above cut and fill estimate includes these offsite components. Overall, 115 acres of the 202 site would be graded. The maximum elevation that would result from grading would occur near hole number seven and would involve an increase in elevation of 25 feet (from 50 feet to 75 feet). The proposed drainage plan includes a system of storm drains with associated energy dissipators to reduce erosion effects of drainage flows and five desiltation basins most of which would be located within the existing drainages of the site.

Slope stability on the bluffs and barrancas of the project site were a concern in the design of the golf links project. Therefore, the applicant has proposed a drainage system which would contribute to the control of erosion and enhance slope stability. A conceptual landscape design has also been proposed as part of the project that would incorporate deep-rooted, drought tolerant native plants on the bluff tops and drainages to provide slope stability.

A structural setback from the top of the bluff has been included in the project design to mitigate potential geologic hazards associated with sea cliff retreat. This setback zone includes a 55 foot structural setback and a 30 foot non-structural setback.

A harbor seal haul out and rookery area exists at the beach near the mouth of Tomate Canyon. In an effort to avoid impacting harbor seal activity in this area, the golf links has been designed with fencing to avoid encroachment into the portions of the project site from which views of the harbor seal haul out area can be gained. Construction activities adjacent to the bluffs that are above the seal haul out area would be scheduled to avoid the most sensitive seasons, such as when pups are present.

Revegetation and habitat enhancement components are also included in the project. Removed trees greater than six inches in diameter shall be replaced with native trees at the ratio of three to one (willows would be replaced at five to one). Removed tamarisk trees would not be replaced. Wildlife habitat would also be enhanced by the use of native vegetation throughout the site.

The scheduling and time in months for completion of the various construction components is presented in Appendix 3.0 of the EIR. The total estimated construction schedule for the reclaimed water option is 18 months. Based on the applicant's estimate that abandonment of the existing oil and gas operations could commence within six months after approval of the Conditional Use Permit, project construction (starting with abandonment) could begin in October of 1993 and be completed by April of 1995.

Implementation of the reclaimed water option would involve extension of the proposed 8-inch reclaimed water pipeline from the GSD/GWD Phase II extension which would terminate at Hollister Avenue and Las Armas Road, where the Phase II expansion to Sandpiper Golf Course leaves Hollister Avenue. The pipeline would continue westward within Hollister Avenue until reaching the entrance to the Sandpiper Golf Course and the existing public access road to ARCO's Ellwood facility. The pipeline would continue westward across the Hyatt property within the proposed access road. Should the access road not be constructed during the installation of the pipeline, a portion of the eastern half of the Hyatt property would have a temporary alternate route. The remainder of the Hyatt property would be crossed within the existing road to the boundary of the Eagle Canyon Ranch. From this point, the pipeline would turn southwest and continue approximately 220 feet within the existing access road to the Ellwood Pier. The lines would then be located on existing oil and gas piperacks (within an existing easement) crossing Eagle Canyon Ranch. The existing piperacks extend over two drainages including Eagle Canyon and an unnamed corridor north of Ellwood Pier. Through both of these areas, the pipelines would be positioned by light crane and then welded in place. Once the reclaimed water pipeline extension crosses Eagle Canyon Creek, it would enter the existing roadway for approximately 300 feet until turning west and climbing out of the Canyon. The line would terminate at a proposed four acre-feet, onsite storage lake. The last 300 feet of the pipeline would be mostly outside of the existing roadway. Where buried within roadways, the pipeline would be located approximately two to three feet off the centerline of the pavement.

A storage lake in the eastern portion of the site is proposed to allow for sufficient water reserve in the case of a temporary interruption of water deliveries. The approximately four acre-foot lake would provide reserves for five days of average irrigation and 2.5 days of peak irrigation needs. The lake would be included.

In order to construct the cart barn in the location shown on the site plan, a Lot Line Adjustment must first be accomplished as it is currently shown extending over the property boundary into an area owned by Caltrans.

The grading, development, use, and maintenance of the property, the size, shape, arrangement, and location of structures, parking areas and landscape areas, and the protection and preservation of resources shall conform to the project description above and the conditions of approval below. The property and any portions thereof shall be sold, leased or financed in compliance with this project description and the conditions of approval hereto.

2. Compliance with Departmental Letters:

   a. Air Pollution Control District dated March 15, 1992
   b. Building and Development Division, Public Works dated March 26, 1993

c. Environmental Health Services dated April 2, 1993
d. Fire Department dated July 21, 1992
e. Flood Control dated March 17, 1993
f. Park Department dated March 25, 1993

3. Prior to Issuance of a Coastal Development Permit for any aspect of the project, an Environmental Quality Assurance Program (EQAP) shall be prepared according to procedures established by Santa Barbara County RMD, paid for by the applicant and submitted for review and approval of RMD. The EQAP shall include the following: 1) All conditions and mitigation measures imposed on this project and the impacts they are mitigating separated by subject area. 2) A plan for coordination and implementation of all measures and the plans and programs required therein. 3) A description of all measures the applicant will take to assure compliance, including field monitoring, data collection, management and coordination of all field personnel and feedback to field personnel and affected County agencies including RMD. Contractor feedback responsibilities include weekly, monthly and quarterly reports (as specified in EQAP) to be prepared throughout grading and construction. These shall include status of development, status of conditions, incidents of non-compliance and their results and any other pertinent or requested data. 4) A contractor to carry out the EQAP shall be selected by RMD in consultation with the applicant. The contractor(s) will be under contract and responsible to the County, with all costs to be funded by the applicant. The EQAP contractor shall appoint at least one on-site Environmental Coordinator (OEC) responsible for overall monitoring, but shall employ as many qualified specialists as necessary, as determined by RMD, to oversee specific mitigation areas (e.g. archaeologists, biologists). In addition, the OEC has the authority and ability to secure compliance with all project conditions and to stop work in an emergency. The EQAP shall also provide for any appropriate procedures not specified in the conditions of approval to be carried out if they are necessary to avoid environmental impacts.

4. The applicant shall ensure that the project complies with all approved plans and all project conditions including those which must be monitored after the project is built and occupied. To accomplish this the applicant agrees to:

   a. Contact RMD compliance staff as soon as possible after project approval to provide the name and phone number of the future contact person for the project and give estimated dates for future project activities.

   b. Contact RMD compliance staff at least 2 weeks prior to commencement of construction activities to schedule an on-site pre-construction meeting with the owner, compliance staff, other agency personnel and with key construction personnel.

   c. Pay fees prior to land use clearance as authorized under ordinance and fee schedules to cover full costs of monitoring as described above, including costs

for RMD to hire and manage outside consultants when deemed necessary by RMD staff (e.g. non-compliance situations, special monitoring needed for sensitive areas including but not limited to biologists, archaeologists) to assess damage and/or ensure compliance. In such cases, the applicant shall comply with RMD recommendations to bring the project into compliance. The decision of the Director of RMD shall be final in the event of a dispute.

NOTE: The letters with numbers which appear within the parenthesis indicate mitigation measures as identified in the EIR prepared for the project.

5. (B1) Riparian/Wetlands. The following measure ensures that features contained on the Biological Enhancement Plan are fully implemented and provides for replacement of riparian vegetation and riverine wetlands lost as a result of the construction of storm drains, desiltation basins, energy dissipators, retention walls and fill.

   a. The applicant shall submit a revegetation plan describing in detail the methodology used to implement the Biological Enhancement Plan to mitigate losses of riparian vegetation and wetlands on Drainages 1, 2, 3, 5-south. The applicant shall also revegetate the banks of all constructed desiltation basins (Drainages 1, 3, 5, 6 and Tomate Canyon). The revegetation plan shall include the following measures:

      1. The plan shall distinguish between native grassland revegetation, riparian revegetation and native tree planting.

      2. Plant species will be native species, at a density to be determined by the RMD approved botanist preparing the plan. Species will be from locally obtained plants and seed stock.

      3. A management plan shall be developed and include provisions for buffers of dense, screening native vegetation around wetlands and riparian areas, measures for preventing competitive displacement of native grasslands by introduced grasses and forbs, an erosion control plan, and an exotic plant/weed control plan. The plan shall include a detailed maintenance and monitoring plan, measurable performance criteria, and a contingency plan to be carried out in the event of high plant mortality.

      4. New plantings will be irrigated with drip irrigation on a timer, and will be weaned off of irrigation over a period of two to three years.

      5. Revegetated areas will be fenced during the establishment period, but allow free passage of wildlife.

6. Grass cutting, disking for fire control or any other removal of native species will be prohibited within the biological enhancement areas.

7. Non-native species will be removed.

8. The plantings will be in place and non-native plant species removed prior to opening of the golf course for public use.

b. Construction envelopes shall lie at least 30 feet outside Drainages #4,5,6,7 south of the railroad and Tomate Canyon (with the exception of drainage facilities). No construction or construction equipment shall occur outside of these construction envelopes. Subsurface structures including septic systems and utilities and access ways including roads, driveways and utilities shall not be placed in these drainages except on bridges. Envelope boundaries shall be staked in the field prior to any ground disturbance.

c. The energy dissipators shall be re-designed to allow native revegetation to occur by using rock gabions or preformed concrete block revetment systems with open cells instead of gunite or grouted rip-rap.

d. Drainages shall be marked as out of bounds and separated from fairways and roughs by vegetated buffers and/or rustic fencing. Signage shall be included at visible points along the drainages, at the starter house, and on each course card indicating that players found within specified out-of-bounds areas will be expelled from the course. This action shall be enforced by the golf course marshall.

e. A golf ball recovery program shall be developed and implemented consisting of retrieval of balls in drainages and on the beach by designated course employees.

Plan Requirements: Prior to project approval, the applicant shall submit a detailed Biological Enhancement/Landscape Plan (BELP), prepared by a RMD approved biologist, to RMD for review and approval. The applicant shall file a performance security bond with the County prior to issuance of a Coastal Development Permit (CDP) to complete restoration, monitor and maintain plantings for a three-year period. An erosion control plan shall be submitted to and approved by RMD, Public Works Grading Division and Flood Control prior to CDP issuance. Construction envelopes shall be shown on all grading and building plans. A note shall be placed on all final plans describing the activities disallowed in this area. The final design of the energy dissipators shall be incorporated into the final development plans and grading plans. **Timing:** Revegetation work and construction of erosion control devices shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use. Envelopes shall be staked prior to initiation of construction activity.

MONITORING. RMD/EQAP staff shall site inspect for compliance. Maintenance shall be ensured through site inspections. During Plan Check the planner shall ensure that all construction is to occur within approved envelopes. Staking shall be checked during preconstruction meeting. Site inspections and photo documentation shall occur during all construction phases to ensure building envelopes are respected. Permit Compliance signature is required for performance security bond release.

6. (B2) Harbor Seal protection. Permanent fencing shall be installed at least 30 feet north of the bluff edge above the haulout area and no activity shall be allowed south of this fencing. Construction activities shall not be allowed within 300 feet of the bluff edge above the haulout area during the pupping/breeding season (February 1 to May 31). **Plan Requirements:** All grading and construction plans shall indicate the location of the 30-foot setback fence line, the location of the harbor seal breeding area and a note concerning restrictions during the harbor seal breeding season. **Timing:** Construction fencing should be in place prior to grading. Grading activities shall be restricted from the 300 foot bluff area from February 1 to May 31. Permanent fencing shall be installed prior to opening of the golf course to public use.

MONITORING: RMD/EQAP staff shall inspect site prior to the start of grading activities. Monitoring shall be conducted during construction to determine if impacts are occurring and to recommend additional mitigation if required. Final inspection of permanent fencing prior to golf course opening.

7. (B2) Harbor Seal protection. Coastal access vertical easements shall be offered for dedication to the County from the Coastal Trail to the beach at the mouth of Eagle Canyon and to the beach and at the mouth of the canyon just west of Tomate Canyon prior to the issuance of the CDP. **Plan Requirements:** The offer shall be in form and language acceptable to Santa Barbara County. The specific location of the easements and the extent, location and design of any improvements shall be submitted by the applicant for review and approval by the Parks Dept and RMD. **Timing:** The easement and requirements of the Restricted Access Implementation Plan presented in condition 8 shall be submitted for review and approval prior to acceptance by the County.

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MONITORING: Park Dept. and RMD shall review prior to Acceptance.

8. (B2) Harbor Seal protection. To reduce impacts to the Harbor Seal haul-out area associated with the offer to dedicate vertical coastal access to the beach at the mouth of Eagle Canyon and to the beach and at the mouth of the canyon just west of Tomate Canyon, a Restricted Access Implementation Plan shall be required. Prior to acceptance of the offer to dedicate the vertical access, the County, State, or other group acceptable to the County shall enter into an agreement to accept responsibility for implementing the restrictions which include but are not limited to the following:

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a. Access to the beach at the vertical coastal access point at Eagle Canyon and access eastward along the beach from the vertical coastal access point west of Tomate Canyon shall be prohibited during the seal pupping/breeding season (February 1 to May 31).

b. Locking gates shall be installed at the vertical access trails to implement any restrictions on access to the beach under the Restricted Access Implementation Plan (e.g. at Eagle Canyon during the pupping season).

c. No dogs shall be allowed on the vertical access nor on the beach.

d. Signs shall be posted at the golf course parking lot, at the bridge stairway to the coastal access trail, at the terminus of the trail at Eagle Canyon and at the vertical access located west of Tomate Canyon and, if possible, on the beach bluff east and west of the haul out area detailing the provisions of this condition and noting appropriate Marine Mammal Protection regulations.

e. The restricted access implementation plan shall contain a monitoring component (such as an on-site guard) to assure the above restrictions are enforced and that the seals are not being harassed.

f. The restricted access implementation plan shall contain a two year monitoring study to determine the effects of providing beach access on the seals. The vertical coastal beach access trails shall be permanently closed if it is determined by RMD, Fish and Game, or the National Marine Fisheries Service that the program is not effective in protecting the seals as planned, and or if the agency/entity responsible for implementation of the plan terminates their responsibility and no other agency/entity accepts responsibility.

PLAN REQUIREMENTS AND TIMING: Prior to Acceptance of the offer to dedicate the vertical access easements to the sandy beach, the restricted access implementation plan, detailing the provisions above, shall be approved by RMD, Fish and Game, and the National Marine Fisheries Service.

MONITORING: RMD shall approve the plan prior to acceptance, and shall inspect the access prior to opening the accessway prior to public use. Limited periodic monitoring by RMD of the accessways shall be performed as required.

9. (B3) Monarch Butterflies. Pipeline construction shall not occur within 50 feet of the Monarch autumnal roosting trees located in Eagle Canyon between October 1 and January 31. **Plan Requirements:** The Monarch Butterfly

autumnal roosting trees shall be show on the pipeline construction plans. **Timing:** Pipeline construction plans shall be approved by RMD prior to issuance of CDP.

MONITORING: RMD/EQAP staff shall ensure compliance onsite during construction.

10. (B4) Surface Water. The applicant shall retain a qualified biologist to participate in refining the design of the proposed five acre-foot reservoir to maximize its wildlife value and allow for minimal human disturbance in the reservoir area. **Plan Requirements:** Prior to issuance of a CDP, the applicant shall submit a revised BELP including this provision for the proposed reservoir, prepared by a RMD approved biologist, to RMD for review and approval. Prior to issuance of a CDP, the applicant shall file a performance security bond with the County to complete restoration and maintain plantings for a three-year period. **Timing:** Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use.

MONITORING: RMD/EQAP staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance signature is required for performance security release.

b. (from addendum). Pond Turtles. A survey for western pond turtles shall be conducted by an RMD approved biologist prior to grading and/or construction occurring in or within 50 feet of Tomate Canyon and Drainage 5 during the wet season, when standing water may be present in the drainages (between November 1, and May 1.) If turtles are found construction shall be prohibited within 50 feet of the standing water between November 1, and May 1. **Plan Requirements and timing:** The BELP shall include this provision and shall be submitted prior to issuance of the CDP.

MONITORING: RMD/EQAP staff shall site inspect to ensure compliance.

11. (B5) Trees. The applicant shall replace all trees as shown on the tree inventory map (with the exception to tamarisk) as mitigation for impacts to sensitive spariparian communities, bats and raptors and to facilitate raptor control of rodents through the use of trees as raptor perches. All non-willow trees shall be replaced at ratio of 3:1 and all willows shall be replaced at a ratio of 5:1. Excavation work within the canopy and/or dripline of willows shall be avoided to the maximum extent feasible. Where excavation must be performed adjacent to willow trees or within southern willow scrub (see Figure 5.1-1) it shall be performed with hand tools only. If the use of hand tools is deemed infeasible by RMD, excavation work may be authorized by RMD to be completed with rubber-tired construction equipment weighing five tons or less. If significant

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large rocks are present, or if spoil placement will impact surrounding trees, then a small tracked excavator (i.e., 215 or smaller track hoe) may be used as determined by RMD staff. **Plan Requirements:** A revised BELP including the tree replacement, prepared by a RMD-approved biologist and approved by RMD shall be implemented. Prior to issuance of CDP, the applicant shall file a performance security bond with the County to complete planting and maintain plantings for a three-year period. Construction requirements for work near native trees shall be noted on all building and construction plans. **Timing:** Tree planting shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course.

MONITORING: RMD/EQAP staff shall ensure tree installation and maintenance through periodic site visits. Performance security bond release requires Permit Compliance sign-off.

12. (B6) Pesticides. The project shall incorporate an Integrated Pest Management (IPM) program, utilizing an ecosystem approach, focusing on selective control of pests while maintaining populations of pest predators, parasites and non-pest competitors. The IPM program shall include buffer zones adjacent to the vernal pool and all drainages in which pesticide application would be prohibited or highly restricted. The plan shall prohibit the use of rodenticides such as diphacinone or other first-generation anticoagulants known to cause secondary poisoning effects in predators, and shall require proper and frequent disposal of poisoned carcasses. Mosquito abatement shall be conducted using a biological control agent (Vectobac-G or equivalent) specific to mosquito and black fly larvae. Conditions limiting the use of pesticides during specific wind conditions shall also be contained in the IPM program to limit the potential for aerial drift during pesticide application. To minimize the need for pesticides, the IPM program should also contain recommendations regarding the installation of bat and swallow boxes on the site. **Plan Requirements:** The applicant shall submit a plan for implementation of an IPM program. The plan shall be developed in coordination with the University of California Agricultural Cooperative Extension. The plan shall include an action level (pest density at which action is taken), pesticide (insecticide, fungicide, herbicide, rodenticide) application rates (i.e. pounds per acre) and application frequency for all expected pest species. The potential for importation of turfgrass pest predators or parasites or application of pathenogenic bacteria (*Bacillus thuringiensis* strains) shall be investigated and included in the plan if feasible. The plan shall be updated annually, reviewed by RMD and include a monitoring section. The applicant shall submit a written request for RMD review and approval of any changes in the IPM program throughout the life of the project. A written approval from RMD shall be required prior to implementation of such changes. **Timing:** The plan shall be submitted to and approved by RMD prior to issuance of CDP.

MONITORING: RMD/EQAP staff shall ensure compliance by conducting periodic site inspections throughout the life of the project.

13. (B7) Vernal Pool. The following requirements apply to the vernal pool designated in Figure 5.1-1 and shall be a component of the BELP and shall be incorporated into the final grading and building plans for the project:

    a. Construction other than that shown on the site plan, or required to build the staircase from the existing bridge to access the Coastal Trail shall be prohibited within 100 feet of the pool.

    b. A permanent fence at the edge of the cart path as shown in the site plan, and at least 50 feet from the pool edge in all other areas shall be installed around the pool to protect the pool against humans and vehicles. The fencing shall be split rail (or equivalent) to allow for wildlife use of the pool. The fence shall have signs posted to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.

    c. Grass cutting or disking for fire control shall not be permitted within buffer zone established by Measure b.

    d. The applicant shall remove the non-native Hottentot fig along the edge of the pool and replace it with a native plant that is compatible with the vernal pool and ecosystem.

    Plan Requirements: The above measures shall be noted on all grading and construction plans. **Timing:** The revised BELP shall be reviewed and approved prior to issuance of CDP.

    MONITORING: RMD/EQAP staff shall ensure compliance during construction and prior to occupancy through site inspection.

14. (B8) Sensitive Plants. The applicant shall submit a revised BELP, including a component addressing revegetation for the southern tarplant, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

    a. Collection of propagules (seeds, cuttings, rootstock);

    b. Growth of propagules in containers in a greenhouse;

    c. Transplanting of propagated plantings to suitable habitats onsite;

d. Monitoring and maintenance of transplanted populations; and,

e. A contingency plan to be carried out in the event of high mortality of transplants.

Plan Requirements: Prior to issuance of the CDP, the applicant shall submit the revised BELP. **Timing:** Populations of rare plants grown from collected propagules shall be established in advance of the removal of natural populations from the site. Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use.

MONITORING: RMD/EQAP staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance signature is required for performance security release.

15. (T1) Traffic. The applicant shall provide low vegetation (trees and shrubs) adjacent to the tee boxes on Holes 1, 3 and 4 to minimize the risk of errant tee shots entering the highway and impacting passing motorists. Fencing or netting to prevent errant golf balls from entering the highway shall not be permitted. Final golf hole routing shall be reviewed and approved by Caltrans for avoidance of errant golf ball shots entering the highway. **Plan Requirements:** Prior to Coastal Development Permit (CDP) a landscape plan as part of the Biological Enhancement/Landscape Plan showing the vegetation to be planted adjacent to holes 1, 3, and 4 shall be submitted by the applicant and reviewed and approved by RMD and hole routing shall be reviewed and approved by Caltrans. **Timing:** Landscaping shall be in place prior to occupancy clearance (OC).

MONITORING: Prior to Occupancy Clearance, RMD shall visit the site to ensure landscaping is in place.

16. (T2) Trails. The applicant shall dedicate to the County in perpetuity a 24-foot-wide lateral access area (narrowing to 16 feet over each of the proposed tunnels) for the future development and exclusive use of a biking, hiking and equestrian trail. The applicant shall dedicate an easement allowing for limited parking (15 spaces) and access from the parking lot to the trail. The 15 spaces shall be clearly marked and reserved for public trail users during the hours that the golf course parking lot is open to golfing patrons. The applicant shall construct a stairway from the existing bridge to the trail and construct the trail east of the bridge to the vertical viewing area near Eagle Canyon. The applicant shall construct a locked gate east of the vertical viewing area to prevent public access to Eagle Canyon until such time that either the Coastal Trail is opened for public use through the adjacent property to the east or until the vertical beach access and monitoring program is in effect, whichever occurs first. In the event that

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the Coastal Trail is opened through the adjacent property to the east, and the vertical beach access program is not in effect, a locking gate shall be constructed at Eagle Canyon to prevent public access down to the beach. The applicant shall rough grade the remainder of the trail. **Plan Requirements:** Access easement and the 15 designated parking spaces shall be indicated on the site plans to be reviewed and approved by RMD and Santa Barbara County Park Department, prior to issuances of CDP.

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MONITORING: RMD and County Park Department shall visit the site to ensure proper designation of lateral access corridor.

17. (T3) Calle Real. Prior to issuance of CDP, the applicant shall obtain the easement on the private portion of Calle Real for the County and shall construct to County Standards; or gain approval from the effected property owners located on the north side of the highway to close the median break on U.S. Highway 101. **Timing:** The easement shall be obtained and the road constructed, or, approval from effected property owners shall be gained prior to CDP.

MONITORING: RMD shall verify for receipt prior to CDP.

18. (T4) Dos Pueblos Canyon Road Interchange. The applicant shall provide fair-share funding to the County of Santa Barbara Public Works Department for inclusion in the County Pavement Management System to repair the pavement structure of the roadway system between the northbound and southbound ramps (including the loop road under the highway overcrossing structure) at the Dos Pueblos Road Interchange. The Public Works Department has determined that the project's contribution (59% based on traffic volumes) to this improvement is $19,833.00. **Timing:** Road improvement contribution shall be made prior to CDP.

MONITORING: RMD shall check for receipt prior to CDP and shall check for improvements prior to OC.

19. (T5) Parking. The applicant shall draft a parking program plan to provide for adequate parking at off-site facilities, including the use of shuttle services to and from the site, for event days when the on-site parking demand could not be accommodated. The plan shall include offsite designated parking areas with scheduled shuttle bus services to and from the course. **Plan Requirements and Timing:** Prior to CDP, the parking program shall be submitted for review and approval by RMD.

MONITORING: RMD shall visit site during the first tournament event to ensure that the program is in place and functioning.

20. (WS1) Water Supply. The applicant shall provide a water-efficient irrigation system for the golf courses. **Plan Requirements and Timing:** Prior to Coastal Development Permit (CDP) the irrigation plan as a component of the Biological Enhancement/Landscape Plan shall be submitted to RMD for review and approval. The irrigation system shall be installed prior to Occupancy Clearance (OC).

MONITORING: RMD shall review and approve plan prior to CDP and shall inspect system prior to OC.

21. (WS2) Water Supply. The applicant shall plumb toilet fixtures and fire suppression systems to accept non-potable water assuming the appropriate authorities authorize such use. **Plan Requirements and Timing:** Prior to CDP, non-potable lines shall be depicted on building plans subject to RMD review and approval. Lines shall be installed prior to OC.

MONITORING: RMD shall inspect to ensure compliance prior to occupancy.

22. (WS3) Water Supply. The applicant shall submit to RMD a copy of the can-and-will-serve letter from the GSD/GWD indicating willingness and ability to provide reclaimed water to the project site. The letter shall be provided to RMD prior to issuance of CDP.

MONITORING: RMD shall ensure compliance through review of the can-and-will-serve letter.

23. (WS5) Water Supply. Indoor water use shall be limited through the following measures:

    a. All hot water lines shall be insulated.

    b. Water pressure shall not exceed 50 pounds per square inch (psi). Water pressure greater than 50 pounds per square inch shall be reduced to 50 psi or less by means of a pressure-reducing valve.

    c. Recirculating, point-of-use, or on-demand water heaters shall be installed.

    d. Water efficient dishwashers shall be installed.

    e. Lavatories and drinking fountains shall be equipped with self-closing valves.

Plan Requirements and Timing: Prior to CDP, indoor water-conserving measures shall be graphically depicted on building and/or grading plans, subject to RMD review and approval. Indoor water-conserving measures shall be implemented prior to OC.

MONITORING: RMD shall inspect for all requirements prior to OC.

24. (WQ1) Water Quality. The applicant shall submit a final turf management plan to RMD for review and approval. The plan shall include information regarding irrigation, pest management and fertilization practices. Pest management shall be conducted as an Integrated Pest Management (IPM) program which relies on frequent scouting of golf course areas for pests. Chemicals are applied on localized areas only when needed. **Plan Requirements and Timing:** The plan shall be submitted and approved by RMD prior to CDP.

MONITORING: RMD/EQAP staff shall review and approve plan. Periodic inspections shall be made at the discretion of RMD through the life of the project to ensure implementation.

25. (WQ2) Water Quality. The applicant shall submit the final Biological Enhancement/Landscape Plan (BELP) to RMD which follow the parameters outlined in the Biological Enhancement Plan showing setbacks and areas of undisturbed vegetation to be maintained between drainage features and components of the golf course for review and approval. **Plan Requirements and Timing:** The final BELP and design plans shall be approved prior to CDP.

MONITORING: RMD shall review and approve plan. Building and grading inspectors shall monitor the site during construction to ensure that buffers are maintained.

26. (WQ3) Water Quality. New and replacement culverts shall meet County requirements of 100-year flow capacity. Headwalls, endwalls, wingwalls and regraded channels shall also be designed (size and material) to accommodate 100-year flows and afford adequate stabilization of banks and abutments. **Plan Requirements and Timing:** Final drainage plans shall be submitted to the Public Works Department for review and approval prior to CDP.

MONITORING: Public Works shall approve plan and shall inspect site to ensure proper design of drainage facilities.

27. (WQ4) Water Quality. The applicant shall develop and implement a maintenance (dredging) schedule for removal of accumulated sediments in the proposed in-stream desiltation basins. The plan shall include provisions for maintenance during construction, immediately after storm events and normal periodic maintenance. **Plan Requirements and Timing:** The schedule shall be submitted to RMD and the Public Works Department for review and approval prior to CDP.

MONITORING: RMD/EQAP staff/Public Works shall approve the schedule and shall periodically inspect the site during construction, and though the life of the project to ensure that maintenance is being conducted according to the approved schedule.

28. (WQ5) Water Quality. A grading plan shall be designed to minimize erosion and shall include the following:

    a. Graded areas shall be revegetated within three weeks of final grading activities within a given area. Geotextile binding fabrics shall be used if necessary to hold slope soils until vegetation is established (also proposed by the applicant).

    b. Methods such as silt fencing and hay bales shall be used to reduce siltation into adjacent streams during grading and construction activities. Scheduling of construction shall be limited to the dry season (May through October) unless appropriate erosion control devises are installed (also proposed by the applicant).

    c. A 30-foot-wide buffer of undisturbed native vegetation from the top of bank and/or slope line as indicated on the Biological Enhancement Plan shall be maintained during construction. The edge of this buffer shall be delineated by vegetated buffers and/or rustic fencing.

    Plan Requirements and Timing: The plan shall be submitted for review and approved by RMD and Public Works prior to CDP. The applicant shall establish fencing and notify Permit Compliance prior to commencement of grading.

    MONITORING: Permit Compliance will photo-document revegetation and ensure compliance with plan. Grading inspectors shall monitor technical aspects of the grading activities.

29. (AQ1) Air Quality. The applicant shall ensure that all contractor's equipment meets the following requirements:

    a. Construction equipment shall be maintained as per manufacturer's specifications;

    b. Catalytic converters shall be installed on all gasoline-powered equipment;

    c. The fuel injection timing shall be retarded on diesel-powered equipment by two (2) degrees from manufacturer's recommendations. Reformulated diesel fuel and high pressure injectors shall be used in all diesel powered construction and abandonment equipment;

d. Gasoline-powered equipment shall be substituted for diesel powered equipment if feasible.

Plan Requirements: All requirements shall be listed in contractor and subcontractor contracts. A list of equipment to be used on-site and a copy of manufacturer's specifications for each shall be provided to the monitor prior to the commencement of abandonment/construction. The applicant shall provide quarterly equipment use (hours), fuel use, fuel supplier and mechanics certificate to the APCD and RMD to verify requirements.
Timing: The grading plans, building plans and contracts must have requirements listed prior to issuance of a Coastal Development Permit (CDP).

MONITORING: RMD shall ensure such measures are on plans and manufacturer's specifications have been provided. A monitor shall be provided by the applicant. The name and telephone number of the monitor shall be provided to the APCD and RMD prior to the initiation of construction activities.

30. (AQ2) Air Quality. Emissions generated by construction activities shall be reduced by the following measures:

a. The frequency of construction site watering shall be increased when wind speeds exceed 15 miles per hour (mph) to reduce PM_{10} emissions;

b. Grading and scraping operations shall be suspended when wind speeds exceed 20 mph to reduce PM_{10} emissions;

c. An on-site construction speed limit of 15 mph shall be posted to reduce PM_{10} emissions;

d. Water trucks or sprinkler systems using reclaimed water shall be used, if available, during clearing, grading, earth moving, excavation or transportation of cut and fill materials to prevent dust from leaving the site and to create a crust after each day's activities cease (also proposed by applicant);

e. Excavated material and stockpiled soil shall be covered if not to be used for more than 48 hours;

f. All trucks transporting fill material to and from the site shall be covered.

g. Construction/abandonment related vehicle trips shall be scheduled to avoid peak hours (7:30-8:30 a.m.; 4:30-6:00 p.m.) to reduce peak hour construction emissions;

Plan Requirements: All requirements shall be shown on grading and building plans. A well abandonment mitigation plan shall be developed and include a complete description of equipment and procedures used to comply with measure 30.g. A monitor shall be provided by the applicant. The monitor shall supervise the dust control program and order increased watering frequency when necessary. The name and telephone number of the monitor shall be provided to the APCD and RMD.

Timing: The grading plans, building plans and contracts must have requirements listed prior to issuance of a CDP.

MONITORING: RMD shall ensure such measures are on all plans. RMD/EQAP staff/Grading and Building Division shall inspect the site to ensure compliance.

31. (AQ3) Air Quality. Project patrons shall be given a financial incentive to carpool (i.e. reduced green fees).

Plan Requirements and Timing: The applicant shall provide RMD a written letter outlining the incentive program to be implemented upon project operation prior to CDP.

MONITORING: RMD shall review plan and visit site upon operation to ensure compliance.

32. (AQ4) Air Quality. Commercial water heaters and space heaters used on the project site shall emit no more than 40 nanograms of NO_x per joule heat input, consistent with 1991 AQAP Control Measures N-XC-2 and N-XC-3.

Plan Requirements: Requirements shall be shown on building plans to be submitted and approved by RMD. The applicant should provide RMD with proof of purchase of specified heaters prior to OC. **Timing:** Building plans must have requirements listed prior to issuance of a Coastal Development Permit.

MONITORING: RMD shall ensure requirements are on plans.

33. (A1) Archaeological Resources. A fill program shall be designed so that intrusions or recompaction shall be limited to the upper 20 centimeters of previously disturbed topsoil. All material used as fill shall be culturally sterile and chemically neutral. Placement of the fill over the archaeological sites shall be monitored by a RMD-qualified archaeologist and a Native American

representative. Because site deposits on which fill would be placed would no longer be accessible to research, a data collection program shall be conducted. The program shall be performed by a RMD-qualified archaeologist, and shall include the following:

a. mapping the location of surface remains within the proposed area of fill;

b. surface collection of artifacts;

c. the excavation of a small sample, determined by the RMD contract archaeologist, of the cultural deposit to characterize the nature of the buried portions of the sites;

d. monitoring of excavations by a Native American representative;

e. analysis of all remains;

f. submission to RMD of a final report detailing the results of the investigations; and

g. curation of all artifacts and records at a County-approved curation facility.

Plan Requirements and Timing: Prior to CDP, the applicant shall record an agreement, subject to RMD approval, that if significant archaeological resources cannot be avoided by fairways greens, tees, bunkers, or other facilities, impacts shall be reduced by filling or capping the sites. The data recovery program shall be funded by the applicant and performed by a RMD-qualified archaeologist. The archaeologist shall submit a final report to the RMD contract archaeologist or designee detailing the results of the study prior to the capping of the site.

MONITORING: RMD/EQAP staff shall approve the program and monitor in field.

34. (A2) Archaeological Resources. All earth disturbances inside and within 50 feet of an archaeological site area shall be monitored by a RMD-qualified archaeologist and a Native American representative pursuant to County Archaeological Guidelines. This recommendation includes the monitoring of the proposed pipeline through southern portion of the CA-SBA-2441 site area. An agreement between the applicant and the archaeologist, consisting of a project description and scope of work, shall be reviewed and approved by RMD prior to grading. **Plan Requirements and Timing:** This condition shall be included on all grading plans.

MONITORING: RMD/EQAP staff and the Public Works Department shall approve the program and monitor in the field.

35. (A3) Archaeological Resources. A Phase III mitigation excavation pursuant to County guidelines shall be conducted along the buried pipeline route in the CA-SBA-1322 site area, in order to offset the significant impacts to this portion of the site that the proposed development of a water pipeline, as planned, would cause. A Phase II archaeological testing to evaluate the archaeological deposits within the maintenance building locality shall be conducted with subsequent Phase III mitigation excavations required in the event of significant finds. For all studies, the volume of the soil excavated and processing techniques shall be reviewed and approved by the RMD archaeologist or County designee. Analysis of all cultural materials and other items shall be detailed in a final report and submitted to the RMD contract archaeologist or County designee prior to development of this area of the site. Additionally, all artifacts and records from the programs shall be curated at a County-approved curation facility. Since Phase III mitigation work requires a large investment of time and labor, sufficient time shall be given by the applicant to perform the study. Should unexpected finds such as human burials be discovered, project redesign shall be considered to protect the religious and cultural values of the most likely Native American descendants (identified by the California Naive American Heritage Commission) of the site. **Plan Requirements and Timing:** Prior to CDP, the applicant shall hire a RMD-qualified archaeologist to perform the Phase III mitigation program. The program shall be funded by the applicant and shall be performed by a RMD-qualified archaeologist and monitored by a native American representative. Similar plan requirements and timing constraints apply if a Phase II study is to be performed at the maintenance building localities.

MONITORING: Prior to CDP, RMD shall approve the program. RMD/EQAP staff shall monitor.

36. (A4) Archaeological Resources. At site CA-SBA-76 on the Eagle Canyon Ranch, low impact rubber wheeled construction equipment shall be used during placement of the pipeline. All ground disturbance inside and within 50 feet of an archaeological site area shall be monitored by an RMD-qualified archaeologist and a Native American representative pursuant to County archaeological guidelines. Should piperack repair or replacement be required in the site area, a Phase II archaeological study shall be required, pursuant to County guidelines, in order to evaluate the deposit in the proposed development area. All excavation shall be performed by an RMD-qualified archaeologist in the presence of a Native American representative. An agreement to perform an archaeological investigation (Phase II) between the applicant and the archaeologist, consisting of a project description and scope of work, shall be reviewed and approved by RMD prior to any grading or removal of the existing piperacks. The agreement shall include provisions for Phase III mitigation data recovery in the event of significant finds during the Phase II investigation. Upon

completion of the fieldwork, a final report documenting the results of the investigation shall be submitted to the RMD archaeologist or County designee. All artifacts and records from the program shall be curated at a County-approved curation facility. **Plan Requirements and Timing:** Prior to issuance of the CDP for grading permit, the applicant shall include a note on a separate informational sheet to be included with grading plans regarding the provision of this condition. The program shall be funded by the applicant.

MONITORING: RMD shall approve the program. RMD/EQAP staff shall monitor.

37. (A5a) Archaeological Resources. The alternate above-ground pipeline route, north of CA-SBA-73, shall be the permanent location for placement of the pipeline to ensure that all impacts to the site are avoided. **Plan Requirements and Timing:** The revised pipeline route shall be shown on all pipeline grading and construction plans to be reviewed and approved by the Public Works Department prior to CDP.

MONITORING: RMD shall check plans prior to CDP. RMD/EQAP staff shall spot check during grading and construction to ensure that CA-SBA-73 is avoided.

OR

Should the above recommended action prove unfeasible and the underground route following the future Hyatt - Santa Barbara access road be chosen for pipeline placement, mitigation would depend upon the results of final archaeological work conducted prior to the construction of the proposed road therefore the following measure shall be implemented.

(A5b) An archaeologist familiar with the proposed ARCO Dos Pueblos pipeline plans shall consult with the archaeologist conducting the proposed Hyatt access road to take into consideration the placement of the buried pipeline in the site area. If the proposed pipeline would lie in fill for the proposed access road, then no adverse impacts to the site are expected. However, should trenching for the pipeline go below the fill layer, a Phase III mitigation excavation for the pipeline impacts shall be performed prior to placement of the fill soil. **Plan Requirements and Timing:** Prior to CDP an RMD-qualified archaeologist for the proposed project shall consult with the Hyatt Project archaeologist to determine the significance of the impact to CA-5BA-73 from the reclaimed pipeline and shall provide a written letter relating the results to RMD. If the Phase III mitigation program is required, prior to CDP, the applicant shall hire an RMD-qualified archaeologist to perform the Phase III mitigation program. The program shall be funded by the applicant and monitored by a Native American representative.

MONITORING: Prior to CDP RMD shall approve a letter report and a Phase III mitigation program if necessary. RMD/EQAP staff shall also make an onsite inspection to ensure that the mitigation is carried out.

38. (A1) Aesthetics. The applicant shall submit architectural drawings and site plans including details on the size, location and appearance of signage on and off the project and exterior lighting fixtures of the project for review and approval by BAR prior to Coastal Development Permits.

MONITORING: RMD will check project structures to ensure that all BAR requirements have been incorporated into the project design prior to occupancy clearance.

39. (HM2) Hazardous Materials. The applicant shall submit to EHS a work plan for assessment of hazardous waste or other contamination (i.e., crude oil) on the site. The assessment shall target especially those areas of known oil-drilling activity, including areas surrounding abandoned wells, sites of former aboveground storage tanks, underground piping and suspected sump locations. The work plan must include information on sampling locations of soil and groundwater constituents to be sampled, and sampling and analysis techniques to be utilized. **Plan Requirements and Timing:** Prior to CDP the work plan shall be submitted to EHS. Upon approval of the plan by EHS, the work plan and analysis shall be performed. Results shall be submitted to EHS to determine if further testing is needed. The site assessment shall be completed to the satisfaction of EHS.

MONITORING: EHS shall be responsible for approving the work plan and assessment results. EHS shall also inspect site prior to OC.

40. (HM3) Hazardous Materials. If soil and/or groundwater contamination exists onsite, the applicant shall submit a site remediation plan which will include timeliness for remediation acceptable to EHS. Soil remediation methods could include excavation and onsite treatment, excavation and offsite treatment or disposal, or treatment without excavation. Remediation alternatives for cleanup of contaminated groundwater could include in-situ treatment, extraction and onsite treatment, or extraction and offsite treatment and/or disposal. If site remediation is required, it could increase the extent of excavation currently proposed for the project. This could result in secondary archaeological or biological impacts if excavation is proposed in areas with sensitive biological or archaeological resources. Therefore, the remediation plan should also be approved by RMD to ensure that impacts to these resources would be avoided or mitigated. **Plan Requirements and Timing:** The remediation plan shall be approved by EHS, RMD prior to CDP.

MONITORING: EHS shall approve the remediation plan and shall ensure that the plan is implemented according to the approved schedule. Site inspections shall be made periodically during the remediation effort at the discretion of EHS.

41. (HM4) Hazardous Materials. An abandonment plan for the proposed Dos Pueblos Golf Links Project shall be submitted by the applicant and approved by RMD Energy Division, EHS, County Fire Department and DOG. The plan shall follow the draft Site Abandonment Restoration Guidelines (SARG). Refer to Appendix 5.7.3.2 of 92-EIR-16 for The Energy Division's SARG and ARCO's Draft Facilities Operation and Abandonment Plan submitted to the County October 14, 1991.

MONITORING: RMD Energy Division, EHS and County Fire Department shall check plans and ensure their proper implementation prior to CDP.

42. (HM5) Hazardous Materials. The applicant shall develop a formal fertilizer/pesticide storage and application plan to be reviewed and approved by the EHS and CACO. This plan shall conform to standards contained in Assembly Bill 2185 and the UFC and Building Code where applicable. In addition, application of chemicals shall be consistent with instructions on container labels and permits for restricted substances shall be obtained from CACO. Storage areas for hazardous materials shall be designed with the following mandatory components:

    a. A low berm around the interior floor to prevent migration of materials in the event of a spill.

    b. The floor shall be a concrete slab.

    c. The berm shall be designed to provide 100 percent containment of any stored liquids.

    d. A fire protection sprinkler system or other approved fire protection system shall be installed in all chemical storage areas.

    Plan Requirements: Prior to CDP, the applicant shall submit storage area plans to RMD and EHS for approval. Storage area specifications shall be depicted on all grading and construction plans. ***Timing:*** The storage area shall be installed prior to occupancy clearance.

    MONITORING: EHS and RMD shall site inspect prior to occupancy clearance.

43. (HM6) Hazardous Materials. The applicant shall develop a Hazardous Materials Business Plan (HMBP) as applicable with respect to actual stored quantities of hazardous materials and regulatory threshold quantities of hazardous materials and regulatory threshold quantities. Such plans shall conform to the provisions of AB2185/2187. **Plan Requirements:** Prior to occupancy clearance, the applicant shall submit a HMBP to EHS for review and approval. The plan shall be updated annually and shall include a monitoring section. **Timing:** The components of the HMBP shall be implemented prior to occupancy clearance.

MONITORING: EHS shall ensure plan approval and shall site inspect prior to occupancy clearance and periodically through the life of the project.

44. (HM7) Hazardous Materials. All wells shall be inspected and reviewed by the DOG and the RMD Energy Division to determine the adequacy of their abandonment. If portions of the casings of the presently existing wells will have to be removed during grading, surface cement plugs placed during abandonment shall be of a sufficient length that the required length of cement will remain after casing removal. If portions of the casings of the presently existing wells will have to be removed during grading, DOG must be contacted for possible requirement for upgrade of surface plugging. All well casings shall be cut off at least 5 feet below the surface of the ground. A steel plate at least as thick as the outer casing shall be welded around the circumference of the outer casing at the top of the casing, after division approval of the surface plug. DOG must also receive and review a site plan showing the locations of all wells in the project and all proposed permanent structures. Recommendations by the DOG and RMD Energy Division regarding reabandonment procedures and positioning of any structures in the vicinity of the wells shall be incorporated into the final project plans. Further requirements regarding reabandonment of wells pursuant to Section 3208.1 of the Public Resources Code (PRC) would be made from an examination of abandoned well conditions. DOG may order the reabandonment of any previously abandoned well if the future construction of any structure over or in the proximity of the well could result in a hazard [California Laws for Conservation of Petroleum and Gas, Publication No. PRC01, November 1991, Article 4, Regulation of Operations, Section 3208.1(a)]. **Plan Requirements:** This measure shall be incorporated into the abandonment plan. **Timing:** The abandonment plan shall be submitted and approved by the RMD Energy Division, EHS, and County Fire Department prior to CDP.

MONITORING: Abandonment and reabandonments shall be visually inspected by RMD Energy Division throughout abandonment procedures.

45. (HM8) Hazardous Materials. If site remediation is required, the remediation plans shall include a Site Health and Safety Plan to be followed throughout all remediation activities to protect the health of the site workers, the public and/or the environment. Excavation areas should be fenced off at sufficient distances to minimize exposure. A dust control program should be included in the site remediation plans requiring frequent wetting of exposed areas, as site remediation could involve extensive excavations. Offsite transportation of contaminated soil may be necessary for treatment or disposal. Transportation times and routes should be prearranged to minimize the potential for accidents or public exposure. All transportation of hazardous wastes would be done under proper manifest and restricted to persons with appropriate training and licensing. **Plan Requirements and Timing:** The remediation plan shall be approved by EHS prior to CDP.

MONITORING: EHS shall approve the remediation plan and shall ensure that the plan is implemented according to the approved schedule. Site inspections shall be made periodically during the remediation effort at the discretion of EHS.

46. (HM9) Hazardous Materials. A geophysical survey shall be performed on the area as part of the assessment identified in condition #39. The survey should locate pipelines and mud pits for appropriate abandonment procedures. Plan requirements timing and monitoring would be the same as for measure HM2.

47. (G1) Geology. The preliminary drainage plan for the project shall be finalized by a civil engineer and shall be designed to ensure that there would be no increase in surface runoff onsite and that surface runoff is conducted in a controlled manner to the base of the sea cliffs or appropriate areas within the major drainage swales. Specifically, runoff from all impervious surfaces such as roofs, pathways and parking areas shall be directed into an engineered drainage control system. The final design for proposed energy dissipators shall consider conformity to existing channels, cross-sectional area to accommodate discharge, and proper sizing of riprap to avoid scour beneath rocks and accomplish dispersion. **Plan Requirements and Timing:** The final drainage plan which includes a maintenance and inspection program to ensure proper functioning, shall be submitted prior to Coastal Development Permit by the applicant to RMD, Public Works and the Flood Control District for review and approval. Drainage plan components shall be installed prior to issuance of Occupancy Clearance (OC).

MONITORING: RMD, Flood Control and Public Works shall ensure compliance with plan requirements prior to CDP and RMD shall ensure installation of drainage control measures prior to OC.

48. (G2) Geology. Undersaturation of soils and subsequent increased slope stability shall be maintained through the implementation of the measures listed below.

a. Deep-rooted, drought-tolerant plant species, as selected by a landscaping specialist, shall be planted on the site to the extent feasible and existing ice plant shall be removed from the cliff face and replaced with species with less surface weight. Removal of the ice plant shall not occur during the rainy season.

b. Water percolation and soil moisture measurement devices shall be installed in areas of the project site to receive irrigation and water shall be applied at a rate that represents only the consumptive use of the plants.

Plan Requirements: Prior to CDP, a Biological Enhancement/Landscape Plan (BELP) including the above components shall be submitted to RMD for review and approval. **Timing:** The applicant shall implement components of the BELP referenced above prior to OC.

MONITORING: RMD/EQAP staff shall conduct site visits to ensure installation prior to occupancy.

49. (G3) Geology. A detailed geological and soils engineering study addressing structure sites, bridge sites, pathways, access roads and pipeline routes shall be prepared to assess surface and subsurface soil conditions (including collapsibility, compressibility, and expansiveness) and determine the structural design criteria. The stability of the existing piperacks to accommodate new pipelines shall also be assessed. The study shall be submitted for review and approval by the County Public Works Department. (This has already been completed by Rick Hoffman and Associates and Pacific Materials Laboratory for the proposed tunnel areas. Recommendations for tunnel construction presented in the existing investigation shall also be incorporated into the project design.) **Plan Requirements:** Grading and construction plans denoting the recommended measures as found in the geological and soils engineering study shall be submitted for review and approved by RMD prior to Coastal Development Permit (CDP). **Timing:** Components of the grading plan shall be implemented prior to issuance of building permits and components of the construction plans shall be implemented prior to issuance of occupancy clearance (OC).

MONITORING: Public Works shall ensure compliance with study requirements prior to CDP. Grading inspectors shall ensure compliance with measures incorporated into the grading plan and building inspectors shall ensure compliance with the structural design measures incorporated into the building plans prior to OC.

50. (F1) Fire. Adequate structural access shall be provided to the proposed site. **Plan Requirements:** Emergency access route shall be submitted by the applicant for review and approval by the County Fire Department prior to issuance of CDP and shall be installed prior to construction with combustible materials.

MONITORING: Access shall be reviewed and approved by RMD and County Fire Department prior to construction of combustible materials. The Fire Department and Permit Compliance shall ensure compliance through site inspections.

51. (F2) Fire. The applicant shall provide an adequate number of fire hydrants as determined by the County Fire Department. **Plan Requirements:** Prior to Coastal Development Permits, the applicant shall meet with the County Fire Department to review placement of additional fire hydrants throughout the development. **Timing:** Hydrants shall be installed prior to construction with combustible materials.

MONITORING: The County Fire Department shall ensure compliance through visitation of the site.

52. (F3) Fire. Buildings proposed as part of the project shall be equipped with automatic sprinkler systems, as determined by the County Fire Department. **Plan Requirements:** Prior to installation, the applicant shall meet with the County Fire Department to review sprinkler system plans. **Timing:** Sprinkler systems shall be installed and inspected during construction.

MONITORING: The County Fire Department shall ensure compliance prior to occupancy.

53. (S1) Solid waste. The applicant shall submit a Solid Waste Management Source Reduction Plan to RMD and Public Works for review and approval. The plan shall include the following components:

a. Implementation of a curbside recycling program in coordination with Marborg Disposal Company to serve the new development, including provision of accessible recyclable collection areas where needed within the project site with bins for storage of recyclable material;

b. The provision of composting facilities for the onsite recycling of all green wastes;

c. The provision of built-in compartmentalized recyclable material collection bins within each structure;

d. A listing of building supply merchandisers that would provide recycled materials to be used in construction and description of how these materials would be used;

e. A provision stating that recycled materials would be used in construction including a list of such supplies and suppliers.

Plan Requirements and Timing: The applicant shall submit a Solid Waste Management Program to RMD and Solid Waste (Public Works) for review and approval prior to approval of a CDP.

MONITORING: RMD and Public Works shall site inspect as necessary.

54. **DELETED.**

55. (ALU1) Agricultural Land Use. During grading of areas of Class II soil (as shown in Figure 1 in Appendix A to 92-EIR-16, ARCO letter comment 213), the following procedures will be followed:

Cut Areas

a. Topsoil to a depth of 24 inches will be removed and stockpiled separately;

b. Upon completion of the cut, the underlying subsoil shall be ripped to a depth of 18 inches with ripper shanks placed no more than 18 inches apart; and

c. The previously removed top soil shall be replaced in 12-inch lifts in the same area it was removed from and will be ripped to a depth of 18 inches with ripper shanks placed no more than 18 inches apart. This soil will not be compacted.

Fill Areas

a. Topsoil to a depth of 24 inches will be removed and stockpiled separately;

b. Upon completion of the top soil removal, the underlying subsoil shall be ripped to a depth of 18 inches with ripper shanks placed no more than 18 inches apart;

c. Clean subsoil that was removed from the Class II soil cut areas shall be used as fill and shall be placed in 12-inch lifts with no compaction;

d. Once the fill is placed, the top 18 inches shall be ripped with ripper shanks placed no more than 18 inches apart; and

e. The previously removed top soil shall be replaced in the same area it was removed from and will be ripped to a depth of 18 inches with ripper shanks placed no more than 18 inches apart.

Stockpiled topsoil shall be protected from wind and water erosion. The replaced topsoil shall be revegetated and protected from erosion. The above activities shall be monitored for compliance.

Plan Requirements: Grading plans denoting the recommended measures shall be submitted to RMD for review and approval prior to Coastal Development Permit (CDP). **Timing:** Components of the grading plan shall be implemented prior to issuance of building permits.

Monitoring: Grading inspectors shall ensure compliance with measures in the grading plan through periodic site inspection.

56. (ALU2) Agricultural Land Use. It shall be stipulated in the Conditional Use Permit (CUP) that in the event of a permanent closure of the golf links facility, agricultural land use shall be given preference on the project site's prime soil.

57. Pursuant to the Administrative Guidelines for Housing Impact Assessment for Non-Residential Projects, the applicant shall contribute in-lieu fees of $35,000.00 per housing unit demand over the first unit generated by the project. The housing demand is determined based on the number of anticipated employees generated by the project. The reclaimed water option will generate 32 employees. Affordable housing demand is determined by the following formula: 32 (employees) / 1 (employee density factor) * 0.27 (new-to-the-area proportion of total employees based upon "other" use) * 0.37 (low to moderate proportion of new-to-the-area employees) / 1.4 (workers per household or unit). Therefore, using the above formula, the applicant shall contribute $44,800.00. **Timing:** All in-lieu fees shall be paid prior to issuance of the Coastal Development Permit. As an alternative, the applicant shall enter into an agreement with the County of Santa Barbara, satisfactory to County Counsel and RMD, agreeing to provide for the development of one (1) affordable housing unit. The unit may be provided through direct provision on the project site or on an alternate site. If the applicant chooses to provide for the development of one affordable housing unit, prior to the issuance of the CDP the applicant shall enter into an agreement with the County, subject to County Counsel's approval that one unit shall be affordable based on RMD's "Model" *Agreement to Provide Affordable Housing* approved by the Board of Supervisors. The agreement shall contain timing by which the unit must be built and monitoring requirements to ensure its affordability. Income eligibility of prospective low or moderate buyer or renter shall be determined by the County or its designee. An intent to reside statement shall be required of the potential owner or renter of the low or moderate-income unit. The maximum sales price or rental rate of the low or moderate income unit shall not exceed the maximum levels established by RMD, consistent with the provisions of the Housing Element. Said low or moderate

income unit shall be retained as an affordable unit for a period of 30 years. Provisions for resale controls to implement this condition shall be recorded in the agreement between the applicant and the County using the "Model" *Deed Restriction to Control the Resale of Property* approved by the Board of Supervisors.

Monitoring: RMD staff shall ensure that either in-lieu fees have been paid or an agreement to supply an affordable unit is in place prior to issuance of the CDP. If in-lieu is not selected, the agreement mentioned above shall contain additional monitoring requirements.

58. Two performance securities shall be provided by the applicant prior to land use clearance, one equal to the value of installation of all items listed in section (a) below (labor and materials) and one equal to the value of maintenance and/or replacement of the items listed in section (a) for three years of maintenance of the items. The amounts shall be agreed to by RMD. Changes to approved landscape plans may require a substantial conformity determination or a modification to the plan. The installation security shall be released upon satisfactory installation of all items in section (a). If plants and irrigation (and/or any items listed in section (a) below) have been established and maintained, RMD may release the maintenance security two years after installation. If such maintenance has not occurred, the plants or improvements shall be replaced and the security held for another year. If the applicant fails to either install or maintain according to the approved plan, RMD may collect security and complete work on property. The installation security shall guarantee compliance with the provision below:

    (a) Installation of the Biological Enhancement/Landscape Plan (BELP) prior to occupancy clearance.

    MONITORING: RMD shall inspect landscaping and improvements for compliance with approved plans prior to authorizing release of both installation and maintenance securities.

59. Landscaping shall be maintained for the life of the project.

60. Prior to the issuance of the CDP for the cart barn in the location shown on the Site Plan, a Lot Line Adjustment shall be approved and executed with a Record of Survey so that the cart barn is situated entirely within the applicant's property (not over the property line).

61. Golf course use shall occur only during daylight hours and shall terminate by dark. Night lighting for night use of the course is prohibited.

62. The clubhouse facilities shall be open to the public. The facilities shall not be leased or used for private banquets or receptions not associated with golf play. Food service is intended for golfers during daylight hours only. The grill shall close no later than 1/2 hour after sunset.

63. The conversion of any portion of this public golf course to private or restricted use requires additional discretionary review and approval.

64. **DELETED.**

65. The applicant shall prohibit any additional connections to their private reclaimed water line.

66. The on-site Antiquated Naples lots shall not be developed with single family residences.

67. No signs of any type are approved with this action unless otherwise specified. All signs require a separate CDP and BAR approval and shall comply with the Santa Barbara County Code Chapter 35 (Sign Regulations).

68. All final conditions of approval (Planning Commission or Board of Supervisors) shall be printed in their entirety on appropriate construction or building plans submitted to RMD or Building and Development Division of Public Works. For any subsequent development on any parcels created by the project, each set of plans accompanying a CDP shall contain these conditions.

69. Prior to CDP issuance, the applicant shall pay all applicable RMD permit processing fees in full.

70. Any change of use in the proposed building ~~of use~~ shall be subject to full environmental analysis and discretionary review by the Planning Commission.

71. All plans and programs shall be implemented as approved.

72. This Conditional Use Permit is not valid until a Coastal Development Permit for the development and/or use has been obtained. Failure to obtain said Coastal Development Permit shall render this Conditional Use Permit null and void. It is anticipated that two separate Coastal Development Permits will be issued: the first for demolition and abandonment of the existing facilities, and the second for the construction of the golf links and related improvements. Prior to the issuance of the Coastal Development Permit, all of the conditions for each separate activity listed in this Conditional Use Permit that are required to be satisfied for that activity prior to issuance of the Coastal Development Permit

must be satisfied. Upon issuance of the Coastal Development Permit, the Conditional Use Permit shall be valid. The effective date of this Permit shall be the date of expiration of the appeal period, or if appealed, the date of action by the Board of Supervisors.

73. If the Planning Commission determines at a Noticed Public Hearing, that the permittee is not in compliance with any permit conditions, pursuant to the provisions of Sec.35-181 of Article II of the Santa Barbara County Code, the Planning Commission is empowered, in addition to revoking the permit pursuant to said section, to amend, alter, delete, or add conditions to this permit.

74. Any use authorized by this CP shall immediately cease upon expiration or revocation of this CP. Any Coastal Development Permit issued pursuant to this CP shall expire upon expiration or revocation of the CP. CP renewals must be applied for prior to expiration of the CP.

75. The applicants acceptance of this permit and/or commencement of construction and/or operations under this permit shall be deemed to be acceptance by the permittee of all conditions of this permit.

76. Within 2 years after the effective date of this permit, construction and/or the use shall commence. Construction or use cannot commence until a Coastal Development Permit has been issued.

77. All time limits may be extended by the Planning Commission for good cause shown, provided a written request, including a statement of reasons for the time limit extension request is filed with the Resource Management Department prior to the expiration date.

78. Developer shall defend, indemnify and hold harmless the County or its agents, officers and employees from any claim, action or proceeding against the County or its agents, officers or employees, to attach, set aside, void, or annul, in whole or in part, the County's approval of the Conditional Use Permit. In the event that the County fails promptly to notify the applicant of any such claim, action or proceeding, or that the County fails to cooperate fully in the defense of said claim, this condition shall thereafter be of no further force or effect.

79. In the event that any condition imposing a fee, exaction, dedication or other mitigation measure is challenged by the project sponsors in an action filed in a court of law or threatened to be filed therein which action is brought in the time period provided for in section 66499.37, this approval shall be suspended pending dismissal of such action, the expiration of the limitation period applicable to such action, or final resolution of such action. If any condition is invalidated by a

court of law, the entire project shall be reviewed by the Planning Commission and no approval shall be issued unless substitute feasible mitigation conditions/measures are imposed.

III. This permit is issued pursuant to the provisions of Sections 35-132.8, 35-172.8, 35-169 of the Coastal Zoning Ordinance of the County of Santa Barbara and is subject to the foregoing conditions and limitations; and this permit is further governed by the following provisions:

1. If any of the conditions of the Conditional Use Permit are not complied with, the Planning Commission, after written notice to the permittee and a noticed public hearing, may revoke the Conditional Use Permit.

2. A Conditional Use Permit shall become null and void and automatically revoked if the use permitted by the Conditional Use Permit is discontinued for more than one year.

3. All time limits imposed may be extended by the Planning Commission one time for good cause shown, provided a written request, including a statement of reasons for the time limit extension request is filed with the Resource Management Department prior to the expiration date.

Albert J. McCurdy by D. Meester

Albert J. McCurdy, Secretary,
Santa Barbara County Planning Commission

8/23/93
Date

xc: Case File: 91-CP-085
Permanent File
Ken Marshall, Interface Planning, 829 De La Vina, #210, Santa Barbara, CA 93101
David Painer, Jr., Schramm and Raddue, P.O. Box 1260, Santa Barbara, CA 93102
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Fire Department
Flood Control
Park Department
Public Works
APCD
Environmental Health Services
County Surveyor
County Counsel
Richard Corral, Planning Technician
Clerk of the Board (File #93-18,853)
Planners: S. Goggia/G. Wheeler/D. Meester/K. Drude

G:GROUP\PC_STAFF\WP\PC_CUP\91CP085.526

Santa Barbara County
Air Pollution Control District

March 15, 1993

Steve Goggia
County of Santa Barbara
Resource Management Department
123 East Anapamu Street
Santa Barbara, California 93101

RE: 91-CP-085 - ARCO Dos Pueblos Golf Links

Dear Mr. Goggia:

Thank you for giving the Air Pollution Control District (APCD) the opportunity to review the above referenced project. The APCD recommends that the following comments be included as conditions in the Land Use Permit:

1. The applicant shall ensure that all contractors' equipment meets the requirements (mitigation measure AQ1, 92-EIR-16):

    a. Construction equipment shall be maintained as per manufacturer's specifications;

    b. Catalytic converters shall be installed on all gasoline-powered equipment;

    c. The fuel injection timing shall be retarded on diesel-powered equipment by two degrees from manufacturer's recommendations. Reformulated diesel fuel and high pressure injectors shall be used in all diesel powered construction and abandonment equipment;

    d. Gasoline-powered equipment shall be substituted for diesel powered equipment if feasible.

2. Emissions generated by construction activities shall be reduced by the following measures (mitigation measure AQ2, 92-EIR-16).

    a. The frequency of construction site watering shall be increased when wind speeds exceed 15 miles per hour (mph) to reduce PM_{10} emissions;

26 Castilian Drive B-23, Goleta, CA 93117 Fax. 805-961-8801 Phone. 805-961-8800
James M. Ryerson, Air Pollution Control Officer William A. Mastor, Assistant Director

b. Grading and scraping operations shall be suspended when wind speeds exceed 20 mph to reduce PM_{10} emissions;

c. An on-site construction ~~speed limit~~ of 15 mph shall be posted to reduce PM_{10} emissions;

d. Water trucks or sprinkler systems using reclaimed water shall be used, if available, during clearing, grading, earth moving, excavation or transportation of cut and fill materials to prevent dust from leaving the site and to create a crust after each day's activities cease;

e. Excavated material and stockpiled soil shall be covered if not to be used for more than 48 hours;

f. All trucks transporting fill material to and from the site shall be covered;

g. Construction/abandonment related vehicle trips shall be scheduled to avoid peak hours (7:30-8:30 a.m.;4:30-6:00 p.m.) to reduce peak hour construction emissions;

h. Predicted short-term exceedances of the State NO_2 standard shall be mitigated by the electrification of diesel fired engines for well abandonment.

3. Project patrons should be given a financial incentive to carpool, i.e. reduced green fees (mitigation measure AQ3, 92-EIR-16). It is important to note that Santa Barbara County is in non-attainment for both the State and Federal standards for ozone. Emissions of ozone precursors resulting from the proposed project add to the long-term air quality problems of the area and impede progress toward attainment. Encouraging golf links patrons to carpool would be a positive way to reduce single occupant vehicle trips to the links.

4. Commercial water heaters and space heaters used on the project site should emit no more than 40 nanograms of NO_x per joule heat input, consistent with 1991 AQAP Control Measures N-XC-2 and N-XC-3 (mitigation measure AQ4, 92-EIR-16).

5. If contaminated soil cleanup is required at the project site, ARCO must contact the APCD's Engineering Division to determine if an Authority to Construct permit will need to be issued by the APCD.

6. The applicant is required to complete the attached "Asbestos Demolition/Renovation Notification" form. The completed form should be mailed to the APCD and EPA Region IX no later than the date specified in Section I.B.1 of the instructions.

If you have any questions or comments, please contact me at 961-8838.

Sincerely,

Frances Wilson

Frances Wilson
Air Quality Specialist

Attachment

cc: R.W. Hollis, Jr., ARCO Oil & Gas Company, Applicant
Ken Marshall, Interface Planning, Agent
Gilda Wheeler, Resource Management Department
Project File
IAD Chron File

IA\WP\IARCOR\LDNKS.LTR

County of Santa Barbara
AIR POLLUTION CONTROL DISTRICT
Notification for Renovation and Demolition

nstructions on Page 4 - *Please Read Instructions before Completing This Form*

ection I. Notification

APCD Identification Number: _____

AIL TO:
ASBESTOS NOTIFICATION
EPA/NESHAPS Region IX
75 Hawthorne Street
San Francisco, CA 94105
Name of Local Agency also Notified:
Santa Barbara APCD
Post Office Box 2120
Goleta, CA 93118
(805) 961-8800
DATE TODAY: _____
PROJECT JOB: _____

Project Dates:
Start Date: _____
Finish Date: _____

Asbestos Work Dates:
Start Date: _____
Finish Date: _____

Renovation _____
Demolition _____
Emergency _____

ORIG___REV___CANCL___

APCD USE ONLY
Date Rec_____
Pstmrk_____
Check#_____
Amount_____
Complete_____
NESHAPS_____
NOV issued___
NOV #_____
Inspdt_____

Fees for Asbestos Demolition and Renovation
*Please check box and submit proper amount

Quantity of Asbestos	Fee	
Demolition only:		
Less than 260 linear or 160 square feet	$ 75.00	☐
Demolitions and Renovations:		
Greater than 260 linear or 160 square feet but Less than 500 linear or square feet	$300.00	☐
Greater than 500 but less than 1000	$425.00	☐
1000 or greater but less than 2500	$570.00	☐
2500 or greater but less than 5000	$705.00	☐
5000 or greater but less than 10,000	$825.00	☐
10,000 or greater	$975.00	☐

Section II. Addresses

Removal Contractor's Name:
Company Name: _____
Contact Name: _____
Address: _____
City: _____
State/Zip: _____
Phone: (___) _____

Other Contractor (if applicable):
Company Name: _____
Contact Name: _____
Street Ad: _____
City: _____
State/Zip: _____
Phone: (___) _____

Owner Name: _____
Address: _____
City: _____
State/Zip: _____
Phone: (___) _____

Facility: _____
Street Ad: _____
City: _____
State/Zip: _____
Phone: (___) _____

Section III. Project Specifications

Is this an Abatement for a Renovation or a Demolition?
Is Asbestos Present? (Yes/No)
Are Asbestos Containing Materials (ACM) present? (Yes/No)
Type of Asbestos: _____

int of Asbestos:

Regulated ACM Removing Category I ACM Not Removed Category II ACM Not Removed	RACM To Be Removed	Nonfriable Asbestos Material Not to Be Removed		Indicate Unit of Measurement Below	
		Category I	Category II	UNIT	
es					
face Area					
ume RACM off Facility Components					

scribe Methods of Removal:_____

tion IV. Procedures

ocedure, including Analytical Method, if Appropriate, used to Detect the esence of Asbestos Containing Materials:

moval Procedures Used to Comply with 40 CFR Part 61:_____

scription of Work Practices and Engineering Controls to be used to event Emissions of Asbestos at the Renovation and/or Demolition Site:

ction V. Disposal

aste Transporter #1: Name:_____ Tel.#:( )_____
dress:_____
ty:_____ State:_____ Zip Code:_____

aste Transporter #2: Name:_____ Tel.#:( )_____
dress:_____
ty:_____ State:_____ Zip Code:_____

aste Disposal Site: Name:_____ Tel.#:( )_____
ocation:_____
ty:_____ State:_____ Zip Code:_____

ction VI. Government Order

f Demolition has been Ordered by a Government Agency, Identify Agency:
me:_____ Title:_____
thority:_____
ate of Order (MM/DD/YY):_____ Date Ordered to Begin:_____

ction VII. Emergency Renovations

ate and Hour of Emergency (MM/DD/YY):_____
escription of the Sudden, Unexpected Event:_____

xplanation of How the Event Caused Unsafe Conditions or Would Cause quipment Damage or an Unreasonable Financial Burden:_____

:tion VIII. Unexpected Discovery of Asbestos

scription of Procedures to be Followed in the Event that Unexpected .bestos is Found or Previously Nonfriable Asbestos Material becomes :umbled, Pulverized, or Reduced to Powder: _____

_____

_____

:ction IX. Trained Individual On-Site

Certify that an Individual Trained in the Provisions of this Regulation 40 CFR Part 61, Subpart M) will be On-Site During the Renovation or emolition and Evidence that the Required Training has been Accomplished by his Person will be Available for Inspection during Normal Business Hours. Required after 11/21/90):

_____
Type/Print Name

_____ _____
(Signature of Owner/Operator) (Date)

Section X. Statement

I Certify That <u>all</u> the Above Information is Correct:

_____ _____
(Signature of Owner/Operator) (Date)

_____
Type/Print Name

****INSTRUCTIONS ARE ON PAGE 4****

INSTRUCTIONS FOR NOTIFICATION*

:ion I. Notification

A copy of this notification should be sent to the EPA/Neshaps Region IX and also the Santa Barbara APCD (for projects only being performed in Santa Barbara County).

Asbestos notification requirements are as follows:

1. Notification of all Renovations and Demolitions are to be 10 working days in advance, unless it is an Emergency Renovation (see definition).
2. Please state whether the Notification of the Project is an Original, Revision, or a Cancellation, in the space provided.
3. Please check appropriate box for fees submittal. Amount submitted should correspond with amount being demolished or renovated.
4. If a revision to a notification is being submitted, please write the assigned APCD Identification Number on the top right-hand corner.

:tion II. Addresses

Please complete all areas that are applicable. If sections are the same Name and Address (for eg. Owner and Facility), "same" is acceptable.

"Contractor" means company employed by facility to complete project.

"Facility" means name and actual street location of asbestos removal project. Facility is any institutional, commercial, or industrial structure, installation, or building (excluding apartment buildings having no more than 4 dwelling units).

:ction III. Project Specifications

. FAM means more than 1 percent asbestos that hand pressure can crumble, pulverize, or reduce to powder when dry. If the asbestos content is less that 10 percent as determined by a method other than point counting by Polarized Light Microscopy (PLM), verify the asbestos content by point counting using PLM.

. For definition of category I and II, please see §61.141 - definitions.

. RACM means Regulated Asbestos-Containing Material. For a complete definition, please see §61.141 - definitions.

. "Methods of Removal" should include a detailed description of the removal method or reference appropriate EPA Method.

ection IV. Procedures and Section V. Disposal

. Please refer to 40 CFR Part 61 Subpart M for a complete listing of Procedures and Methods.

ection VII. Emergency Renovations:

. Emergency Renovation, as defined by 40 CFR §61.141, means a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage, or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment.

Please note that verbal notifications will not be accepted. All notifications must be in writing, either by mail or by hand delivery.

f you have any questions on completing this form, please contact the egulatory Compliance Division, Goleta Office (805) 961-8800 or Buellton ffice (805) 686-5012.

COUNTY OF SANTA BARBARA

123 E. ANAPAMU ST.
SANTA BARBARA,
CALIFORNIA 93101
AREA CODE 805
568-3000
FAX 568-3019

F. G. (SANDY) SCOTT
Assistant Director

EDWARD J. MARINI
Deputy Director

DEPARTMENT OF PUBLIC WORKS

MARLENE F. DEMERY
Director

March 26, 1993

Planning Commission
County of Santa Barbara
County Engineering Building
123 East Anapamu Street
Santa Barbara, CA 93101

Re: 91-CP-085
Arco Golf Course
APN 079-180-05,-16,-18;
079-200-04,-08.

Dear Commissioners:

The Department of Public Works recommends the following conditions for the above referenced project:

1. Prior to any construction activity within Caltrans or County road right of way, applicant shall obtain the appropriate encroachment permits.

2. A Preliminary Soils Report (Foundation Investigation) will be required to guide all foundation designs. This report shall include any grading and drainage recommendations.

2. A Grading Permit will be required for any grading, if more than 50 cubic yards of material are to be moved. A Grading Plan will be required for any Grading Permit, and must address drainage and erosion control as applicable.

3. New development, such as the development associated with the approval requested, which generates new peak hour trips, currently increases the costs for capital improvements required to service such increased road traffic by not less than $350.00 per new peak hour trip. Analysis of this project reveals that it can be expected to generate 61 new peak hour trip(s). To mitigate the particular traffic impacts on area roads that can be seen to be caused by this development,

3.(cont'd)
developer shall, prior to Land Use Clearance, make a payment of $21,350.00 to the County to be deposited into the Road Improvement Trust Fund for traffic related improvements identified on the Capital Improvement Plan for the subject area.

The purpose of the payment required by this condition is to offset, in part, the increase in the costs for traffic related capital improvements that will be created by the new development.

The payment will be used to pay and/or reimburse County expenses incurred for engineering, design and construction of the improvements identified in the Capital Improvement Plan for the area affected by the new development.

The total payment due may be adjusted downward at the discretion of the Director of Public Works if a substantial conformity determination is made on a revised project with lower traffic generation.

Each year on the anniversary date of this letter, if said payment has not been made, the amount of said payment shall be adjusted by the amount equal to the change in the construction cost index for the preceding year pursuant to "Cal Trans' Cost Data."

Note to planner: _X_ Sign-off needed prior to Land Use Clearance

___ No sign-off needed

Sincerely,

Bret A. Stewart, P.E.
Senior Development Engineer

cc: Planner: Steve Goggia
Grading Division
Surveyor's Office

COUNTY OF SANTA BARBARA
ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

☐ 120 CREMONA DR., STE. C • GOLETA, CA 93117
PHONE (805) 681-4900 • FAX (805) 681-4901

☐ 2125 S. CENTERPOINTE PKWY. STE. 333 • SANTA MARIA, CA 93455
PHONE (805) 346-8460 • FAX (805) 346-8485

ARY W. ERBECK, R.E.H.S., M.P.H.
DIRECTOR

TO: Resource Management Department
Development Review Division
Attn: Steve Goggia, Planner

FROM: Rick Merrifield
Environmental Health Services

DATE: April 2, 1993

SUBJECT: Case No. 91-CP-085 Goleta Area

Applicant: ARCO Oil & Gas Company
Route 1, Box 275
Goleta, CA 93117

Property Location: Assessor's Parcel Nos. 079-180-005, -016, -018 and 079-200-004 & -008, zoned AG-II-100 and AG-II-320, located on the coastal bluff south of US Highway 101, approximately 1.5 miles west of the Winchester Canyon exit of northbound US 101..

Case No. 91-CP-085 represents a request to develop a public golf course on a 202 acre site. The facilities would include a driving range, putting green, turf farm, clubhouse, cart barn, maintenance building and parking. The site is currently occupied by the ARCO Oil & Gas Company production facility.

Domestic water supply is proposed to be provided by the Goleta Water District. Supplemental domestic water may be provided by a ocean water desalination plant or an existing entitlement from the Rancho Dos Pueblos Water System. Irrigation water is to be supplied by either reclaimed water from the Goleta Water and Sanitary Districts or by a desalination plant. If a separate water system is developed for the treatment and distribution of desalinated ocean water, a small public water system will need to be formed and treatment facilities constructed. A supplemental domestic water system would be under the jurisdiction of Environmental Health Services.

Sewage disposal is proposed to be provided by private septic systems utilizing the seepage pit (drywell) method of disposal. Soils tests for the standard leach method indicated poor conditions near the ground surface for sewage disposal. Acceptable test

reports have been submitted, however, for three test drywells which were shown to provide satisfactory absorption.

Development of the site will require abandonment of the existing oil wells and production facilities which date back to the 1920's. Due to the age of the facilities, it is likely that soil contamination is present and will need to be remediated. Contamination of groundwater is possible, but not likely, due to the lack of any known shallow water under the site. It may be necessary to re-abandon previously plugged oil wells if they are found to be inconsistent with the proposed development. The status of abandoned wells should be verified by the California Division of Oil & Gas which has jurisdiction over oil production wells.

Providing the Planning Commission grants approval of the applicant's request, Environmental Health Services recommends the following be included as Conditions of Approval:

1. Prior to Issuance of Zoning Clearance, Environmental Health Services shall receive and approve written notice from the Goleta Water District indicating that said district can and will provide domestic water service upon demand and without exception and that all financial arrangements guaranteeing extension of said service have been made to the satisfaction of the district and Environmental Health Services.

In the event the project includes a desalination plant or other supplemental domestic water, conditions 2 through 7 shall apply:

2. Prior to Issuance of Zoning Clearance, final detailed engineering plans and specifications for the proposed water supply system to serve the project shall be reviewed and approved by Environmental Health Services. Additionally, a completed application for a Domestic Water Supply Permit shall be submitted to Environmental Health Services.

3. Prior to Issuance of Zoning Clearance, the water source(s) which are not already developed but are necessary in order to complete a suitable system design, must be developed in accordance with the provisions of County Ordinance No. 3458.

4. Prior to Issuance of Zoning Clearance, the approved domestic water supply system shall be installed, constructed and fully operational.

5. Prior to Issuance of a Building Permit, the owner of the proposed water system shall be in possession of a valid Domestic Water Supply Permit pursuant to Health and Safety Code Section 4010 et seq.

6. Prior to Occupancy, a potability clearance must be obtained from this department stating in writing that the system is capable of delivering potable water.

7. Prior to Issuance of Zoning Clearance, if a desalination plant is included in the project, Environmental Health Services the shall review and approve a plan for the disposal of brine and sludge wastes from the plant. Concurrence by the California Regional Water Quality Control Board shall be required.The plan shall include but not be limited to the following:

   (a) Description of waste characterization procedures
   (b) Description of short-term storage facilities
   (c) Method and place of waste disposal
   (d) Means of waste transport
   (e) All equipment necessary to implement the plan.

Conditions 8 through 11 shall apply to the use of reclaimed water on the project site:

8. Goleta Water District shall be responsible for the on-site operation and maintenance of the reclamation system, prevention of potential hazards, implementing all State and local guidelines, and coordination with the State approved cross-connection control program.

9. Prior to Use of Reclaimed Water, the applicant shall obtain approval of plans and specifications for the reclaimed water distribution system from Environmental Health Services and Regional Water Quality Control Board staff. The plans shall include all of the following:

   (a) User site distribution lines for reclaimed wastewater and the location of all potable and non-potable water lines and sewer lines. All pipelines transporting reclaimed water and domestic water shall have a 10 foot horizontal and a 1 foot vertical separation (with the domestic water above the reclaimed water).

   (b) Location and type of approved backflow protection devices for protection of potable water supplies at the user sites.

(c) User site plans for the design and control of the use of valves, outlets, quick couplers, and sprinkler heads. These facilities shall be provided with adequate security as well as warning signs, as required by Title 22 of the California Code of Regulations. All existing exterior hose bibs and drinking fountains on the reclaimed water distribution system shall be located and depicted as "to be removed" on these plans.

(d) Buffer zones and other protective measures for: water wells, drainage and water courses, outdoor eating areas of food facilities, property lines and residences.

(e) Grading and drainage plans which indicate that no ponding will occur along public roads or other public areas.

(f) A user site plot plan which shows the location of warning signs regarding the use of reclaimed wastewater.

(g) Reclaimed Water User Agreement which identifies the reclaimed water user supervisor. Updates or amendments to these agreements shall be submitted to Environmental Health Services.

(h) If required by the Regional Water Quality Control Board and State Department of Health Services, the applicant shall submit specific user site information including boring logs which depict perched or useable groundwater depth, and the soil profile across the site. Copies of such information shall be provided to Environmental Health Services.

10. Prior to Use of Reclaimed Water, the applicant shall arrange with Environmental Health Services (EHS) for final inspection of the user site. All warning signs shall be adequately posted; all exterior hose bibs and drinking fountains removed from the reclaimed water system; all backflow protection devices shall be installed and tested by a certified tester, with copies of these reports filed with EHS; all exterior drinking fountains on the potable system shall be adequately protected, as determined by EHS, from direct or windblown reclaimed water spray; all valves, outlets, quick couplers and sprinkler heads shall be color-coded and/or equipped with warning signs and secured in a manner which permits operation only by personnel authorized by the user; and documentation shall be submitted to EHS which shows that training has been provided by the Goleta Water District for the user site supervisor.

11. Prior to Use of Reclaimed Water, Waste Discharge Requirements shall have been issued by the Regional Water Quality Control Board, or a written waiver of such requirements shall be provided to Environmental Health Services.

12. Prior to the Issuance of a Building Permit, the method of backflow protection for the domestic water supply system shall be specified and approved by the Goleta Water District.

13. Prior to Occupancy, any additional backflow prevention device(s) shall be installed as required by Condition 12 and said device(s) inspected and approved by the Goleta Water District.

14. Prior to Issuance of Zoning Clearance, Environmental Health Services shall receive a satisfactory soils percolation (absorptive capability) test report for the proposed septic systems, prepared by a registered civil or soils engineer. An acceptable report shall include the following information and shall conclude that septic systems of specific design and capacity can be installed on the subject property with the approved building plans without resultant future contamination of usable groundwater strata or water sources.

    Note: The proposed area for the installation of the subsurface effluent disposal system cannot exceed 30% slope. Drywells (seepage pits) may only be utilized when standard leach lines have been shown to be infeasible, as determined by the soil engineer with the concurrence of EHS. Drywells must be installed and performance tested to meet the minimum requirements of dissipating five times the septic tank capacity within 24 hours.

    a. A description of the methodology employed in the performance test.
    b. A map showing location of tests.
    c. A table of data obtained from the performance test at each test location.
    d. A log of the subsurface soil and groundwater conditions encountered and existing in the area.
    e. A statement that the soil zones are those utilized by the existing installed system.
    f. A statement that the test locations are representative of and applicable to the existing system location and area of 100 percent expansion.

g. A map indicating sewage disposal system location, 100 percent expansion area, all required setbacks and the area developed.

h. A statement that the parcel has been developed as proposed with the designed private sewage disposal system and that said system can be expected to function satisfactorily with routine use and periodic maintenance.

i. Compliance with Regional Water Quality Control Board Prohibitions effective March 15, 1984 - (see attached). In the event the provisions set forth in this item cannot be complied with, the applicant shall submit sufficient engineering justification to the Regional Water Quality Control Board requesting waiver of appropriate provision(s). The applicant shall supply a copy of the Regional Water Quality Control Board's determination to the County Environmental Health Services Division.

15. Prior to Issuance of Zoning Clearance, Environmental Health Services shall review and approve a septic system design by a registered civil or licensed soil engineer which includes a layout for the construction of a dual (200%) disposal area and area to be set aside for 100% expansion, as required by the Regional Water Quality Control Board. The design is to be based on the larger of: design wastewater flow based on the Uniform Plumbing Code or the number of plumbing fixture units to be served.

16. Prior to Issuance of Zoning Clearance, the applicant shall submit written verification from the Regional Water Quality Control Board that Waste Discharge Requirements apply to the septic systems or that exemption from such requirements has been granted.

17. Prior to Issuance of a Building Permit, application for septic system permits shall be made, reviewed and approved by Environmental Health Services.

18. Prior to Issuance of Zoning Clearance, Environmental Health Services shall review and approve a Mosquito Management Plan for all ponds, lakes and water basins proposed for this project. The plan shall include the following information:

    a. Steepness and material of banks and water depth.
    b. Weed control and maintenance procedures.
    c. A map showing access to the ponds, lakes and basins and any other water sources.
    d. Mosquito control methods.
    e. Drainage and grading plans.

19. Prior to Issuance of a Building Permit, Environmental Health Services shall review and approve the plans and specifications for the proposed food facilities and any related facilities.

20. Prior to Issuance of Zoning Clearance, Environmental Health Services shall review and approve a work plan for assessment of hazardous waste or other contamination (e.g. crude oil) which may exist on the site. The plan shall include information on specific sampling locations, methods and constituents.

21. Prior to Issuance of Zoning Clearance, Environmental Health Services shall review and approve a site assessment and facility abandonment plan which includes timelines for completion of any necessary remedial action.

22. Prior to Issuance of a Building Permit, all inactive oil wells and injection wells on the project site shall be abandoned to the satisfaction of the California Division of Oil & Gas.

23. Prior to Construction, all obsolete underground storage tanks, sumps and ancillary facilities shall be removed under permit by Environmental Health Services and any existing soil contamination shall be remediated unless specific written approval is granted from Environmental Health Services.

24. Any release, threatened release, or discovery of hazardous materials during excavation shall immediately be reported to Environmental Health services.

25. Prior to Issuance of Zoning Clearance, the applicant shall obtain a determination from Environmental Health Services regarding the need for a Hazardous Materials Business Plan and or Risk Management Prevention Plan for the use or storage of hazardous materials or acutely hazardous materials, respectively.

26. Prior to Occupancy Clearance, if required pursuant to Condition 24, the applicant shall submit a Hazardous Materials Business Plan and/or Risk Management Prevention Program in accordance with the provisions of California Health and Safety Code, Chapter 6.95, Section 25500 et seq. This plan shall be reviewed and approved by Environmental Health Services.

27. Prior to Occupancy Clearance, the applicant or any tenants generating hazardous waste shall apply for and receive a Hazardous Waste Generator Permit in accordance with the provisions of Santa Barbara County Ordinance 3503.

Richard M. Merrifield

Richard M. Merrifield, REHS
Senior Environmental Health Specialist

cc: Applicant

Engineer, P & D Technologies, Gerald Robbins, 1100 Town & Country Rd, #300, Orange, CA 92613-5367

Goleta Water District/Company

Goleta Sanitary District

Mike Higgins, Regional Water Quality Control Board

Nick Andrade, Public Works Building and Development Division

Division of Environmental Review

COUNTY OF SANTA BARBARA
FIRE DEPARTMENT

4410 CATHEDRAL OAKS ROAD
SANTA BARBARA, CALIFORNIA 93110-1042
Telephone (805) 681-5500

DAN FRALJO
FIRE CHIEF

DONALD PERRY
DEPUTY CHIEF

KEITH SIMMONS
DEPUTY CHIEF

MEMORANDUM

TO: Steve Goggia
RMD Santa Barbara

FROM: Andrew J. Rosenberger, Captain
Development Review Section

DATE: July 21, 1992

SUBJECT: APN 079-180-005, 016, 018 079-200-004, 008; Permit # 91-CP-85
SITE: Dos Pueblos Golf Links (ARCO)

The above project is located within the jurisdiction of the Santa Barbara County Fire Department, and to comply with the established standards, we submit the following:

THE FOLLOWING CONDITION LETTER HAS FIRE DEPARTMENT REQUIREMENTS ON:

(.) PERMITS
( ) ALARM SYSTEMS
(✓) FIRE HYDRANT(S)
(✓) MITIGATION FEES
( ) OTHER AGENCY REQUIREMENTS
(✓) APPROVED FIRE SPRINKLER SYSTEM
(✓) DRIVEWAY OR PRIVATE ROAD ACCESS
(✓) HIGH FIRE HAZARD AREA CONSTRUCTION
( ) STORED WATER FIRE PROTECTION SYSTEM

PLEASE READ THE FOLLOWING CONDITION LETTER CAREFULLY TO AVOID ANY DELAYS WHEN A FINAL OCCUPANCY CLEARANCE INSPECTION IS DONE.

FIRE DEPARTMENT WATER REQUIREMENTS (WITHIN A WATER PURVEYOR'S DISTRICT). The applicant shall submit a written application to the water purveyor serving this area requesting service for fire protection. The completed application, approved by the water purveyor shall be submitted to the Fire Department.

PRIOR TO RECORDATION, fire hydrants capable of supplying the required fire flow for fire protection shall be provided. The new fire hydrants shall each be located 300 feet within the developed area. The new fire hydrants shall have 2 2 1/2" outlets and one 4" outlet. Outlets shall have national standard threads and caps to protect the threads. The fire hydrants shall be of the type approved by the Fire Department and acceptable to the water company or district serving the property. The fire hydrants and mains supplying same shall be installed in accordance with the standards established in and by the Uniform Fire Code, the National Fire Protection Association and the American Water Works Association, and supply a minimum of 1500 gallons per minute under normal flow pressure [20 PSI minimum]. In the event any portion of the building or buildings exceeds 300 feet from a properly spaced fire hydrant, located on the project access way, an on-site fire hydrant shall be installed.

PRIOR TO INSTALLATION, two sets of plans showing the location, size and type of fire hydrants, valves, main lines and lateral lines shall be submitted to this office for approval.

The applicant shall provide approved water system plans from the water purveyor.

Fire protection water systems installed without plans approved by the Fire Department are unacceptable to this Department and may result in the issuance of a STOP WORK order and or removal of improper installation.

PRIOR TO THE ERECTION OF COMBUSTIBLE MATERIALS, the fire protection water system shall be installed as shown on the plans approved by the Fire Department.

PRIOR TO ISSUANCE OF LAND USE CLEARANCE, the applicant shall provide a letter from the appropriate water purveyor stating that financial arrangements have been made with them guaranteeing the installation of the necessary water mains and fire hydrants.

PRIOR TO INSTALLATION, two sets of plans for the water supply system shall be submitted for approval to both the Fire Department and the appropriate water district or purveyor.

PRIOR TO ISSUANCE OF BUILDING PERMIT, the applicant shall provide evidence satisfactory to the Fire Department that financial arrangements have been made guaranteeing the installation of the necessary water mains and fire hydrants within the public right-of-way. An executed copy of a contract will serve as evidence of financial arrangements concerning the installation of an on-site fire protection water system.

If connection to a public water supply is not available, an Underwriters Laboratories listed fire pump capable of delivering the required fire flow of 1500 GPM shall be installed in compliance with NFPA Standard #20. The fire pump shall be supervised by a U.L. listed central station and be equipped with a local alarm bell on the address side of the building. The stored water for fire protection shall be 180,000 gallons and comply with NFPA Standard #22. The on-site water supply system shall be stubbed out to facilitate connection to the water district or purveyor when available. Connection to water district or purveyor mains shall be accomplished within 180 days of availability.

PRIOR TO INSTALLATION, two sets of plans for the water supply system shall be submitted for approval to both the Fire Department and the appropriate water district or purveyor.

BUILT-IN FIRE PROTECTION SYSTEMS COMMERCIAL. All structures over 5,000 square feet or more (except accessory agricultural buildings and owner occupied residential structures) within urban limit lines and all commercial structures regardless of square footage outside of the urban limit lines, as defined within the county's comprehensive plan, shall be protected by an approved, automatic fire sprinkler system. The system shall be supervised, including tamper switches via a dedicated 7-digit telephone number to a UL listed central station monitoring sevice and shall be installed in accordnace with National Fire Protection Association Standard #13, #13R and #71. The building's housing bathrooms do not require fire sprinklers.

PRIOR TO INSTALLATION, plans for the proposed system shall be designed by a qualified person and submitted to this office for approval. The plans shall be designed and submitted with all information and material required by the Santa Barbara County Fire Department Development Standard #4 or #5 (attached).

PRIOR to covering the installed piping, the Fire Department shall be notified to schedule a rough inspection (48 hour notice, minimum).

PRIOR TO ERECTION OF COMBUSTIBLE MATERIALS, all access ways (public or private) shall be installed and made serviceable.

Access to this project shall conform to the requirements for private roads and driveways as set forth in the Santa Barbara County Private Road and Driveway Design Standard #1 (attached).

PRIOR TO ISSUANCE OF ZONING CLEARANCE, private roadway plans, acceptable to the Public Works and Fire Departments, shall be submitted by a civil engineer registered in the State of California. Two (2) sets of plans shall be submitted to each department for approval.

UPON COMPLETION OF ROAD CONSTRUCTION, the responsible party shall certify to the Public Works and Fire Departments that the access road has been constructed as required by approved plans, and meets the current standards.

Access roads under 28-feet in width shall be posted and striped to indicate no parking on either side. Access roads under 36-feet in width shall be posted and striped to indicate parking on one side only.

Dead-end access roads shall terminate with a Fire Department approved turnaround. Turns and turnarounds shall maintain a minimum 38-foot radius.

Access ways shall be extended to within 150-feet of all portions of the exterior walls of the first story of any building.

A minimum of 13'6" of vertical clearance shall be provided and maintained for fire apparatus.

All access ways, private or public, shall be named and street signs installed to county standards.

Building numbers (minimum 3" high on a contrasting background for residential; 6" high on a contrasting background for commercial) shall be installed ON THE STRUCTURE and shall be visible from the access road when traveling in either direction. If the driveway is over 150 feet in length or the building is obstructed from view at the access road, numbers shall be installed at the intersection of the driveway and the access road.

When access ways are gated, a Fire Department approved locking system shall be installed in an accessible location.

PRIOR TO INSTALLATION, the location and type of locking system shall be approved by the Fire Department.

PRIOR TO OCCUPANCY, portable fire extinguishers are required and shall be in accordance with the Uniform Fire Code, Section 10.301 and 10.303.

PRIOR TO OCCUPANCY, all structures requiring a building permit shall be built in accordance with Santa Barbara County Code Section 10-83 which prescribes material, procedures, and techniques to be used within high fire hazard zones, as outlined in Fire Department Development Standard #3 (attached).

Attached Table I shall be completed and returned to the undersigned.

PRIOR TO CONSTRUCTION, applicant shall submit building plans to the Fire Department detailing areas in which flammable or hazardous materials shall be used or stored. Plans shall reflect all requirements of the Uniform Fire Code and Uniform Building Code. The plans must be approved by the Fire Department prior to construction.

PRIOR TO OCCUPANCY CLEARANCE, an annual permit for the use and storage of flammable or hazardous materials is required by the Fire Department. Prior to the issuance of the permit, the applicant shall comply with the Santa Barbara County Code Chapter 15, Article I, including the Uniform Fire Code and the latest supplements.

PRIOR TO OCCUPANCY CLEARANCE, the applicant will be required to pay a fee. Pursuant to Chapter 15, Article III of the Santa Barbara County Code the fee shall be paid for the purpose of mitigating the increased fire protection needs generated by the development. The amount of the fee is as follows:

> Non-residential, $350.00 plus $.25 per square foot on each new non-residential building in excess of 500-square feet, and an addition to a non-residential building which adds 500-square feet or more.

Checks shall be made payable to the Santa Barbara County Fire Department and mailed or delivered to the Fire Administration Center, Attention Alicia Cranney/Fire Prevention Division, 4410 Cathedral Oaks Road, Santa Barbara, CA, 93110.

The Fire Department recommends that fire protection mitigation fees be PAID AT LEAST THREE WEEKS PRIOR to a request for occupancy clearance (Inspections will NOT be scheduled unless fee has been paid). This will allow time for the request to be processed so that occupancy clearance will not be delayed. FINAL OCCUPANCY CLEARANCE INSPECTIONS WILL BE PERFORMED WITHIN THREE WORKING DAYS. If a project is denied on the initial inspection, then a second inspection will

have to be arranged with the Inspector assigned to this project. This could result in a seven day waiting period.

These conditions apply to the project as currently described. Future changes, including but not limited to further division, change of occupancy, intensification of use, or increase in hazard classification, any require additional mitigation to comply with applicable development standards in effect at the time of change. The application for a new building permit will require further review and the imposition of current development standards.

NONCOMPLIANCE WITH CONDITIONS PLACED ON THIS PROJECT COULD RESULT IN THE ISSUANCE OF A STOP WORK ORDER BY THE FIRE DEPARTMENT, WHICH MAY REQUIRE ADDITIONAL FEES.

If you have any questions or need clarification of any of the conditions contained in this letter, please contact this office.

Thank you.

AR:jb
CC: APN, Building Department/ SB, Chron, County Counsel
Environmental Health - Peggy O' Halloran
Environmental Planner - Joddi Leipner
Owner - Atlantic Richfield Co.
Route 1, Box 275
Goleta, Ca 93117
Applicant - Michael G. Viettone
c/o Penfield & Smith
P.O. Box 98
Santa Barbara, Ca 93102
P/W Road Division
Surveyor
Water Purveyor: Goleta Water District

Attachments: 1, 2, 3, 5

COUNTY OF SANTA BARBARA
FIRE DEPARTMENT

Since 1926

4410 CATHEDRAL OAKS ROAD
SANTA BARBARA, CALIFORNIA 93110-1042
Telephone (805) 681-5500

SANTA BARBARA COUNTY FIRE DEPARTMENT
FIRE PROTECTION DIVISION
DEVELOPMENT REGULATION #1
PRIVATE ROAD AND DRIVEWAY DESIGN STANDARDS
SERVING SINGLE FAMILY DWELLINGS

SCOPE AND PURPOSE

The intent and purpose of these design standards is to specify minimum standards for the construction of private roads and driveways serving residential development in the unincorporated areas.

A private road is a roadway system that is not part of the official county maintained road system, where the County has no maintenance responsibilities, although the private roadways may be located in either a publicly or privately owned easement.

In general, these standards will be applied as conditions of approval when land is developed or divided. Modifications of existing facilities and existing parcels of 40 acres or larger may be exempted from these requirements at the discretion of the fire chief and the director of public works.

Exemptions may also be granted by the chief and director based upon consideration of feasibility or environmental considerations.

Individual review of each proposed road section may disclose that a higher standard of design is warranted by potential future or additional use of the road section or by the existence of special circumstances.

REV: 2/92

I. GENERAL REQUIREMENTS FOR DRIVEWAYS AND PRIVATE ROADS

A All pertinent Public Works and Flood Control grading and drainage requirements must be adhered to. A driveway permit must be obtained for connection to a public way. A road excavation and encroachment permit must be obtained for private roads.

B. Road and driveway surface per Section IV following.

C. Minimum curve radius 38 feet from centerline of roadway.

Maximum allowed grade shall not exceed 15 percent, except when approved in writing by the fire chief and Director of Public Works.

II. DRIVEWAY STANDARDS (Applies to driveways more than 100 feet long which serve one residential lot or dwelling)

A. Minimum traveled width 12 feet. Driveway sections in excess of 500 feet shall have 10 foot by 50 foot turnouts every 500 feet.

B. Approved turnaround (large enough to accommodate fire trucks) shall be provided at end of driveway. (See attached)

III. PRIVATE ROAD STANDARDS (This standard applies to access roadways serving two or more residential lots or dwellings)

A. Roadways serving two to four residential lots or dwellings shall have a minimum width of 16 feet.

B. Roadways serving five or more residential lots or dwellings shall have a minimum width of 20 feet.

C. Roads serving ten or more residential lots, each 5 acres or less shall have a minimum width of 24 feet.

D. All dead end access roads shall terminate with an approved circular turnaround. (See page 9)

E. A minimum 30 foot easement shall be provided for private roads 16 to 24 feet in width.

REV: 2/92

IV. ROAD SURFACE STANDARDS

A. Paving is defined as:

1. Double chip seal (An application of asphaltic emulsion and rock screenings over prepared base material) or:

2. Asphaltic concrete pavement as approved by the Director of Public Works.

3. Poured concrete as approved by the Director of Public Works.

B. An approved all weather road surface is defined as:

1. Suitable aggregate material over compacted subgrade soil as approved by the Director of Public Works.

C. An approved all weather road surface, as defined in "B.-1" is allowed outside the Urban Limit Line where grades do not exceed 10 percent on driveways and private roadways serving 4 or fewer residential parcels.

D. Paving as defined in "A.-1." and "A.-2" is required on:

1. All driveways and roadways within the Urban Limit Line.

2. On all roadways serving 5 or more lots outside the Urban Limit Line.

3. Double chip seal is the minimum pavement allowed on grades from 10 to 15 percent outside the Urban Limit Line.

4. On road grades exceeding 15 percent, a minimum of 2 1/2" of asphaltic concrete pavement shall be provided over Class II aggregate base, or
alternative, as approved by the director of public works.

REV: 2/92

V. CERTIFICATION

Prior to occupancy of any residential development constructed on private roads or driveways covered by these standards, the civil engineer or contractor shall submit the following certification on a complete set of "Record" drawings to the director of Public Works.

"I hereby declare that I have conducted a field review of the completed road and drainage facilities shown on this plan. The improvements have been constructed in a workmanlike manner pursuant to the approved design and the applicable county standards"

_____

Signature

Registration/License No._____

Date_____

REV: 2/92

VI. ACCESS

A. The furthest projection of the exterior wall of a building shall be accessible from within 150 feet of a public or private road or private driveway as measured by an unobstructed route around the exterior of the building.

B. Gated access shall be provided with an approved fire department locking system. Nominal width of open gate shall exceed road width by at least two feet.

C. All weather access shall be provided prior to erection of combustible materials. (A fire engine must be able to get to the structure while under construction)

VII. STREET SIGNS

A. Street signs shall be installed on private roads so that there are no questions as to where to go.

B. County rules and regulations about posting and naming streets shall be followed. (County Code Chapter 35)

VIII. BUILDING ADDRESSING

A. Address numbers shall be installed prior to occupancy. They must be a minimum of 3" high on a contrasting background.

B. Addresses must be readily visible from the street or private road. At road forks or down long driveways, it must be obvious to any emergency vehicle where the house is located by directional and numerical signs.

C. Numbers are assigned by County Resource Management.

REV: 2/92

IX. VEGETATION CLEARANCE

A. Vertical clearance of 13'6" shall be maintained.

B. Horizontal clearance of up to ten feet on each side of the driveway or private road shall be maintained where required by the fire chief.

C. Additional brush clearance may be required in high fire hazard areas.

X. BRIDGES

A. Bridges shall have the same minimum width as in road standards

B. Capacity of 20 tons shall be certified by a registered civil engineer.

1. Certificate copy to be on file at local fire station.

2. Capacity shall be posted at both bridge approaches and updated periodically, as required by the fire chief.

XI. CREEK CROSSINGS

A. May be acceptable in some cases. (If permanent)

B. Minimum width 12 feet

C. Concrete construction required

REV: 2/92

XII. STRUCTURAL SECTION, GENERAL

A. The following standards are based on State of California Department of Transportation structural section design methods utilizing:

1. Traffic Index (T.I.)

2. Gravel Equivalent (G.E.)

3. Gravel Factor (G.F.)

4. Soil Bearing Value (R-Value)

B. Other design methods may be approved and alternative structural sections supported by civil engineering design calculations may be accepted.

XIII. DRIVEWAYS OVER 100 FEET LONG SERVING ONE LOT OR DWELLING

A. The minimum standard structural section for driveways in 7" of suitable aggregate material with a Gravel Factor of 1.0 or 6" of Class II Aggregate Base (CalTrans specifications) over 6" of compacted subgrade soil, with adequate drainage control.

B. The section may be modified by engineering design or certification, utilizing the data in Table 26 (Section XIV following) or other appropriate design methods.

REV: 2/92

XIV. TABLE 26: PRIVATE DRIVEWAY STRUCTURAL SECTION SERVING ONE LOT OR DWELLING

Traffic Index = 2, G.E. = .0032(T.I.) (100-R)

R-Value	G.E.	Inches of Material (G.F.=1.0)	Equivalent Thickness Cl. II A.B.
50	.32	4	3.5
40	.38	4.5	4
30	.45	5.5	5
20	.51	6	5.5
15	.54	6.5	6
10	.58	7	6.5

XV. PRIVATE ROADS SERVING 2 TO 4 LOTS OR DWELLINGS

A. The minimum standard structural section for roadways serving 2 to 4 lots or dwellings is 10 1/2" of suitable aggregate material with a Gravel Factor of 1.0 or 9.5 inches of Class II Aggregate Base (CalTrans specification) over 9" of compacted subgrade soil (95% relative compaction)

B. The standard may be modified by engineering design or certification utilizing the data in Table 27 (Section XVI following) or other appropriate design. Private roads serving 4 or fewer lots may be certified by a civil engineer or a licensed contractor.

REV: 2/92

XVI. TABLE 27 PRIVATE ROADS SERVING 2 TO 4 LOTS OR DWELLINGS

Traffic Index = 3.0 G.E. = .032 (3.0) (100-R)

R-Value	G.E.	Inches of Material (F.G.=1.0)	Equivalent Thickness Cl. 11 A.B.
50	.48	6	5
40	.57	7	6
30	.67	8	7.5
20	.77	9	8.5
15	.82	10	9
10	.86	10.5	9.5

XVII. PRIVATE ROADS SERVING 5 OR MORE LOTS OR DWELLINGS

Private roads serving 5 or more residential lots or dwellings will require civil engineering design and certification based on an appropriate Traffic Index value not lower than 4.0 and R-Value Soil Analysis.

REV: 2/92

APPROVED FIRE DEPARTMENT TURNAROUND

(INSERT)

APPROVED FIRE LANE SIGN

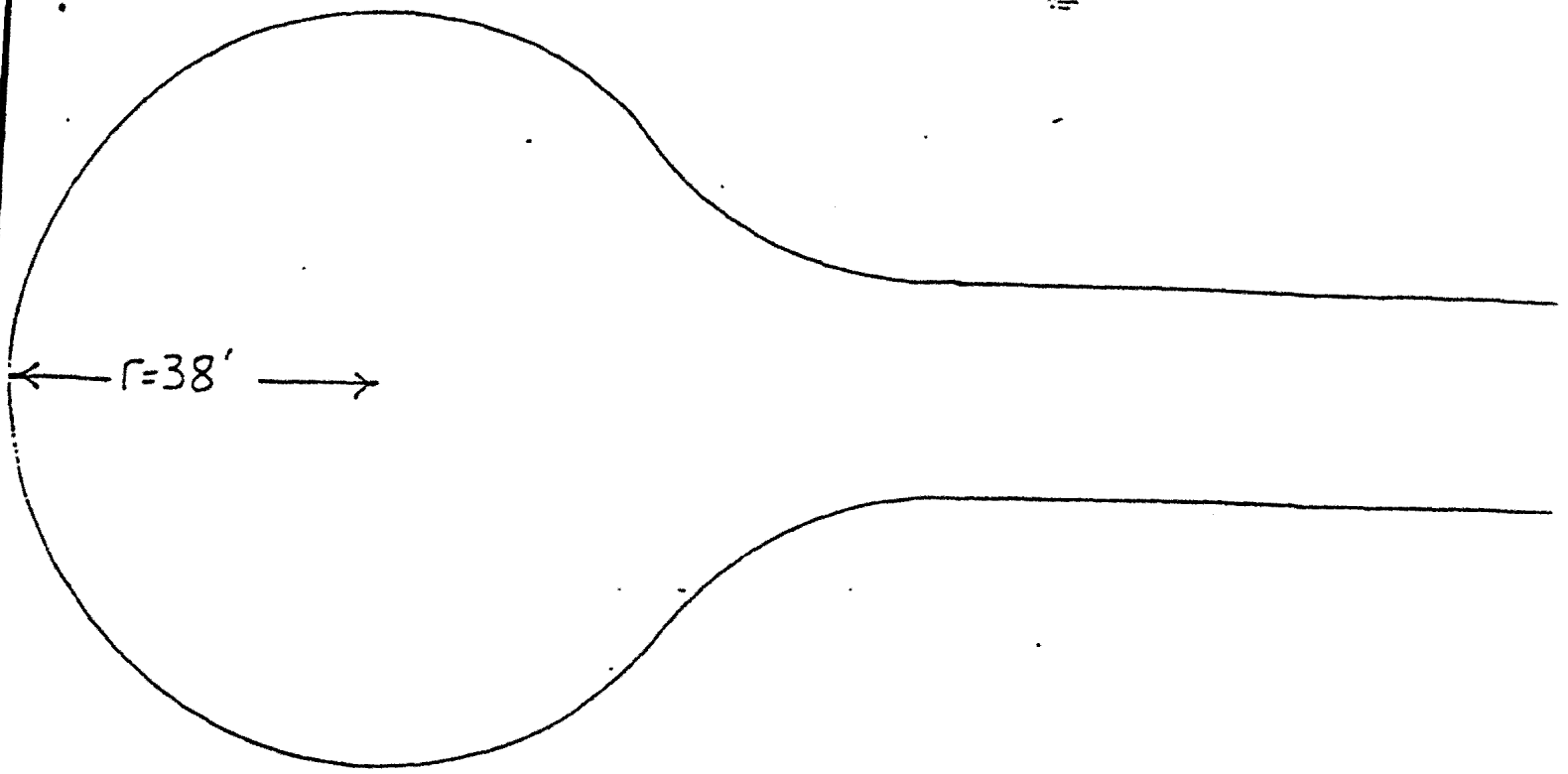
(INSERT)

1. Metal reflectorized sign
2. Size: Minimum 12" by 18"
3. Lettering size: minimum 3" in height
4. Background: White with red lettering
5. Bottom of sign shall be no less than 7 feet above ground
6. Posting: Post at the beginning and end and every 150 feet of the control zone

S.B. Code Sec 15-1 & 15-7

REV: 2/92

APPROVED FIRE DEPARTMENT



APPROVED FIRE LANE SIGN

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SANTA BARBARA COUNTY FIRE DEPARTMENT
FIRE PROTECTION DIVISION
DEVELOPMENT STANDARD 2-A

FIRE PROTECTION WATER REGULATIONS
FLOWS AND FIRE HYDRANT SPACING
PUBLIC AND PRIVATE ON-SITE FIRE HYDRANT SPECIFICATIONS

SCOPE AND PURPOSE

Fire hydrants allow firefighters access to water to handle serious fires. Fire hydrant spacing should allow for short hose lays to maximize the efficiency of pumper trucks and personnel and to assure access to a sufficient quantity of water. The following hydrant spacing and flow requirements are based on nationally accepted standards. This development standard shall apply to both ministerial and discretionary projects.

GENERAL: MINIMUM REQUIRED FIRE FLOW AND FIRE HYDRANT SPACING ALONG A FIRE APPARATUS ACCESS ROAD

Comprehensive Plan Designation

Category	Urban & Rural Developed Neighborhood	Inner-rural 5 to 10 acres	Inner-rural over 10 acres	Rural (Ag Land) 40 acres and over
SFD-Single Family Dwelling	500′ to 600′ 750 gpm	800′ 500gpm	1000′ 500gpm	see development standard 2B
Multi-unit Residential or Mobile Home	250′ to 300″ 1500gpm	300′ 1500gpm	300′ 1500gpm	see Item I. 1500gpm
Commercial Industrial or Institutional	250′ to 300 2000 gpm	300′ 2000gpm	300′ 1500gpm	See Item I. 1500gpm

REV: 2/92

Note: Fire hydrant spacing is based on the distance between fire hydrants along a fire apparatus access road when other fire hydrants are present, or more than one fire hydrant is required.

I. Building Plans

The Fire Protection Division Development Review Section shall review building plans and apply fire flow requirements, fire hydrant spacing and fire hydrant type in accordance with the noted standards.

EXCEPTION: Existing substandard fire hydrants not meeting this department's minimum requirements as to type (configuration) for ministerial single family residential projects will be acceptable if they are properly spaced and they discharge the minimum required fire flow.

II. Subdivisions and Lot Splits

The Fire Protection Services Division, Development Review Section, shall review all Divisions of Land and apply fire protection water requirements in accordance with the allowed land use or comprehensive plan designation as approved by the County Planning Commission.

Timing of Installation. When fire protection facilities are to be installed by the developer, such facilities (including all fire apparatus access roads) shall be installed, made serviceable and approved prior to and during the time of construction.

III. On-Site Requirements

A. When any portion of a proposed structure served by a water system will exceed specified distances from properly spaced fire hydrants along a fire apparatus access road the following requirements must be complied with:

1. Single Family Dwellings (SFD)

a. A SFD fire hydrant shall be installed no closer than 50' and no further than 150' driving distance to the dwelling.

b. A SFD fire hydrant shall provide a minimum flow of 750 GPM (500 GPM outside urban limit).

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2. Commercial, Industrial, Multi-Family Dwellings, Mini-storage, Mobile Home Parks, etc.

a. Spacing between on-site hydrants shall be 300 feet.

Exception: Where hydrants are provided at each end of the building, an additional hydrant may not be required until the distance between the hydrants exceeds 600 feet.

b. On-site fire hydrants shall be capable of flowing the required fire flow.

B. Water mains for on site fire hydrants shall be installed in accordance with the water purveyor standards or N.F.P.A. 24 and Item VIII A.3.

C. All on-site fire hydrants shall be equipped with a shut-off (street) valve and located as per Item VIII A.2.

D. Maintenance of on-site fire hydrants - when not maintained by the water purveyor.

1. It shall be the responsibility of the property management company, the homeowner's association, or the property owner to maintain the fire hydrants.

2. Fire hydrants shall be painted red prior to flow test and acceptance of the system.

3. No barricades, walls, fences, landscaping, etc., shall be installed or planted within 3' of a fire hydrant.

4. Fire Department shall have unrestricted access to on-site fire hydrants for approval and testing purposes.

E. Fire hydrant spacing is based on the distance between fire hydrants when other fire hydrants are present, or more than one fire hydrant is required.

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IV. The minimum requirements for an approved type fire hydrant are: (also see Section VIII)

1. Fire Hydrant Discharge Outlet Configuration

   a. **One-Single Family Dwelling** - minimum one 4" discharge outlet. Other discharge outlet configuration are acceptable as long as a 4" outlet is provided.
   Example: 4" x 2 1/2"

   b. **Multiple Detached-Single Family Dwellings** - minimum one 4" discharge outlet and one 2-1/2" discharge outlet.

   c. **All Other Building Types** - minimum one 4" discharge outlet and two 2 1/2" outlets.

   d. All outlets shall have national standard threads and caps to protect the threads.

   e. The center of the lowest outlet shall be a minimum of 18" above grade and a maximum of 24" above grade.

2. The fire hydrant shall have a pentagonal operating nut.

3. Fire Hydrant Riser

   a. **One Single-Family Dwelling**, galvanized riser with a minimum 4" inside diameter.

   b. **All Other Applications**, (including multiple single family swellings) galvanized riser with a 6" minimum inside diameter.

V. Fire Hydrant Spacing Policy

A. Fire hydrants will be required at roadway intersections and along fire apparatus roadways as spacing requirements dictate.

B. When cul-de-sac depth exceeds 450' (residential) or 200' (commercial) an additional fire hydrant shall be required mid block. Additional fire hydrants will be required if fire hydrant spacing exceeds specified distances.

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C. No portion of a building should exceed the distance of a properly spaced fire hydrant along a fire apparatus access road. If the structure is in excess of the distance indicated, refer to the private on-site requirements, Item III.

D. Fire hydrants will be required on both sides of the roadway whenever:

1. Roadway widths are 80' or greater when measured from curb face to curb face.

2. A center median strip exists.

3. The roadway is a major highway as identified by the County Department of Public Works, County Road Division.

4. In the opinion of the Fire Chief, the use of fire hydrants on the opposite side of the roadway may prove operationally difficult, or may create unsafe or hazardous working conditions.

VI. Fire Flow Requirements

A. The number of fire hydrants needed to obtain required fire flows:

Up to 2000 GPM - 1 hydrant
2000 to 3500 GPM - 2 hydrants
3500 to 5000 GPM - 3 hydrants

Minimum fire flow duration shall in no case be less than one hour for single family dwellings and will be greater relative to building size, occupancy classification, and construction type for all other project types.

ALL FIRE FLOWS ARE MEASURED AT NO LESS THAN 20 POUNDS PER SQUARE INCH MINIMUM RESIDUAL PRESSURE

Note: Refer to fire flow requirements for buildings, Appendix III-A, of the 1988 Uniform Fire Code and as amended by Chapter 15 of the Santa Barbara County Code.

B. The following additions may be made to fire flow requirements:

1. Each story above ground level - add 500 GPM per story.

2. Any exposure within 50 feet - add a total of 500 GPM.

3. Fire flows may be increased 250-500 GPM where hazardous conditions exist, i.e., high fire hazard area, wood shake roofs.

4. Any required fire flow may be increased up to 1000 GPM for a hazardous type occupancy.

VII. Fire Hydrant Flowing Procedure

Minimum fire flow acceptable from any one fire hydrant shall be 500 gallons per minute. fire hydrants used to satisfy fire flow requirements will be determined by the following items in succession:

A. Fire hydrants are not acceptable in meeting fire flow requirements unless they satisfy spacing requirements.

B. Closest fire hydrant to serve property will be flowed first, then next closest fire hydrants in succession.

C. The following outlines the policy of this department when flow testing fire hydrants to satisfy required fire flow:

1. Flow one fire hydrant and calculate to determine flow at no less than 20 pounds per square inch residual pressure. If the calculated flow does not meet the fire flow requirement, the next closest fire hydrant may be flowed simultaneously with the first fire hydrant, providing it meets the spacing requirement.

2. If more than one fire hydrant is to be flowed to satisfy the fire flow, use the following table:

   (a) Below 1000 GPM - One

   (b) 1000 to 2500 GPM - Two fire hydrants

   (c) Over 2500 GPM - Three fire hydrants.

Flow the additional fire hydrants simultaneously to meet the required fire flow.

VIII. Fire Hydrant and Supply Line Specifications

A. All required fire hydrants along a fire apparatus access road and on site fire hydrants and supply lines shall be installed to the following specifications prior to flow test and acceptance of the system.

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1. Fire hydrant shall be:

   a. Installed so that the center lines of the lowest outlet is between 18 to 24 inches above finished grade.

   b. Installed so that the front of the riser is between 12 to 24 inches behind curb face.

   c. Installed with outlet facing the curb when one outlet is provided.
   Installed at a 45-degree angle when two outlets are provided.
   Installed with the 4" outlet facing the curb when three outlets are provided.

   d. Of a type and construction which conform to A.W.W.A. C503-82 or C502-85.

   e. Provided with outlets that have national standard threads.

   f. Provided with three-foot unobstructed clearance on all sides.

   g. Provided with approved caps to protect the threads.

   h. Painted prior to flow test and acceptance with safety yellow paint (when maintained by the water purveyor or red paint (when maintained on-site and <u>not</u> by water purveyor).

2. The lateral water line serving the fire hydrant from the water main shall include an approved shut off valve.

   a. Minimum valve distance from the fire hydrant: 10 feet.

   b. Maximum valve distance from the fire hydrant: 25 feet.

      Exception: Location can be less than 10 feet when the water main is already installed and the 10 foot minimum distance cannot be satisfied.

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3. All new water mains, laterals, gate valves, fire hydrant barrels and risers shall be a minimum of 6 inches inside diameter.

4. When sidewalks are contiguous with a curb and are 5-feet wide or less, fire hydrants shall be placed immediately behind the sidewalk. In no case shall fire hydrants be more than 6 feet from the curb face.

5. Before trenches are back-filled, a representative of the Santa Barbara County Fire Department shall inspect all required installations of private on-site water mains and fire hydrants and witness adequate flushing. For an appointment call 681-5500.

6. The owner-developer shall be responsible for making the necessary arrangements with the local water purveyor for the installation of all purveyor facilities. This shall include the furnishing of the fire hydrant heads.

7. Approved fire hydrant barricades shall be installed, if curbs are not provided or other circumstances dictate additional protection is needed.

8. All components of the water system serving these fire flow requirements shall be American Water Works Association or Underwriter Laboratories approved for the fire service.

REV: 2/92

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SANTA BARBARA COUNTY FIRE DEPARTMENT
FIRE PROTECTION DIVISION
DEVELOPMENT STANDARD #3

HIGH FIRE HAZARD AREA REQUIREMENTS

CHAPTER 10 OF THE SANTA BARBARA COUNTY CODE
Article XIII Fire Zones and Fire Prevention

SEC. 10 - 83. HIGH FIRE HAZARD ZONES.

All of the following provisions shall be complied with within the boundaries of the National Forest and within the boundaries of the High Fire Hazard Zone in the County, as the same are shown on a map on file as prepared by the County Fire Chief in the office of the County Clerk, adopted hereby and by this reference made a part hereof as though set out in full herein, which map is entitled "High Fire Hazard Zone Map of Santa Barbara County."

(a) The roof covering of every building or structure shall be a roof covering meeting the requirements or specifications of fire retardant roofing as set forth in Sec. 3203(e) of the Uniform Building Code, 1985 Edition. Wood roofing materials, treated or untreated, will not be allowed except as necessary to effect repairs which do not exceed, in square feet of enclosed space, 25% of the pre-existing structure, or as may be necessary for additions which do not exceed 500 square feet, regardless of the size of the pre-existing structure. All openings in roofing materials, including end openings, shall be capped, filled or enclosed to resist fire.

(b) The following exceptions shall apply to requirements of the High Fire Hazard Zone:

1. Accessory buildings or structures not used for human occupancy which are located 50 feet or more from buildings or structures used for human occupancy shall not be required to have fire resistive wall covering as provided in this section.

2. Accessory buildings or structures other than carports not used for human occupancy which are located less than 50 feet from buildings or structures used for human occupancy may be of Type II-N (non-combustible) construction as defined in the Uniform Building Code, 1985 Edition.

3. Carports open on two or more sides located less than 50 feet from buildings or structures used for human occupancy shall be of one-hour fire resistive construction. Supporting members shall be heavy timber or protected with materials approved for one-hour fire resistive construction.

4. Window and door openings in exterior walls need not be protected by fire assemblies unless otherwise required by the Uniform Building Code.

(c) All projections in excess of 10 inches from an exterior wall, including, without limitation, decks, balconies, roof overhangs, attached patio covers, and similar architectural features shall be protected on the underside with materials approved for one-hour fire resistive construction, or shall be of heavy timber construction. Decks shall be constructed of heavy timber or have one-hour construction or have an approved exterior fire sprinkler system. Heavy timber floor decks may be 2 inch tongue and groove planks or 1 1/8 inch tongue and groove plywood or 3 inch lumber set on edge close together.

In lieu of fire protection as outlined in this Section, decks, balconies, and similar projection may be enclosed from floor level to ground level with materials approved for one-hour construction applied to the exterior face of the wall.

(d) Where exterior walls are required to be protected with fire resistive materials, 2 inch nominal solid blocking shall be provided between rafters at all roof overhangs under the exterior wall covering.

(e) No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or other overhanging areas. Attic or foundation ventilation louvers or ventilation openings in vertical walls shall not exceed 144 square inches each and shall be covered with 1/4 inch mesh corrosion resistant metal screen and shall not be within 3 feet of any opening.

(f) All chimneys or fire pits, fireplaces or appliances, burning liquid or solid fuel, which are located within 200 feet of, or within, any National Forest or County High Fire Hazard Zone, shall be provided with approved spark arrestors.

(g) All exterior glass shall be double glazed unless the building Official approves a limited application or acceptable alternative. Single glazing may be approved with a heat reflective coating.

(h) No treated or untreated wood shake or wood shingle material shall be used for exterior wall coverings. Exterior surfaces shall be protected by one half inch Type X Gypsum wall board underlayment, tightly sealed, or shall have an equivalent fire rating.

(i) Any person owning, leasing, controlling, operating, or maintaining any building or structure within the National Forest or the County High Fire Hazard Zone shall, before commencement of construction and at all times thereafter:

1. Maintain around and adjacent to such building or structure an effective firebreak made by removing and clearing away, for a horizontal distance therefrom of not less than 30 feet on each side thereof, all flammable vegetation or other combustible growth. Root systems of rye grass or other plantings required to stabilize soil and prevent erosion shall not be removed. this provision shall not apply to single specimens of trees, ornamental shrubbery or similar plants used as ground covers, provided that they do not form a means of rapidly transmitting fire from the native growth to any structure.

2. Maintain around and adjacent to any building or structure, additional fire protection or firebreak by removing all brush, flammable vegetation or combustible growth located from 30 feet to 100 feet measured horizontally from such building or structures as may be required by the Building official or personnel of the United States Forest Service or by the Chief of the Fire Department or district having jurisdiction, when he finds that because of extra hazardous conditions a firebreak of only 30 feet around such structures is not sufficient to provide reasonable fire safety. Grass and other vegetation located more than 30 feet from such building or structure and less than 18 inches in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion.

3. Remove that portion of any tree which extends within 10 feet of the outlet of any chimney.

4. Maintain any tree adjacent to or overhanging any building free of dead wood.

5. Maintain the roof of any structure free of leaves, needles or other dead vegetative growth.

(j) If the Building Official or authorized personnel of the United States Forest Service or the Chief of the Fire Department or district having jurisdiction, determine jointly in any specific case that difficult terrain, danger of erosion, or other unusual circumstances make strict compliance with the clearance of vegetation provisions of subsection (i) undesirable or impractical, they may suspend enforcement thereof and require reasonable alternative measures designed to advance the purposes of such subsection (i).

HIGH FIRE ZONE BUILDING REQUIREMENTS FOR NEW CONSTRUCTION AND ADDITIONS

1. CLASS A ROOF COVERING

Fire retardant and roofing assemblies may be any one of the following:

1. Any class a roofing assembly.
2. Asbestos-cement shingles or sheets.
3. Exposed concrete slab roof.
4. Sheet ferrous or copper roof covering.
5. Slate shingles.
6. Clay or concrete roof tile.

2. ATTIC AND FOUNDATION VENTILATION

Eave vents not allowed. Roof and wall vents shall not exceed 144 square inches each and shall be covered with 1/2 inch mesh corrosion metal screen.

REV: 2/92

3. PROJECTIONS

Over 10 inches form exterior walls (i.e. - decks, balconies, roof overhangs, carports, attached patio covers):

- One hour fire resistive materials on underside.
- Heavy timber construction.
- Decks may be protected by an approved exterior fire sprinkler system.

(a) Posts - 8" x 8" min.

(b) Floor Beams and Girders - 6" x 10" min.

(c) Floor Joists - 8" x 10" min.

(d) Floor and Roof Decking - 2" T & G, 1 1/8" T & G plywood, 2 layers 1" T & G plywood, or 3" nominal lumber set on edge close together with staggered joints.

(e) Roof Beams - 4" x 6" minimum.

(f) Roof Rafters - 3" x (blocked soundly or with 2" minimum wood coverings at underside).

ALTERNATE TO HEAVY TIMBER - Enclose projection from floor level to ground within six (6) feet horizontally from outside edge with an exterior type one-hour fire rated assembly per the 1988 Uniform Building Code, Table 43-B.

4. WALLS

No treated or untreated wood shake or wood shingle material shall be used for exterior wall coverings. Exterior surfaces shall be protected by one-half inch Type X Gypsum wallboard underlayment, tightly sealed, or shall have an equivalent fire rating.

5. WINDOWS

All exterior glass shall be double glazed unless the Building Official approves a limited application or acceptable alternative. Single glazing may be approved with a heat reflective coating.

REV: 2/92

6. SPARK ARRESTERS

(Required for all new construction) for chimneys, flues and stovepipes...to be constructed of a minimum 12 gauge wiremesh screen shall be securely attached and shall cover the entire vent diameter, and not create any pockets or recesses.

7. CLEARED AREAS

(a) Provide firebreak of cleared area for minimum 30 feet around structures (or up to 100 if deemed necessary by County).

(b) 10 feet minimum clearance between chimney outlet and any vegetation.

(c) Keep roof and overhanging trees free of dead vegetation.

8. EXEMPTIONS

1. Non habitable accessory structures over 50 feet from habitable structures are not required to have fire resistive wall protection.

2. Non-habitable accessory structures (except for carports) within 50 feet of habitable structures may be of type II-N (non-combustible materials).

3. Carports open on two or more sides located within 50 feet of habitable structures shall be of one-hour fire resistive construction. Supporting members shall be heavy timber or protected by materials approved for one-hour fire resistive construction.

COUNTY OF SANTA BARBARA
FIRE DEPARTMENT

Since 1926

4410 CATHEDRAL OAKS ROAD
SANTA BARBARA, CALIFORNIA 93110-1042
Telephone (805) 681-5500

SANTA BARBARA COUNTY FIRE DEPARTMENT
FIRE PROTECTION DIVISION
DEVELOPMENT STANDARD #5

AUTOMATIC FIRE SPRINKLER SYSTEM STANDARDS FOR ONE AND TWO FAMILY DWELLINGS AND MOBILE HOMES

I. INTRODUCTION

A. Purpose: To provide a reasonable level of life and property safety by enforcing the minimum standards established by the latest edition of NFPA STANDARD #13-D as amended herein and as deemed necessary by the Fire Marshal.

B. Scope: This Standard deals with designs for one and two family dwellings and mobile homes as described in the National Fire Protection Association Standard 13-D.

II. RESPONSIBILITY

All individuals and companies who propose to engage in the installation or alternation of fire sprinkler systems are subject to the requirements of this Standard.

III. POLICY

This Standard outlines the procedures to be followed when submitting sprinkler plans and defines the Fire Department's requirements for one and two family dwellings and mobile homes. The Fire Marshal may modify this Standard based upon unique properties or risks.

IV. PROCEDURES FOR NFPA #13-D SYSTEMS

REV: 2/92

A. Plans and Approval

1. Plans shall be designed by a qualified, licensed contractor, or a Professional Engineer with experience in fire sprinkler design. Submit a minimum of two sets of plans and calculations. One set will be kept in the Fire Department files.

2. Plans shall be submitted for review and approval to the Santa Barbara County Fire Department before any equipment is installed or modified in order to avoid errors or subsequent misunderstandings. Any material deviation from approved plans will require authorization by the Santa Barbara County Fire Department.

B. The following information shall be included on plan.

1. Name and address of owner.

2. Dimensions scaled.

3. Plot plan, elevation points.

4. Piping plan.

   Piping shall be sized in accordance with 4-4.3 and 4-4.4. The design criteria reflects a departure from the conventional area/density methods of NFPA 13. The goal for a NFPA 113-D design is to gain fire control with a maximum of two sprinklers in operation, with a demand of 26 GPM and with calculations to verify demands are met.

5. Full height cross sections, including riser detail.

6. Location of partitions.

7. Use of each room. (Kitchen, laundry, etc.)

8. Water source (pressure, flow, location, capacity).

9. Size, location, type and elevation of store water tank (if applicable).

REV: 2/92

10. Data sheet for sprinkler heads with manufacturer's description of type, orifice size, temperature rating and listed classification of sprinkler.

11. Underground pipe size, length, location, material, point of connection to main and the type and size of valves and meters.

12. Name, address, license number, classification and telephone number of both the general contractor and the sprinkler contractor.

13. At the time of submittal, sprinkler plan fees shall be paid to the Santa Barbara County Fire Department. Fire sprinkler fees are based upon the 1989 U.B.C., Table III-A as amended (4-89) by Chapter 15, Article V of the Santa Barbara County Code. The fee is based upon job valuation and shall be verified by a copy of the authorized contract or the signature of both parties to the agreement.

C. Water Supply

1. A connection to a reliable water purveyor system or water storage tank.

   When a private storage tank is used as the only source of supply, the Santa Barbara County Fire Department Policy for stored water for fire protection shall apply.

   (Santa Barbara County Fire Department Standard #2)

2. Water provided for residential automatic fire protection sprinkler systems should be supplied through the customer's domestic service line. Where water agencies require domestic water meters, all water supplied to the residential fire sprinkler system should be through the meter.

3. Combined service piping shall be designed to meet all domestic water flow requirements, plus a minimum fire sprinkler demand of 26 gallons per minute. The minimum size service line shall be one inch, with one inch meter. In dwellings where substantial irrigation use occurs, provisions should be made for such usage.

4. Each system shall have a single control valve arranged to shut off both the domestic and fire sprinkler systems. a separate shut-off valve should be provided for the domestic system, but not for the fire sprinkler system. Water purveyors may require other valve arrangements.

D. System Components

1. All piping supports used in the construction of the fire sprinkler system shall meet domestic water service requirements.

2. All fire-line piping shall be installed with a rubber seated check valve at or near the beginning of the fire sprinkler system. This is to prevent any backflow into the domestic system or introduction of air into the fire sprinkler system if a pressure loss should occur in the public water system.

3. The fire sprinkler system shall be equipped with drain and test valves, located in such a manner so that the system can be thoroughly flushed and tested for water flow capabilities. The inspector test valve and outlet shall be located at the most remote portion of the system.

4. All facilities downstream of the utility ownership are the responsibility of the customer. This will include both testing and maintenance of the fire sprinkler system.

5. The following system components shall be listed: sprinkler heads, valves, gauges, piping.

6. Each automatic sprinkler system shall be provided with a water flow detector, installed at the riser on the system side of the main fire sprinkler control valve, which shall activate an audible alarm capable of notifying residents in all areas of the structure.

7. The fire sprinkler riser shall be constructed of listed metallic material.

REV: 2/92

E. Automatic Booster Pump

1. When the domestic water pressure is deficient, or topography precludes sufficient gravity pressure from a water tank, an automatic booster pump shall be required to maintain required gallons per minute at the minimum pressure.

2. The pump must automatically activate upon system demand.

3. The pump must be self-priming type.

4. The pump must be designed for its intended use.

F. Sprinkler System Inspection

1. Plans and calculations shall be submitted to the Santa Barbara County Fire Department for approval along with plan check fees.

    a. Hydraulic calculations shall include al information required by NFPA 13-D sections 4-1.1, 4-1.2, A-4-1.2, 4-1.3, 4-14.1, 4-1.5, 4-1.6

    Note: Plans which lack any of the aforementioned information shall be returned to the applicant not approved.

2. Prior to installation of drywalling or interior wall covering, the sprinkler system shall be hydrostatically tested at the domestic system operating pressure plus 50 pounds, for two hours, with a fire department inspector present. In no case shall the system be tested in excess of 175 pounds. Call the Santa Barbara County Fire Department at 681-5500 for an inspection appointment at least 24 hours before inspection date.

3. The sprinkler system and all of the related components shall be tested and inspected by the Santa Barbara County Fire Department prior to the final occupancy clearance.

REV: 2/92

4. Policy Determination - Location of Sprinklers sprinklers shall be installed in all areas, and shall not be omitted from the following areas:

   a. Garages
   b. Attic - a minimum of two heads to be installed.

REV: 2/92

SUBJECT: RESIDENTIAL FIRE SPRINKLER SYSTEMS

Please be advised that this department is currently enforcing the measures outlined in section A-4-2.3 of the 1989 edition of NFPA Standard 13-D.

The results of fire tests outlined in a 1988 report commissioned by Factory Mutual indicate that fire protection equivalent to that intended by NFPA 13-D for flat, horizontal, ceilings may be obtained by providing an increased flow, and providing a design which includes up to three sprinkler heads.

In addition, wherever possible, sprinkler heads will be placed within the maximum allowable four inches from deflector to ceiling, as opposed to the placement in beams which exceed four inches in depth. This will, in most cases, require that sprinkler heads be placed within the pockets formed by the beams.

I realize that the prevalence of beams and/or sloped ceilings in homes constructed in this area are creating a significant problem for the bidding and design process. Please be assured that this department is working daily to obtain further data which will allow a more definitive set of installation and design criteria to be issued. Unfortunately, until further testing is conducted or further data is made available to this department, approval will be contingent upon adherence to the information in the section noted above.

I would strongly recommend that every effort be made to impress upon potential clients, as early as possible, the effect that ceiling design has on the fire sprinkler design. Please do not hesitate to refer such clients to this office when questions regarding this subject arise. This department is also attempting to devise a method whereby the owners and/or architects are notified of potential problems before building permits are issued.

Any further comments or questions should be submitted in writing as soon as possible, so that any additional problems will be addressed in the revised development standard now under consideration. Thank you for taking the time to address this question, and please feel free to call if you wish to discuss these matters in more detail.

Darrell Delgado, Inspector,
Development Review Section

RESIDENTIAL FIRE SPRINKLER SYSTEMS IN SLOPED OR BEAMED CEILINGS

Included with this correspondence is a copy of a letter which notifies sprinkler contractors of this department's policy regarding fire sprinklers in sloped or beamed ceilings.

The purpose of this letter is to alert architects of the effects that sloped or beamed ceilings have on the cost of an automatic fire sprinkler system. By addressing the issue during the design phase, rather than the construction phase, designs could be altered, if desired, so that the cost of the fire sprinkler system may be reduced.

Beams with the depth exceeding four inches, vaulted ceilings, or a combination of the two, would require additional fire sprinkler heads to be installed and an increase in the total flow and pressure requirement for a given system.

In most cases, where beams more than four inches in depth are used, a sprinkler head is required in each bay created by the beams. By increasing the distance between beams, it is possible to decrease the number of required heads; thereby reducing system cost.

When smooth vaulted ceilings are proposed, the total water requirement is more than doubled, which results in the need to install water meters larger than the minimum allowable one inch. These meters are expensive to install and carry additional monthly service fees.

When considering a vaulted or beamed ceiling in a residence that is to be fire sprinklered, we recommend that architects contact this office for further information.
This may help to avoid excessive installation costs and/or plan approval delays.

If an architect has already chosen a fire sprinkler contractor, we recommend that these issues be addressed early in the project's development.

If there are any questions regarding this issue, please contact this office.

Steve Vitttum
Deputy Fire Marshal

COURT HOUSE

Santa Barbara County Flood Control and Water Conservation District

123 E. Anapamu Street
Santa Barbara,
California. 93101
(805) 568-3440
Telecopier: (805) 568-3434

PHILLIP M. DEMERY
Director

RUDOLF OHLEMUTZ, D. Eng.
Assistant Director

March 17, 1993

Planning Commission
County of Santa Barbara
123 E. Anapamu St.
Santa Barbara, CA 93101

RE: 91-CP-85; Arco Dos Pueblos Golf Links
APN: 079-180-05,16,18 and 079-200-04,08
Case Planner: Steve Goggia

Dear Commissioners:

This District recommends that approval of the above referenced project be subject to the following conditions.

1. Prior to issuance of land use clearance, the applicant shall comply with the Flood Control Standard Conditions of Approval.

2. Prior to issuance of land use clearance, the applicant shall submit a Drainage and/or Grading Plan to satisfaction of the Flood Control Engineer. Said plan shall include 100 year capacity culverts under the railroad for storm water conveyance. Any proposed retention basins are to be designed to District Standards.

3. All drainage improvements required as part of condition #2 above shall be constructed in accordance with approved plans and certified by a registered Civil Engineer prior to issuance of occupancy clearance.

Sincerely,

Steve Wagner

Steven D. Wagner
Development Engineer

cc: Nick Andrade, Building and Development
R. W. Hollis Jr.

Santa Barbara County Park Department

610 Mission Canyon Rd., Santa Barbara, Ca. 93105

MICHAEL H. PAHOS
Director of Parks

Jeff Stone
Assistant Director of Parks

TO: Steve Goggia, Development Review Planner
Resource Management Department

FROM: Claude Garciacelay, Park Planner

DATE: March 25, 1993

RE: 91-CP-085 Arco Dos Pueblos Golf Links
APN 079-180-5, -16, -18, 079-200-4, -8

The Park Department will require the following conditions to the approval of 91-CP-085. In conformance with the Parks, Recreation and Trails Element of the Comprehensive Plan (PRT-1), and the County's draft Coastal Access Implementation Plan, the following conditions for dedications and offers to dedicate shall be met prior to the issuance of Coastal Development Permit and conditions for improvements shall be met prior to occupancy permit:

1) The applicant shall dedicate to the County in perpetuity a 24 foot wide (narrowing to 16 foot wide over each of the proposed tunnels) lateral access easement for the exclusive use of riding and hiking trail purposes. Said trail easement shall traverse the site in an east/west direction south of and generally adjacent to the railroad easement in an area acceptable to the Park Department. Said trail easement shall be rough graded west of the existing bridge to the western property line, and rough graded with an 8 foot wide asphalt lane constructed, to Park Department standards, to connect the bridge access with scenic overlook area to the east of the existing bridge.

The applicant shall dedicate to the County in perpetuity and easement for the vertical viewing area near Eagle Canyon. Exact location and size of the viewing area shall be designated by the applicant and approved by the Park Department and RMD. Site improvements by the applicant, to the viewing area shall include fencing of blufftop for safety purposes, benches, trash receptacles and interpretive signage describing the view shed

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area and unique flora and fauna. A viewing area site improvement plan shall be prepared by the applicant and approved by the Park Department and RMD. Applicant shall make arrangements for the perpetual daily and long-term maintenance of the viewing area as part of the golf course operations.

The applicant shall dedicate to the County in perpetuity an easement allowing for limited parking (10 spaces) within the parking lot for the golf course, and shall dedicate access across the existing bridge from the parking lot to the coastal trail. The applicant shall provide a bicycle parking area with rack on the parking lot side of the bridge for the use of the public. The applicant shall construct stairway access from the existing bridge to the coastal trail. The bottom landing of said stairway shall be adjacent to but not within the proposed 24 foot coastal trail easement and the landing pad area shall be sized to accommodate the future construction of bicycle rack and horse tie-up area. Said landing pad area shall be designated by applicant for review and approval by the Park Department and RMD and shall be dedicated to the County in perpetuity as an additional easement area adjacent to the 24 foot wide trail easement.

All dedications to the County above mentioned shall be by grant of easement to the County according to the standard form of easement adopted and approved by the Park Department and County Counsel, including a surveyed legal description and map prepared and stamped by a licensed surveyor.

2) The applicant shall offer to dedicate lateral access for public recreation purposes from the mean high tide line to the toe of the slope along the entire length of the subject property. The applicant shall also offer to dedicate restricted vertical beach access from the proposed coastal trail to the mean high tide line at the eastern property boundary at Eagle Canyon. Said offers to dedicate shall be made according to the standard form developed by the Coastal Commission and acceptable to County Counsel.

cc: Gilda Wheeler, RMD
County Counsel
CRAHTAC
Applicant - R.W. Hollis, Jr.
ARCO
Route 1, Box 275
Goleta, CA 93117

ATTACHMENT A

REVISED FINDINGS FOR PROJECT APPROVAL
ARCO DOS PUEBLOS GOLF LINKS 91-CP-085

REVISED pursuant to the Board of Supervisors Hearing of August 17, 1993

A. Pursuant to Section 35-172.8 of the Article II Zoning Ordinance, the following findings must be adopted in order for the Conditional Use Permit to be approved:

1. The site for the project is adequate in size, shape, location and physical characteristics to accommodate the density and intensity of development proposed.

The property is located approximately 1/2 mile to the west of the Urban/Rural boundary line, within a short driving distance of the Santa Barbara/Goleta metropolitan area. In addition, the area between Ellwood and Gaviota is considered a recreational resource of State-wide importance. The maintenance activities of a golf course are similar to those of agriculture and no operational conflicts are expected.

Only 115 acres of this 202 acre site will be developed. The proposed project has been designed to take advantage of the natural features of the property, with minimum alteration of the natural terrain. The links layout has been designed to avoid all of the major and most of the minor drainages that run across the property. Approximately 265 (226 non-natives) of the 937 trees that currently exist on the site would be removed to accommodate the golf course.

The project site contains several Environmentally Sensitive Habitat areas. Through project design, avoidance of the Environmentally Sensitive Habitat areas is accomplished. In addition, mitigation measures are required as project conditions of approval in order to ensure their protection. Although the project proposed a significant increase in the intensity of the use of the site in close proximity to the Environmentally Sensitive Habitat areas, because the project lacks a residential unit component, with the conditions controlling the hours of operation, location and manner of access to the beach, the finding can be made that the site for the project is adequate in size, shape, location and physical characteristics to accommodate the density and intensity of development proposed.

2. That adverse impacts are mitigated to the maximum extent feasible.

The project EIR identified significant unavoidable adverse impacts associated with Air Quality (short-term construction emissions) and loss of prime Agricultural soils. Mitigation measures for each of these impacts have been incorporated into the project Conditions of Approval. The prime soils will be retained on site, and the potential for the conversion of the site to agricultural uses upon termination of the Conditional Use Permit for the Golf Links will be enhanced. With regard to any significant impacts which may remain after mitigation measures are applied, a

Statement of Overriding Considerations must be adopted concurrently with the CEQA Findings in order to approve the project.

The project EIR identified potentially significant but mitigable impacts to Biological Resources, Traffic and Circulation, Water Resources, Short-Term Air Quality, Archaeological Resources, Aesthetics, Hazardous Materials/Safety, Geology/Soils, and Public Services. Project conditions, adopted with the approval of this project incorporate all mitigation measures and a mitigation monitoring program will guarantee implementation during construction and during long-term operation.

3. Streets and highways are adequate and properly designed.

As presented in the Circulation element Consistency section of the Staff Report dated 4/14/93, streets and highways are adequate and properly designed to serve the proposed Golf Links development.

4. There are adequate public services, including but not limited to, fire protection, water supply, sewage disposal, and police protection to serve the project.

Water Supply: Domestic water supply would be provided by the Goleta Water District. Irrigation water would be supplied with reclaimed water from the Goleta Sanitation District/Goleta Water District wastewater reclamation project. As presented in Appendix 5.3 of the Environmental Impact Report prepared for this project (92-EIR-16), there is adequate capacity for the wastewater reclamation project to serve the ARCO Dos Pueblos Golf Links project in addition to other identified projects which have yet to secure a commitment from the District. The project is approved subject to the applicant obtaining a "can and will serve" letter from the District prior to issuance of a Coastal Development Permit.

Sewage Disposal: Sewage disposal for the project will be through a private septic system adequate to serve the project.

Police Protection: The Santa Barbara County Sheriff's Department has reviewed the project and has indicated that adequate law enforcement services currently exist to serve the project.

Fire Protection: The Santa Barbara County Fire Department has reviewed the project, and with appropriate conditions has, indicated that adequate fire services currently exist to serve the project.

Electrical Utilities: Electric service will be provided by the Southern California Edison Company which has adequate capacity to serve the project.

5. The project will not be detrimental to the health, safety, comfort, convenience, and general welfare of the neighborhood and will not be incompatible with the surrounding area.

The Conditional Use Permit contains many conditions that provide land use controls over the life of the Golf Links project. The majority of these conditions are required as mitigation measures to ensure that the adverse impacts of the project are mitigated to the maximum extent feasible. Based on evidence in the record, the Golf Links project will not be likely to cause adjacent agricultural lands to convert. The only public service and facility expansion associated with the project is the extension of the reclaimed water line the full cost for which will be borne by the project applicant. The reclaimed water line is a private line conditioned to serve the ARCO Golf Links project only, with no additional connections permitted.

The development of the site with a golf course will not diminish the productivity of adjacent prime agricultural lands as the maintenance activities of a golf course are similar to those of agriculture and no operational conflicts with neighboring cattle operations are expected.

The project can be found compatible with the surrounding area as golf courses are conditionally permitted in agricultural zones, and because the ARCO Golf Links project does not include a residential component.

6. The project is in conformance with the applicable provisions of Article II and the Coastal Plan.

Pursuant to the previous discussion in the Project Analysis section of the Staff Report, amended with the revised policy analysis presented in the memo to the Planning Commission dated 5/19/93 and this findings section, the Golf Links proposal is consistent with Article II and the Coastal Plan.

7. In designated rural areas, the use is compatible with and subordinate to the scenic and rural character of the area.

The conversion of the site's broad expanses of grassland interrupted by several incised drainages and oil and gas processing facilities, to the manicured greens, fairways, and roughs, is a subjective call, considered incompatible by some. However, ARCO's existing oil and gas facility, with scattered components across the entire property, would be removed, thus restoring at least some of the visual quality of the site. The "links" style of golf course retains more existing vegetation and requires less alteration of the terrain than the traditional California golf course. As viewed by travellers along U. S. Highway 101, the visual change to the type of grasses would not be so apparent due to the large expanses of existing vegetation to be retained, the screening provided by the native planting mitigation areas, and the buffers provided by the existing topography. The structures proposed for the project would result in minimum encroachment into view corridors, and would not obscure public

views to the ocean as they would be of similar height and located in the same general area as the existing facilities which would be removed. Vegetation and land mass screening is provided for in the location of the proposed buildings.

Consistent with the scenic and rural character of the area, the Golf Links does not propose a residential component to the project.

In addressing coastal access and recreation, the Coastal Plan acknowledges that the area between Ellwood and Gaviota is a recreational resource of State-wide importance. Three major State parks, El Capitan, Refugio, and Gaviota currently provide recreational opportunities for local as well as out-of-County visitors. In addition, areas along the coastline outside of State parks are already used extensively for recreation by mostly local residents. The Golf Links development could therefore be considered subordinate to and compatible with the character of its setting along the Gaviota Coast

8. The project will not conflict with any easements required for public access through, or public use of, a portion of the property.

With approval of the Golf Links project, ARCO will offer to dedicate public coastal access easements consistent with the protection of the environmentally sensitive habitats located on, or adjacent to the site.

9. That the proposed use is not inconsistent with the intent of the zone district.

The purpose of the Agriculture II district is to establish agricultural land use for large prime and non-prime agricultural lands in the rural areas of the County and to preserve prime and non-prime soils for long-term agricultural use.

The purpose of a Conditional Use Permit is to provide for uses that are essential or desirable but cannot be readily classified as principal uses in individual zone districts by reason of their special character, uniqueness of size or scope, or possible effect on public facilities or surrounding uses. Section 315-172.5. 2. k. of Article II states golf courses and driving ranges may be permitted in any district that they are not otherwise permitted with a Major Conditional Use Permit.

CEQA FINDINGS AND STATEMENT OF OVERRIDING CONSIDERATIONS

FINDINGS PURSUANT TO PUBLIC RESOURCES CODE SECTION 21081 AND THE CALIFORNIA ENVIRONMENTAL QUALITY ACT SECTIONS 15090 AND 15091:

A. CONSIDERATION OF THE EIR

The Final Environmental Impact Report (EIR), 92-EIR-16 (the "Final EIR") and Addenda to 92-EIR-16 (the "Addenda") dated May 26, 1993, and August 17, 1993 were presented to the Board of Supervisors and all voting members of the Board have reviewed and considered the EIR, its appendices, and the Addenda prior to approving the Conditional Use Permit (91-CP-085) for ARCO's proposed Dos Pueblos Golf Links. In addition, the Board has reviewed and considered testimony and additional information presented at or prior to public hearings on August 3rd and August 17th, 1993.

B. FULL DISCLOSURE; COMPLIANCE WITH CEQA

The Board of Supervisors finds and certifies that the Final EIR and Addenda constitute a complete, accurate, adequate and good faith effort at full disclosure under CEQA. The Board further finds and certifies that the Final EIR and Addenda have been completed in full compliance with CEQA. The final EIR reflects the independent judgement of the Board of Supervisors.

C. FINDINGS THAT CERTAIN UNAVOIDABLE IMPACTS ARE MITIGATED TO THE MAXIMUM EXTENT FEASIBLE

The Final EIR and Addenda for the Dos Pueblos Golf Links identify two (2) project specific significant environmental impacts and five (5) cumulatively significant impacts which cannot be fully mitigated and, therefore, are considered unavoidable. Those project specific impact areas are short-term air quality and agriculture. Those cumulative impacts are to biological, archaeological, aesthetics, public services and agricultural resources. To the extent the impacts remain significant and unavoidable, such impacts are acceptable when weighed against the overriding social, economic, and other considerations set forth in the Statement of Overriding Considerations below. Each of these "Class I" impacts identified by the Final EIR are discussed below, along with the appropriate findings as per CEQA Section 15091:

1. Short Term Air Quality (PM-10)

The Final EIR concludes that, during the construction and decommissioning phase, PM-10 particulate emissions will be generated which exceed the threshold of significance. The following mitigation measures are incorporated into the Conditions of Approval for the project: restrictions and specifications on contractor's equipment to be used in the construction and decommissioning phase, as well as other detailed construction measures, including increased site watering frequency when wind speed exceeds 15 mph, suspending grading and scraping when wind speed exceeds 20 mph, on-

site construction speed limit of 15 mph. No other feasible mitigation measures were identified. Although these measures will mitigate in part the significant short term air quality effects of the project, such effects cannot be mitigated to insignificance and, therefore, there will be a residual significant adverse effect on short term air quality due to increased PM-10 emissions.

2. Agriculture

The Final EIR concludes that there will be a significant adverse effect on agriculture as a result of the project because the golf course would remove 61 acres of Class II prime soils from potential agricultural productivity on land zoned for agriculture. A cumulatively significant impact would result as the project would reduce the Countywide inventory of prime soils by approximately 61.

The Conditions of Approval provide for the preservation of prime soils during grading and that, in the event of permanent closure of the Golf Links facility, agricultural land use shall be given preference on the project site's prime soils. While these conditions mitigate in part the potential effects of the project, the project will cause a loss of the use of prime soils during the life of the project and, there are no other feasible mitigation measures and the residual effect of the project on agriculture under County environmental thresholds remains significant, adverse and unavoidable.

3. Archaeology

The EIR found that the project would cumulatively contribute to the overall reduction in the number of undisturbed archaeological sites available for scientific study. Mitigation involving data collection (Phase III studies) for project specific impacts would also mitigate this cumulative impact however, the residual cumulative impact would remain significant.

4. Biology

The EIR found that the project would contribute to cumulative biological resources impacts through removal of plant communities and habitat and would increase human activity in the vicinity of sensitive habitats. Mitigation proposed for project specific biological impacts including avoiding sensitive areas, inclusion of vegetated buffers and revegetation would reduce this impact however, residual cumulative impacts would remain significant.

5. Aesthetics

Together with other development in the project vicinity, the project would result in a cumulative aesthetic impacts through altering the existing visual character of the area.

Mitigation proposed for project specific aesthetic impacts including review of the project design and landscaping by the Board of Architectural Review. Residual cumulative aesthetic impacts would remain significant.

6. Public Services

The EIR found that the project would contribute to a cumulative impact to police and fire services through increasing service demand together with other development proposed in the service area. The EIR identified mitigation to address this impact that the County could consider implementing. This includes analyzing the need for additional sheriff staff, as well as relocation of fire station 11. These mitigations are provided as information to the decision-makers, and would have to be implemented by the County rather than on a project specific basis.

D. FINDINGS THAT CERTAIN IMPACTS ARE MITIGATED TO INSIGNIFICANCE BY CONDITIONS OF APPROVAL

The Final EIR identified several subject areas for which the project is considered to cause or contribute to significant, but mitigable environmental impacts. Each of these impacts is discussed below along with the appropriate findings as per CEQA Section 15091:

1. Biological Resources

a. The Final EIR concludes that <u>construction</u> of the Golf Links project has the potential to create significant impacts to biology, including: willow trees and willow scrub habitat; windrow trees; riverine intermittent streambeds; non-native annual grass wetlands; southern tarplant populations; terrestrial, aquatic and marine habitats (related to erosion and sedimentation); the seasonal pond in Tomate Canyon; reptile and amphibian populations in the desiltation basin areas; the harbor seal haul-out area; native animal species (related to habitat fragmentation); reduction of bat population (related to tree removal) and the monarch butterfly site at Eagle Canyon. The following mitigation measures are incorporated into the Conditions of Approval for the project: replacement of impacted trees; implementation of a Biological Enhancement and Landscape Plan (BELP); protection of enhanced drainage areas; revegetation plan for southern tarplants; implementation of an erosion control program; implementation of an Integrated Pest Management Plan (IPMP) as further described in a letter to the Board from Jackie Bowland, dated 8/13/93; design of a 5 acre-foot reservoir; vernal pool setbacks; construction restrictions near the harbor seal haul-out area; and, restrictions on construction of pipelines near Eagle Canyon. These measures will mitigate these impacts to insignificant levels.

b. The Final EIR concludes that the operation of the Golf Links project has the potential to create significant impacts to biology, including: on-site drainages (associated with golf ball retrieval); runoff of pesticides and fertilizers into the vernal pool; increased human activity in the vernal pool area; the harbor seal haul-out area; runoff of pesticides and fertilizers into the drainages; rodenticide use impacts on predators; bio-accumulation of insecticide residues; and, reptile and amphibian impacts (associated with maintenance of desiltation basins). The following mitigation measures are incorporated into the Conditions of Approval for the project: golf ball retrieval program; implementation of an Integrated Pest Management Plan (IPMP); implementation of a Biological Enhancement and Landscape Plan (BELP); vernal pool & setbacks; fencing and/or vegetated buffers and signage along drainages; and implementation of a Restricted Access Plan which prohibits vertical access during the harbor seal pupping/breeding season. These measures will mitigate these impacts to insignificant levels.

2. Traffic/Circulation

The Final EIR indicates that the Golf Links project has the potential to create significant impacts to: motorists on U.S. Highway 101 related to errant golf balls; elimination of direct access to and from U.S. Highway 101 southbound; the Dos Pueblos Canyon Road interchange; and parking during tournament events. The following mitigation measures are incorporated into the Conditions of Approval for the project: provision of low vegetation adjacent to the tee boxes on holes 1, 3 and 4; provide funds to reopen and maintain the private portion of Calle Real or obtain approval from affected property owners to close median break on U.S. Highway 101; provide fair-share funding to the County "Pavement Management System" to repair the pavement between northbound and southbound ramps at the Dos Pueblos Canyon Road interchange; and, development of a parking program for tournament days when the on-site parking lot's capacity would be exceeded. These measures will mitigate these impacts to insignificant levels.

3. Water Resources

The Final EIR concludes that there are potential significant impacts to water resources which could occur under conditions of high rainfall and runoff as a result of the possibility that fertilizers, pesticides and herbicides could be transported into creeks and ultimately the ocean; increased erosion and sedimentation may result from overland sheet runoff and increased flow velocities at pipe outfalls, headwalls and flow constrictions at bridges. Increased sedimentation would also occur if desiltation control basins are not properly sized. The following mitigation measures

have been incorporated into the Conditions of Approval for the project: the final landscape and design plans shall follow the parameters outlined in the Biological Enhancement Plan; the applicant shall prepare a turf management plan which minimizes use of fertilizers, pesticides and herbicides, which plans shall be reviewed by and subject to approval of the Resource Management Department, and new and replacement culverts, headwalls, endwalls, ringwalls and regraded channels shall be designed to accommodate 100 year flows and afford adequate stabilization of banks and abutments. These measures will mitigate the potential impacts to water resources resulting from the project to insignificant levels.

4. Short Term Air Quality (NOx)

The Final EIR concludes that construction and decommissioning activities of the project will generate NOx emissions in excess of significance thresholds. The mitigation measures discussed above in connection with short term air quality impacts of particulates (PM-10), which mitigation measures are incorporated into the Conditions of Approval for the project, will mitigate the short term air quality impacts resulting from NOx emissions to insignificant levels.

5. Archaeological Resources

The Final EIR concludes that the Golf Links project has the potential to create significant impacts to archaeological resources, including: CA-SBA-1322 (associated with construction of the maintenance building); covering of archaeological sites with sterile fill; CA-SBA-76 (associated with waterline piperack construction); and, CA-SBA-73 (associated with the reclaimed waterline). The following mitigation measures are incorporated into the Conditions of Approval for the project: Phase III mitigation excavation along the buried water pipeline to the on-site lake; Phase II archaeological testing (Phase III if required) for the maintenance building; monitoring by archaeologists and Native Americans; fill program restrictions; routing of the pipeline route north of CA-SBA-73 or Phase III archaeological mitigation excavation. These measures will mitigate these impacts to insignificant levels.

6. Aesthetics

The Final EIR notes that the architectural style of the Clubhouse and other buildings may not be considered consistent with the rural nature of the project area. In order to mitigate any potential significant adverse effect of project buildings on the aesthetics of the area, the Conditions of Approval require the applicant to submit architectural and site plans for review and approval by the Board of Architectural Review prior to any construction of structures.

7. Hazardous Materials/Safety

a. The Final EIR concludes that the project would result in potential health and safety impacts to workers and the general public from possible exposure to hazardous materials during oil and gas facility abandonment and site remediation or accidents involving hazardous materials transport from the site. The following mitigation measures have been included into the Conditions of Approval for the project: the applicant shall submit to Environmental Health Services a work plan for the assessment of hazardous waste or other contamination on the site, including a geophysical survey, which shall be implemented after approval; if soil and/or ground water contamination exists on the site, the applicant shall submit a site remediation plan to Environmental Health Services, which shall include a Site Health and Safety Plan, which shall be implemented after approval; an abandonment plan for the oil and gas facilities shall be submitted for approval by the Resource Management Department, Energy Division, Environmental Health Services, Fire Department and Department of Oil and Gas; and all wells shall be inspected and reviewed by Department of Oil and Gas and Resource Management Department to determine the adequacy of abandonment and to assure that all requirements pertaining to well abandonment have been satisfied. These measures will mitigate to insignificant levels the potential impacts to health and safety of workers and the general public resulting from abandonment of the oil and gas facility and any related site remediation as part of the larger Dos Pueblos Golf Links project.

b. The Final EIR concludes that there could be potential significant health and safety impacts resulting from golf course maintenance due to use, storage and transportation of hazardous substances. The following mitigation measures have been incorporated into the Conditions of Approval of the project: the applicant shall be required to develop a formal fertilizer/pesticide/herbicide storage and application plan to be reviewed by both the County Environmental Health Services Department and the County Agricultural Commissioner, and a Hazardous Materials Business Plan shall be developed and implemented. Golf course maintenance in accordance with such plans will mitigate such potential impacts to insignificance.

8. Geology/Soils

The Final EIR concludes that the Golf Links project has the potential to create significant impacts related to: slope stability; soil creep, collapsible/compressible soils and expansive soils; shrink-swell potential and placement of pipelines for reclaimed water in soils with geotechnical

constraints or on unstable existing piperacks could result in significant impacts associated with pipeline failure. The following mitigation measures are incorporated into the Conditions of Approval for the project: preparation of a final drainage plan by a civil engineer to ensure no increase in surface runoff on-site, and that surface water runoff is controlled; use of deep-rooted plants and soil moisture devices; and, implementation of geologic and soils engineering study requirements for on-site improvements. These measures will mitigate these impacts to insignificant levels.

9. Public Services

a. The Final EIR concludes that there could be potential significant public services impacts resulting from new demand for fire protection services created by the project, which is outside of the five-minute response zone for both Fire Stations No. 11 and No. 14. The following mitigation measures have been incorporated into the Conditions of Approval of the project: buildings shall be equipped with automatic sprinkler systems, adequate access shall be provided to the site, and an adequate number of fire hydrants as determined by the County Fire Department shall be installed. These measure will mitigate to insignificant levels any potential impact on fire protection services resulting from the project.

E. FINDINGS THAT IDENTIFIED PROJECT ALTERNATIVES ARE NOT FEASIBLE

The Final EIR evaluated a no project alternative, a reduced project alternative, and two alternative project locations (Naples site and Patterson site) as methods of reducing or eliminating potentially significant environmental impacts of the Dos Pueblos golf Links. The Final EIR concluded that the environmentally superior project alternative was the Patterson site, but the analysis did not consider the feasibility of the off-site alternatives. As discussed below, the off-site alternatives are infeasible.

1. No Project Alternative

The no project alternative would result in the retention of the site in its current state, including continued oil and gas operations. The oil and gas facilities would not be abandoned and the Golf Links project would not be developed. This project would avoid the adverse effects of the project, but none of the numerous environmental benefits of the project (e.g., net reduction in air pollutant emissions, removal of visual detractors from the site, etc.) would be realized, nor would the project goals be met.

2. Reduced Project Size

This alternative would have all of the components of the Golf Links project, except the nine-hole par three course. Although the reduced scale project would (1) avoid two small cart bridges which span small drainages on the south side of the railroad tracks, (2) reduce somewhat the amount of irrigation water used and the number of traffic trips and long term air pollution generated by golfers travelling to the site, and (3) reduce somewhat the amount of PM-10 and NOx emissions during construction, the reduced scale alternative would not avoid any of the significant environmental impacts of the project. Overall, the environmental effects of the project and reduced scale project would be essentially the same. However, this alternative would not provide a 9 nine hole course which could serve a different segment of the population.

3. Naples Alternative Site

This alternative would entail development of the Golf Links project at the Naples township site located to the west of the project site. While there are some specific differences, overall the types of impacts which would result from Naples alternative would be similar to the effects of the project. However, all of the negative effects of the no project alternative would occur because the existing oil and gas operations on the project site would continue for an indefinite period of time. Thus, the Naples alternative would result in many more overall environmental effects than the project because it would not eliminate the existing oil and gas operations at the Dos Pueblos Oil Field.

The Naples site is not owned by Arco and also is the subject of current litigation between the owners and the County, and therefore the Naples alternative site is not a feasible alternative.

4. Patterson Alternative Site

The EIR identified this site as the environmentally preferred alternative. This alternative would develop the Golf Links project on approximately 247 acres of existing land located southwest of the intersection of Hollister Avenue and Patterson Avenue. This project alternative would result in a variety of different significant effects, although many could be mitigated to insignificance. Like the Naples alternative, the Patterson alternative would result in all of the negative effects of the no project alternative due to continued oil and gas operations on the project site.

In addition, this project alternative is not a feasible alternative for ARCO to develop and does not appear to be a feasible project under applicable land use policies, even if the environmental impacts were considered to be somewhat

less than the project. The Patterson site is an existing agricultural operation of long standing with prime soils. Although impacts to agriculture were found to be significant for both the project site and the Patterson site, the degree of impact to agriculture on the Patterson site would be greater given the existing agricultural operations on the site. Since existing policies and the recent conceptual decisions of the Board of Supervisors concerning the Goleta Community Plan would prohibit the conversion of the Patterson site from agriculture, the Patterson site is not a feasible alternative.

STATEMENT OF OVERRIDING CONSIDERATIONS

The Final EIR and Addenda for the Dos Pueblos Golf Links identify project specific impacts to short-term air quality and agriculture and cumulative impacts to agriculture, biology, aesthetics, public services, and archaeology as significant environmental impacts which are considered unavoidable. The Board of Supervisors therefore makes the following Statement of Overriding Considerations which warrant approval of the project notwithstanding that all identified impacts are not fully mitigated. Pursuant to CEQA Sections 15043, 15092 and 15093, any remaining significant effects on the environment are acceptable due to these overriding considerations:

F. Land Use

1. Removal of an existing legal non-conforming oil and gas industrial facility

2. Compliance with the South Coast Consolidation Planning Area's Rezone of Oil and Gas Facilities Sites

3. Reduces the potential of brush fires on the site and creates a fuel break in a high fire hazard area

4. Ensures that on-site Naples antiquated lot will not be developed with single family residences, but rather with a use recognized as a high priority under the Coastal Act

G. Recreational

1. Provides a new public recreational use increasing public access to a coastal property

2. Applicant will offer to dedicate both a coastal access easement on-site which assists the County in its "Coastal Access Implementation Plan" and easements for vertical and lateral access

H. Economic

1. Creates 30-32 new net long-term jobs

2. Creates seasonal jobs for youth

3. Creates numerous short-term jobs during construction

4. Generates approximately 1.5 million dollars annually in new tax revenues, as estimated by the applicant

5. Generates approximately 2 million dollars in local purchase annually, as estimated by the applicant

I. Health and Safety

1. Net long-term air quality benefits associated with the removal of the existing oil and gas industrial facility

2. Removal of public health risks associated with the removal of the existing oil and gas industrial facility (considered 22nd in the County for "Excess Lifetime Cancer Risks, 35th in the County for "Chronic Noncarcinogen Risks," and 36th in the County for "Acute Noncarcinogen Risks")

3. Removal of the median access across U.S. Highway 101 will improve traffic safety in the area

J. Visual

1. Enhances visual amenities through the removal of the existing oil and gas industrial facility and placing existing on-site utilities underground

2. Provides scenic viewing opportunities for golfers and users of the proposed recreational trail

K. Biological

1. Permanent protection/preservation of the on-site vernal pool

2. Enhancement of on-site native landscaping

3. Removal of nonnative vegetation within drainage corridors

L. Water

1. Frees up several acre feet of water currently used in the oil and gas operations, which water is supplied by the Rancho Dos Pueblos System, for use as agricultural irrigation on Rancho Dos Pueblos

ATTACHMENT E

COUNTY OF SANTA BARBARA BOARD OF SUPERVISORS

PROPOSED FINDINGS
FOR DENIAL OF SURFRIDER FOUNDATION'S APPEAL
OF THE PLANNING COMMISSION'S APPROVAL OF
THE ARCO DOS PUEBLOS GOLF LINKS (91-CP-85)

On August 3, 1993, and August 17, 1993, the Board of Supervisors heard and considered the appeal of the Surfrider Foundation from the Planning Commission's May 26, 1993 approval of the Arco Dos Pueblos Golf Links project (91-CP-85). The Board of Supervisors has reviewed the record, including the Final Environmental Impact Report 92-EIR-16 (the "Final EIR") and Addendum to 92-EIR-16 (the "Addendum") dated May 26, 1993, the various staff reports and submissions by the applicant and members of the public to the Planning Commission, the submissions to the Board of Supervisors by Surfrider Foundation, the applicant and members of the public in connection with Surfrider Foundation's appeal, and the staff report prepared for the August 17, 1993 Board hearing.

The Board of Supervisors denies the appeal of the Surfrider Foundation and approves a Conditional Use Permit for the Arco Dos Pueblos Golf Links (91-CP-85).

The Board of Supervisors makes the following findings in connection with its denial of the Surfrider Foundation's appeal:

A. The Planning Commission's approval of a Conditional Use Permit for the Golf Links did not violate the Coastal Act or the County's Certified Local Coastal Plan or the County's Coastal Zoning Ordinance. The Board of Supervisors expressly reaffirms the Planning Commissions's finding that the Golf Links project is in conformance with the applicable provisions of Article II and the Local Coastal Plan, and incorporates by reference into these findings the analysis and findings of conformity of the project with applicable provisions of Article II and the Coastal Plan as set forth in the Project Analysis section of the staff report to the Planning Commission, as amended by the revised policy analysis presented in the staff memo to the Planning Commission dated 5/19/93.

B. The decision of the Planning Commission was not an abuse of discretion or unlawful in any manner whatsoever. The findings and decision of the Planning Commission, and the Board of Supervisors' findings in connection with approval of the conditional use permit for the the ARCO Dos Pueblos Golf Links and these findings, are supported by the evidence in the record.

C. The Board of Supervisors make the following findings on the specific issues raised by the Surfrider Foundation in its appeal:

SURFRIDER APPEAL ISSUE #1

Allegation: The Planning Commission accepted legal interpretations proposed by the applicant, rather than its own staff and therefore misinterpreted and misapplied policies of the Coastal Act and County LCP which prohibit the conversion of agricultural land.

General Finding Rejecting Allegation: In essence, the only staff interpretations of Coastal Act and CLUP policies which were not adopted and followed by the Planning Commission related to agriculture. After input from the applicant and review of the issues by County Counsel, the Planning Commission exercised its discretion to interpret the relevant policies and apply them to the specific facts of this matter. The interpretation of coastal agriculture policies by the Commission in this matter is similar to the Board of Supervisors' interpretation and application of County-wide agriculture policies in connection with the Rancho San Marcos Golf Course and the Planning Commission's interpretation and application of County-wide agriculture policies in connection with the Alisal River Course and the "O'Shaughnessy" golf course (Dos Pueblos Partners).

The Golf Links project site has only recently been zoned Agriculture II. Prior to this rezoning, the site was zoned Coastal Dependent Industry, due to the historic oil and gas use of the site. When the site was rezoned, the Coastal Commission made it clear that the Agriculture designation was "a holding designation", since the Coastal Commission was aware that a golf course was about to be proposed for the property. The Coastal Commission further noted that the agricultural policies under the California Coastal Act should not be as strictly applied as they might have otherwise given the information brought out at the Coastal Commission hearing.

Surfrider Appeal Issue #1a.

Allegation: There is no basis to conclude that PRC Section 30242(a) which precludes conversion unless renewed agricultural use is not feasible, does not apply.

Finding Rejecting Surfrider Appeal Issue #1a: The appellant misreads Section 30242, to "preclude conversion [of agricultural land to non-agricultural uses] unless renewed agricultural use is not feasible." In fact, Section 30242 provides that:

> "Lands suitable for agriculture shall not be converted to non-agricultural uses unless: (1) continued or renewed

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agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands." (emphasis added).

Thus, a finding under either Section 30242(1) or Section 30242(2), together with a finding that the permitted conversion is compatible with continued agricultural use on surrounding lands, is sufficient to make the Golf Links consistent with this policy. ARCO argued that the Golf Links Project is consistent with Section 30242(1) and 30242(2), but the Planning Commission declined to make a finding on ARCO's contention that agriculture was not feasible on the site and therefore did not make a finding under Section 30242(1). Rather, the Commission concluded that prime soils would be preserved and the long term agricultural productivity of the site would be enhanced by improvement of soil conditions and development of irrigation lines to serve a site which presently has no agricultural water source. In the discussion portion of other findings, the Commission found that the Golf Links would not disturb agricultural operations on adjacent properties and would not be likely to cause adjacent properties to convert to nonagricultural uses.

The Planning Commission's finding is supported by the record. The "improvements" to the site (i.e., minor grading and the lack of intense structural development) combined with the soil/irrigation improvements (soil amendments, preservation of topsoil, new irrigation/water systems, etc.) will not preclude use of the site for agriculture in the future and will enhance the potential for future agricultural use. When the applicant-proposed soil amendments are implemented, the new soil profile will be equal to or superior to the original soil profile. There presently is no agricultural water supply, but the development of the Golf Links would result in the development of an irrigation water source necessary for agricultural use of the site in the future. Also, the CUP requires that if the Golf Links permanently closes, then agricultural land use shall be given preference on the site's prime soil.

Surfrider Appeal Issue #1b:

Allegation: There is no credible evidence to support a finding that the elimination of 61 acres of prime agricultural land would actually "preserve" prime agricultural land or concentrate development consistent with Section 30250.

Finding Rejecting Surfrider Appeal Issue #1b: The appellant misstates the facts as to "elimination of 61 acres of prime agricultural land." In fact, all prime soils would be preserved

on-site and would be enhanced by soil amendments during the development of the Golf Links.

The Golf Links not only is consistent with Section 30250, it carries out the purpose of Section 30250. The site is within 1/2 mile of the urban/rural boundary line and therefore is "in close proximity to existing developed areas able to accommodate it," as County staff always stated. Moreover, ARCO's use of the site as an oil field and production facility qualifies it as an existing isolated development. Finally, the Golf Links can be viewed as creating a buffer which will minimize conflicts between the urban uses to the east and the larger agricultural parcels to the west.

Although the Alternatives Analysis section of the EIR concluded that a golf course located at the Patterson site (which is within a developed area) would be the "environmentally superior project alternative", this CEQA analysis did not consider the whether approval of a golf course on the Patterson site was feasible. The Patterson site is an active viable, producing agricultural operation. The Patterson site is considered to have a majority of prime agricultural soils and has been identified as "Prime Land" and "Land of Statewide Importance" by the California Department of Conservation.

Due to policy inconsistencies related to the loss of <u>existing</u> agriculture at the Patterson site under long-standing County agriculture policies <u>and</u> the Board of Supervisors' recent action on the Goleta Community Plan, the approval of a golf course at the Patterson site is infeasible under Public Resources Code Section 30108, which states that "feasible" means "capable of being accomplished within a reasonable period of time, taking into account economic, environmental, social, and technological factors." In addition, the Patterson site is not a feasible alternative for ARCO to develop since ARCO does not own the site.

Since the Patterson site alternative is not feasible, there are no appropriate areas within existing nearby developed areas within which to locate the proposed Golf Links project.

Due to the infeasibility of locating the Golf Links project in a presently developed area, and the fact that the project is located in an isolated area at a selected point of attraction for visitors, the project is consistent with Section 30250.

<u>Surfrider Appeal Issue #1c</u>:

<u>Allegation</u>: There is no credible evidence to support the conclusion that [the Golf Links] would be compatible with continued agricultural use on surrounding lands.

Finding Rejecting Surfrider Appeal Issue #1c: There has never been a question whether golf course operations on the site would interfere with agricultural operations on adjacent parcels. The evidence was that the Golf Links would not interfere with agricultural operations on adjacent parcels.

The only issue as to compatibility of the Golf Links with continued agricultural use on surrounding lands was whether the presence of the Golf Links would cause the adjacent parcels to convert to non-agricultural uses.

The Planning Commission properly concluded that the Golf Links would provide a buffer which will minimize conflicts between the urban uses to the east and the larger agricultural parcels to the west. Moreover, as the Commission found, the extension of reclaimed water service to the site in connection with the project would not be available to serve any other properties and therefore will not contribute to conversion of any adjacent agricultural property to non-agricultural use.

Surfrider Appeal Issue #1d:

Allegation: The Planning Commission erroneously accepted ARCO's interpretation of PRC Section 30241; there is no credible evidence to support the conclusion that the project won't destabilize the urban/rural boundary, and that the extension of urban services won't cause adjacent agricultural lands to convert to urban uses.

Finding Rejecting Surfrider Appeal Issue #1d: The intent of PRC Section 30241 is clear: "The maximum amount of agricultural land shall be maintained in agricultural production to assure the protection of the area's agricultural economy." (emphasis added)

Thus, the first issue under PRC Section 30241 was whether this Section is applicable at all to the Golf Links project. The Golf Links site is not maintained in agricultural production and has never contributed to the area's agricultural economy. Therefore, an argument can be made that this Code Section does not apply to the project site.

Assuming that PRC Section 30241 is applicable to the analysis of the Golf Links project, the project is consistent with this statute--and, in particular, with subsections (a), (e) and (f) referenced by the wording of Surfrider Foundation's Appeal Issue #1d.

Section 30241(a) provides for maintaining agricultural production on prime agricultural land "[b]y establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined buffer areas to minimize conflicts between agricultural and urban uses." The evidence was clear that

there would be no conflict between the Golf Links' use of the site and continued agricultural operations on adjacent properties. Further, the Planning Commission properly found the Golf Links to be an appropriate and desirable buffer use of the site. There was no evidence that approval of the Golf Links would destabilize the urban-rural boundary, and there is no basis for making a finding that the Golf Links would have such an effect. Therefore, the project does not conflict with Section 30241(a).

Public Resources Code Section 30241 (e) requires that public service and facility expansions and non-agricultural development not impair agricultural viability, either through increased assessment costs or degraded air and water quality. As the EIR for the Golf Links project indicates, the long-term air and water quality would not be degraded with the development of the golf course. Regarding the extension of reclaimed water service to the site (which is the only new public service to the site as discussed at more length below in connection with Surfrider Appeal Issue #5) and potential indirect effects upon surrounding agricultural land uses (i.e., possible increased pressures to convert adjacent properties to non-agricultural development), the project has been conditioned to ensure that the only new extension of public service to the site would not affect adjacent land uses. Therefore, the project is consistent with Public Resource Code Section 30241 (e).

Public Resources Code Section 30241 (f) requires assurance that all development adjacent to the prime agricultural lands shall not diminish the productivity of such prime agricultural lands. There are no prime agricultural lands adjacent to the site; the closest prime agricultural lands are over 3/4 of a mile to the west of the project site (but adjacent properties are cattle ranches). The maintenance activities of a golf course are similar to those of agriculture and there are no anticipated operational conflicts with existing neighboring cattle operations.

SURFRIDER APPEAL ISSUE #2

Allegation: The Planning Commission's misinterpretation and misapplications of policy contradict the conclusions of the EIR that this project will result in a Class I, significant, unavoidable effect on agriculture and that the project would have growth-inducing effects.

Finding Rejecting Surfrider Appeal Issue #2: The EIR is an informational document, which applies "thresholds of significance" to determine whether there is a significant project-specific impact. The EIR applied this methodology to reach the conclusion that there would be a significant impact on agriculture (due to the presence of prime soils on the site) although there has been an oil field on the site for over 50 years and there is no existing or significant historical agricultural use of the site.

The fact that an EIR concludes that there would be a Class I impact does not dictate any particular land use policy conclusion. The environmental analysis is separate and independent of the policy analysis. Each analysis employs different methodologies and criteria. For example, it is possible for a project to have a Class I CEQA impact on water and not be inconsistent with water policies; conversely, a project may have a Class III CEQA impact on water but be inconsistent with water policies. The same is true for the CEQA and policy analysis of agriculture.

In this case, there is no contradiction between the EIR analysis leading to a Class I impact on agriculture and the Commission's and the Board's conclusion that the Golf Links project is consistent with the various applicable land use policies regarding agriculture.

The EIR's conclusion that there is Class I impact on agriculture arises from the presence of prime soils on the site. This analysis does not take into account whether there is any existing or historic agriculture on the site. Under the EIR analysis, the use of prime soils on the site for purposes other than agriculture results in a Class I impact due to the loss of the use of such soils for potential agricultural use.

However, in this case, such loss is merely a temporary loss of use of the soils for agriculture since the project will not cause the loss of the prime soils or the termination of the potential of agricultural use of the site. The conditions of project approval require the preservation of prime soils on site and provide that agricultural uses receive priority upon termination of golf course operations on the site. In addition, the project will enhance the agricultural potential of the site in the long term (e.g., by providing an agricultural water supply). Moreover, there is no existing agricultural use of the site. Therefore, as discussed at more length in other findings, the project is consistent with applicable agriculture policies.

Since the Golf Links project would not increase pressure for adjacent lands to convert to non-agricultural uses, the Golf Links will not be growth-inducing.

SURFRIDER APPEAL ISSUE #3

Allegation: There are other policy inconsistencies (e.g., PRC Section 30222, 30250, 30251, LCP Policy 7-6, 7-29, Agricultural Goal #1).

Finding Rejecting Surfrider Appeal Issue #3: Regarding PRC Section 30222, either ARCO's Golf Links project is recreational use--either as a "public" recreational use or a "visitor-serving commercial" recreational use. To the extent that Section 30222 is applicable, it establishes visitor-serving commercial recreational

use as one of the priority uses under the Coastal Act along with agriculture and coastal dependent industry. Section 30222 does not state that agriculture has priority over visitor-serving commercial recreational uses, only that visitor-serving commercial recreational use has a priority over certain uses and not over agriculture and coastal dependent industry. Other Coastal Act policies must be referred to in evaluating coastal agriculture policy consistency on the site.

Page 2 of the County's LCP states:

> "Public recreational uses have priority on coastal sites which are not habitat areas and not needed for coastal dependent uses . . . . visitor-serving commercial recreation has priority over private residential, general industrial and general commercial development. These priorities must be reflected in the land use plans prepared by local governments."

Local Coastal Plan Section 35-64 "Agricultural Lands" states that if a lot is zoned for agricultural use and is located in a rural area not contiguous with the urban/rural boundary, rezoning to a non-agricultural zone district shall not be permitted unless such conversion of the entire lot would allow for another priority use under the Coastal Act--*e.g.*, coastal dependent industry, recreation and access, or protection of an environmentally sensitive habitat. Such conversions shall not be inconsistent with PRC Sections 30241 and 30242 of the Coastal Act.

The intent of Local Coastal Plan Section 35-64 is to prioritize land uses; the conclusion is that agriculture, coastal dependent industry and visitor-serving commercial recreation are all priorities along the coast. Section 30222 does not state that agriculture is the number one priority. Additionally, as stated above, the site has never been in agricultural production. Due to existing site constraints for agriculture (especially, lack of water), it is not anticipated that the site could be used for active agricultural production. In conclusion, visitor-serving commercial recreation facilities as well as public recreational uses are a priority use described in the Coastal Act, and as such, the project is <u>consistent</u> with Section 30222.

Regarding PRC Section 30250, see Finding Rejecting Surfrider Appeal Issue #1b. above.

Regarding PRC Section 30251, the project is consistent with and promotes the policies of this section because the existing oil and gas facilities would be removed from the project site, above ground utilities would be placed underground, grading would be kept to a minimum, native vegetation would be used, structures would be placed in areas previously accommodating structures and they would

be subordinate to the character of the area, there would be minimal encroachment into view corridors, no ocean views would be blocked and the removal of non-native trees would actually enhance ocean views.

Regarding Agricultural Element Goal #1, the issues are the same as under Public Resources Code Section 30242. Therefore, see Finding Rejecting Surfrider Appeal Issue #1a.

Regarding LCP Policy 7-6, the project is consistent with this LCP Policy in that the Golf Links Project is a recreational use that does not require extensive alteration of the natural environment, and as such has a priority over uses requiring substantial alteration. The overall biological environment will be enhanced with the Project's Biological Enhancement and Landscape Plan, the Project involves only 150,000 cubic yards of cut/fill, there will be a net long-term air quality benefit, etc.

Regarding LCP Policy 7-29, the project is consistent with this LCP Policy in that the Golf Links Project would generate less than 5 golfers per acre per day, and is considered a low intensity recreational use. As stated above, the Golf Links Project would enhance the overall biological environment through the Project's Biological Enhancement and Landscape Plan, the Project involves only 150,000 cubic yards of cut/fill, there will be a net long-term air quality benefit, the Project will utilize reclaimed water, etc.

SURFRIDER APPEAL ISSUE #4

Allegation: The Planning Commission's decision violates CEQA in that, inter alia, the EIR understates impacts in a number of issue areas; fails to adequately analyze alternatives, and the findings and statement of overriding considerations are not supported by the evidence.

Finding Rejecting Surfrider Appeal Issue #4: The appellant has not provided any specific examples of where the EIR or the findings and overriding considerations are inaccurate or inadequate. The EIR is extensive. Comments from members of the public alleging understated impacts in the Draft EIR were fully addressed in the responses to comments. The Addendum addresses issues which arose during the hearing. The findings and overriding considerations are supported by the evidence.

SURFRIDER APPEAL ISSUE #5

Allegation: The Planning Commission's decision violates the Coastal Zoning Ordinance (e.g., Section 35-69.4.2) because the project will require an expansion of urban services which will increase pressure to convert adjacent agricultural lands, and the findings for the infeasibility of alternatives are not supported by the evidence.

Finding Rejecting Surfrider Appeal Issue #5: The development of a golf course on the property does not require the extension of any utilities, with the exception of the reclaimed water line. All other urban services presently are on-site as part of the existing oil and gas operation (i.e., potable water, electricity, gas, telephone, solid waste, fire and police protection, etc.). The extension of the reclaimed water line is not considered an extension of urban services because reclaimed water does not meet potable water standards and is therefore may be used solely for turf irrigation or agriculture. Additionally, ARCO's reclaimed water line would not be available for service to any other property, which will ensure that the extension of reclaimed water service will not be growth inducing. Therefore, the reclaimed water line would not allow for the expansion of urban services which could either promote growth or interfere with agricultural production of adjacent lands.

Concerns regarding extension of urban services typically are related to ultimate growth inducement leading to development of residences on the site. In addition to the fact that the extension of reclaimed water service to the site is not a potable water supply and therefore could not support residences or other urban development on the site, the Golf Links project is a "golf and only golf" project which can never include any residential component now or in the future. Condition 66 of the CUP for the Golf Links expressly provides that "the on-site Antiquated Naples lots shall not be developed with single family residences."

Additionally, the proposed Golf Links project does not require a Local Coastal Plan (LCP) amendment or a Rezone, and is consistent with the existing Agriculture II-100 land use designations.

Moreover, as long as the adjacent properties retain their agricultural designation, there is no expectation that any substantial change in surrounding uses or property values would or could occur as a result of the project. Local Coastal Zoning Ordinance Section 35-64(1) states:

> "If a lot is zoned for agricultural use and is located in a rural area not contiguous with the urban/rural boundary, rezoning to a non-agricultural zone district shall not be permitted unless such conversion of the entire lot would allow for another priority use under the Coastal Act, e.g., coastal dependent industry, recreation and access, or protection of an environmentally sensitive habitat. Such conversions shall not be inconsistent with PRC Sections 30241 and 30242 of the Coastal Act."

This zoning restriction ensures that the rural nature of the area will be maintained and that rezoning of adjacent lands to nonagricultural designations would not be permitted, thereby assuring the preservation of long-term rural uses in this area and

that there will be no conflicts with contiguous agricultural operations in the area.

Due to the lack of existing agricultural production on-site and the lack of pressure to convert adjacent agricultural lands, the Golf Links project will not interfere with agricultural production on or adjacent to the site, nor does it require an expansion of urban services which will increase pressure for conversion of the adjacent agricultural lands. For these reasons, the Golf Links project is consistent with Article II.

As to the allegation that the findings for the infeasibility of alternatives are not supported by the evidence, these findings have been prepared, reviewed and approved by RMD staff, County Counsel and the Planning Commission, and are found by the Board of Supervisors to be more than adequate and supported by the evidence. Additionally, these findings are similar to other findings made for similar projects, such as Rancho San Marcos Golf Course, Alisal River Golf Course, and "O'Shaughnessy" Dos Pueblos Golf Course.

SURFRIDER APPEAL ISSUE #6

Allegation: The Conditions of Approval regarding coastal access are arbitrary, unreasonable and violative of the access policies of the Coastal Act and the LCP, in that they unnecessarily restrict and reduce access from existing levels of use without evidence that historical use has caused any harassment or other adverse impact on any biological resource.

Findings Rejecting Surfrider Appeal Issue #6: The coastal access conditions of approval have been crafted with input from the California Department of Fish and Game, the National Marine Fisheries Services, the Coastal Commission, and RMD, to carry out federal, state and local statutes and policies--based on the sensitivity of seals to harassment and prior documented harassment at the seal haulout area. The conditions balance the interests of the community and the sensitive biological resources on-site and in the project area.

ATTACHMENT A

Findings for Approval:

REVISED pursuant to the Planning Commission Hearing of May 26, 1993

To be included in the Public Record

A. The Planning Commission adopts the CEQA findings and Statement of Overriding Considerations dated May 26, 1993 as presented herein.

B. Public Resources Code Section 21081.6. requires the County to adopt a reporting or monitoring program for the changes to the project which it has adopted or made a condition of approval in order to mitigate or avoid significant effects on the environment. The approved project description and conditions of approval, with their corresponding permit monitoring requirements, are hereby adopted as the monitoring program for this project. The monitoring program is designed to ensure compliance during project implementation.

These conditions also require that an Environmental Quality and Assurance Program (EQAP) be prepared to ensure compliance during project implementation with those measures included in the project description and with those conditions imposed on the project in order to mitigate or avoid significant effects on the environment.

C. Pursuant to Section 35-172.8 of the Article II Zoning Ordinance, the following findings must be adopted in order for the Conditional Use Permit to be approved:

1. The site for the project is adequate in size, shape, location and physical characteristics to accommodate the density and intensity of development proposed.

The property is located approximately 1/2 mile to the west of the Urban/Rural boundary line, within a short driving distance of the Santa Barbara/Goleta metropolitan area. In addition, the area between Ellwood and Gaviota is considered a recreational resource of State-wide importance. The maintenance activities of a golf course are similar to those of agriculture and no operational conflicts are expected.

Only 115 acres of this 202 acre site will be developed. The proposed project has been designed to take advantage of the natural features of the property, with minimum alteration of the natural terrain. The links layout has been designed to avoid all of the major and most of the minor drainages that run across the property. Approximately 265 (226 non-natives) of the 937 trees that currently exist on the site would be removed to accommodate the golf course.

The project site contains several Environmentally Sensitive Habitat areas. Through project design, avoidance of the Environmentally Sensitive Habitat areas is accomplished. In addition, mitigation measures are required as project conditions of approval in order to ensure their protection. Although the project proposed a significant increase in the intensity of the use of the site in close proximity to the Environmentally Sensitive Habitat areas, because the project lacks a residential unit component, with the conditions controlling the hours of

operation, location and manner of access to the beach, the finding can be made that the site for the project is adequate in size, shape, location and physical characteristics to accommodate the density and intensity of development proposed.

2. That adverse impacts are mitigated to the maximum extent feasible.

The project EIR identified significant unavoidable adverse impacts associated with Air Quality (short-term construction emissions) and loss of prime Agricultural soils. Mitigation measures for each of these impacts have been incorporated into the project Conditions of Approval. The prime soils will be retained on site, and the potential for the conversion of the site to agricultural uses upon termination of the Conditional Use Permit for the Golf Links will be enhanced. With regard to any significant impacts which may remain after mitigation measures are applied, a Statement of Overriding Considerations must be adopted concurrently with the CEQA Findings in order to approve the project.

The project EIR identified potentially significant but mitigable impacts to Biological Resources, Traffic and Circulation, Water Resources, Short-Term Air Quality, Archaeological Resources, Aesthetics, Hazardous Materials/Safety, Geology/Soils, and Public Services. Project conditions, adopted with the approval of this project incorporate all mitigation measures and a mitigation monitoring program will guarantee implementation during construction and during long-term operation.

3. Streets and highways are adequate and properly designed.

As presented in the Circulation element Consistency section of the Staff Report dated 4/14/93, streets and highways are adequate and properly designed to serve the proposed Golf Links development.

4. There are adequate public services, including but not limited to, fire protection, water supply, sewage disposal, and police protection to serve the project.

Water Supply: Domestic water supply would be provided by the Goleta Water District. Irrigation water would be supplied with reclaimed water from the Goleta Sanitation District/Goleta Water District wastewater reclamation project. As presented in Appendix 5.3 of the Environmental Impact Report prepared for this project (92-EIR-16), there is adequate capacity for the wastewater reclamation project to serve the ARCO Dos Pueblos Golf Links project in addition to other identified projects which have yet to secure a commitment from the District. The project is approved subject to the applicant obtaining a "can and will serve" letter from the District prior to issuance of a Coastal Development Permit.

Sewage Disposal: Sewage disposal for the project will be through a private septic system adequate to serve the project.

Police Protection: The Santa Barbara County Sheriff's Department has reviewed the project and has indicated that adequate law enforcement services currently exist to serve the project.

Fire Protection: The Santa Barbara County Fire Department has reviewed the project, and with appropriate conditions has, indicated that adequate fire services currently exist to serve the project.

Electrical Utilities: Electric service will be provided by the Southern California Edison Company which has adequate capacity to serve the project.

5. The project will not be detrimental to the health, safety, comfort, convenience, and general welfare of the neighborhood and will not be incompatible with the surrounding area.

The Conditional Use Permit contains many conditions that provide land use controls over the life of the Golf Links project. The majority of these conditions are required as mitigation measures to ensure that the adverse impacts of the project are mitigated to the maximum extent feasible. Based on evidence in the record, the Golf Links project will not be likely to cause adjacent agricultural lands to convert. The only public service and facility expansion associated with the project is the extension of the reclaimed water line the full cost for which will be borne by the project applicant. The reclaimed water line is a private line conditioned to serve the ARCO Golf Links project only, with no additional connections permitted.

The development of the site with a golf course will not diminish the productivity of adjacent prime agricultural lands as the maintenance activities of a golf course are similar to those of agriculture and no operational conflicts with neighboring cattle operations are expected.

The project can be found compatible with the surrounding area as golf courses are conditionally permitted in agricultural zones, and because the ARCO Golf Links project does not include a residential component.

6. The project is in conformance with the applicable provisions of Article II and the Coastal Plan.

Pursuant to the previous discussion in the Project Analysis section of the Staff Report, amended with the revised policy analysis presented in the memo to the Planning Commission dated 5/19/93 and this findings section, the Golf Links proposal is consistent with Article II and the Coastal Plan.

7. In designated rural areas, the use is compatible with and subordinate to the scenic and rural character of the area.

The conversion of the site's broad expanses of grassland interrupted by several incised drainages and oil and gas processing facilities, to the manicured greens, fairways, and roughs, is a subjective call, considered incompatible by some. However, ARCO's existing oil and gas facility, with scattered components across the entire property, would be removed, thus restoring at least some of the visual quality of the site. The "links" style of golf course retains more existing vegetation and requires less alteration of the terrain than the traditional California golf course. As viewed by travellers along U. S. Highway 101, the visual change to the type of grasses would not be so apparent due to the large expanses of existing vegetation to be retained, the screening provided by the native planting mitigation areas, and the buffers provided by the existing topography. The structures proposed for the project would result in minimum encroachment into view corridors, and would not obscure public views to the ocean as they would be of similar height and located in the same general area as the existing facilities which would be removed. Vegetation and land mass screening is provided for in the location of the proposed buildings.

Consistent with the scenic and rural character of the area, the Golf Links does not propose a residential component to the project.

In addressing coastal access and recreation, the Coastal Plan acknowledges that the area between Ellwood and Gaviota is a recreational resource of State-wide importance. Three major State parks, El Capitan, Refugio, and Gaviota currently provide recreational opportunities for local as well as out-of-County visitors. In addition, areas along the coastline outside of State parks are already used extensively for recreation by mostly local residents. The Golf Links development could therefore be considered subordinate to and compatible with the character of its setting along the Gaviota Coast

8. The project will not conflict with any easements required for public access through, or public use of, a portion of the property.

With approval of the Golf Links project, ARCO will offer to dedicate public coastal access easements consistent with the protection of the environmentally sensitive habitats located on, or adjacent to the site.

9. That the proposed use is not inconsistent with the intent of the zone district.

The purpose of the Agriculture II district is to establish agricultural land use for large prime and non-prime agricultural lands in the rural areas of the County and to preserve prime and non-prime soils for long-term agricultural use.

The purpose of a Conditional Use Permit is to provide for uses that are essential or desirable but cannot be readily classified as principal uses in individual zone districts by reason of their special character, uniqueness of size or scope, or possible effect on public facilities or surrounding uses. Section 315-172.5. 2. k. of Article II states golf courses and driving ranges may be permitted in any district that they are not otherwise permitted with a Major Conditional Use Permit.

CEQA FINDINGS AND STATEMENT OF OVERRIDING CONSIDERATIONS

FINDINGS PURSUANT TO PUBLIC RESOURCES CODE SECTION 21081 AND THE CALIFORNIA ENVIRONMENTAL QUALITY ACT SECTIONS 15090 AND 15091:

A. CONSIDERATION OF THE EIR

The Final Environmental Impact Report (EIR), 92-EIR-16 (the "Final EIR") and Addendum to 92-EIR-16 (the "Addendum") dated May 26, 1993 were presented to the Planning Commission and all voting members of the Commission have reviewed and considered the EIR, its appendices, and the Addendum prior to approving the conditional use permit (91-CP-085) for ARCO's proposed Dos Pueblos Golf Links. In addition, the Commission has reviewed and considered testimony and additional information presented at or prior to public hearings on April 14, 1993, May 12, 1993, and May 26, 1993.

B. FULL DISCLOSURE; COMPLIANCE WITH CEQA

The Planning Commission finds and certifies that the Final EIR and Addendum constitute a complete, accurate, adequate and good faith effort at full disclosure under CEQA. The Commission further finds and certifies that the Final EIR and Addendum have been completed in full compliance with CEQA. The final EIR reflects the independent judgement of the Planning Commission.

C. FINDINGS THAT CERTAIN UNAVOIDABLE IMPACTS ARE MITIGATED TO THE MAXIMUM EXTENT FEASIBLE

The Final EIR and Addendum for the Dos Pueblos Golf Links identify two (2) project specific significant environmental impacts and five (5) cumulatively significant impacts which cannot be fully mitigated and, therefore, are considered unavoidable. Those project specific impact areas are short-term air quality and agriculture. Those cumulative impacts are to biological, archaeological, aesthetics, public services and agricultural resources. To the extent the impacts remain significant and unavoidable, such impacts are acceptable when weighed against the overriding social, economic, and other considerations set forth in the Statement of Overriding Considerations below. Each of these "Class I" impacts identified by the Final EIR are discussed below, along with the appropriate findings as per CEQA Section 15091:

1. Short Term Air Quality (PM-10)

Avenue and Patterson Avenue. This project alternative would result in a variety of different significant effects, although many could be mitigated to insignificance. Like the Naples alternative, the Patterson alternative would result in all of the negative effects of the no project alternative due to continued oil and gas operations on the project site.

In addition, this project alternative is not a feasible alternative for ARCO to develop and does not appear to be a feasible project under applicable land use policies, even if the environmental impacts were considered to be somewhat less than the project. The Patterson site is an existing agricultural operation of long standing with prime soils. Although impacts to agriculture were found to be significant for both the project site and the Patterson site, the degree of impact to agriculture on the Patterson site would be greater given the existing agricultural operations on the site. Since existing policies and the recent conceptual decisions of the Board of Supervisors concerning the Goleta Community Plan would prohibit the conversion of the Patterson site from agriculture, the Patterson site is not a feasible alternative.

STATEMENT OF OVERRIDING CONSIDERATIONS

The Final EIR and Addendum for the Dos Pueblos Golf Links identify project specific impacts to short-term air quality and agriculture and cumulative impacts to agriculture, biology, aesthetics, public services, and archaeology as significant environmental impacts which are considered unavoidable. The Planning Commission therefore makes the following Statement of Overriding Considerations which warrant approval of the project notwithstanding that all identified impacts are not fully mitigated. Pursuant to CEQA Sections 15043, 15092 and 15093, any remaining significant effects on the environment are acceptable due to these overriding considerations:

A. <u>Land Use</u>

1. Removal of an existing legal non-conforming oil and gas industrial facility

2. Compliance with the South Coast Consolidation Planning Area's Rezone of Oil and Gas Facilities Sites

3. Reduces the potential of brush fires on the site and crea' a fuel break in a high fire hazard area

*

1. No Project Alternative

The no project alternative would result in the retention of the site in its current state, including continued oil and gas operations. The oil and gas facilities would not be abandoned and the Golf Links project would not be developed. This project would avoid the adverse effects of the project, but none of the numerous environmental benefits of the project (e.g., net reduction in air pollutant emissions, removal of visual detractors from the site, etc.) would be realized, nor would the project goals be met.

2. Reduced Project Size

This alternative would have all of the components of the Golf Links project, except the nine-hole par three course. Although the reduced scale project would (1) avoid two small cart bridges which span small drainages on the south side of the railroad tracks, (2) reduce somewhat the amount of irrigation water used and the number of traffic trips and long term air pollution generated by golfers travelling to the site, and (3) reduce somewhat the amount of PM-10 and NOx emissions during construction, the reduced scale alternative would not avoid any of the significant environmental impacts of the project. Overall, the environmental effects of the project and reduced scale project would be essentially the same. However, this alternative would not provide a 9 nine hole course which could serve a different segment of the population.

3. Naples Alternative Site

This alternative would entail development of the Golf Links project at the Naples township site located to the west of the project site. While there are some specific differences, overall the types of impacts which would result from Naples alternative would be similar to the effects of the project. However, all of the negative effects of the no project alternative would occur because the existing oil and gas operations on the project site would continue for an indefinite period of time. Thus, the Naples alternative would result in many more overall environmental effects than the project because it would not eliminate the existing oil and gas operations at the Dos Pueblos Oil Field.

The Naples site is not owned by Arco and also is the subject of current litigation between the owners and the County, and therefore the Naples alternative site is not a feasible alternative.

4. Patterson Alternative Site

The EIR identified this site as the environmentally preferred alternative. This alternative would develop the Golf Links project on approximately 247 acres of existing land located southwest of the intersection of Hollister

Services Department and the County Agricultural Commissioner, and a Hazardous Materials Business Plan shall be developed and implemented. Golf course maintenance in accordance with such plans will mitigate such potential impacts to insignificance.

8. Geology/Soils

The Final EIR concludes that the Golf Links project has the potential to create significant impacts related to: slope stability; soil creep, collapsible/compressible soils and expansive soils; shrink-swell potential and placement of pipelines for reclaimed water in soils with geotechnical constraints or on unstable existing piperacks could result in significant impacts associated with pipeline failure. The following mitigation measures are incorporated into the Conditions of Approval for the project: preparation of a final drainage plan by a civil engineer to ensure no increase in surface runoff on-site, and that surface water runoff is controlled; use of deep-rooted plants and soil moisture devices; and, implementation of geologic and soils engineering study requirements for on-site improvements. These measures will mitigate these impacts to insignificant levels.

9. Public Services

a. The Final EIR concludes that there could be potential significant public services impacts resulting from new demand for fire protection services created by the project, which is outside of the five-minute response zone for both Fire Stations No. 11 and No. 14. The following mitigation measures have been incorporated into the Conditions of Approval of the project: buildings shall be equipped with automatic sprinkler systems, adequate access shall be provided to the site, and an adequate number of fire hydrants as determined by the County Fire Department shall be installed. These measure will mitigate to insignificant levels any potential impact on fire protection services resulting from the project.

E. FINDINGS THAT IDENTIFIED PROJECT ALTERNATIVES ARE NOT FEASIBLE

The Final EIR evaluated a no project alternative, a reduced project alternative, and two alternative project locations (Naples site and Patterson site) as methods of reducing or eliminating potentially significant environmental impacts of the Dos Pueblos golf Links. The Final EIR concluded that the environmentally superior project alternative was the Patterson site, but the analysis did not consider the feasibility of the off-site alternatives. As discussed below, the off-site alternatives are infeasible.

plementation of an erosion control program; implementation of an Integrated Pest Management Plan (IPMP); design of a 5 acre-foot reservoir; vernal pool setbacks; construction restrictions near the harbor seal haul-out area; and, restrictions on construction of pipelines near Eagle Canyon. These measures will mitigate these impacts to insignificant levels.

b. The Final EIR concludes that the operation of the Golf Links project has the potential to create significant impacts to biology, including: on-site drainages (associated with golf ball retrieval); runoff of pesticides and fertilizers into the vernal pool; increased human activity in the vernal pool area; the harbor seal haul-out area; runoff of pesticides and fertilizers into the drainages; rodenticide use impacts on predators; bio-accumulation of insecticide residues; and, reptile and amphibian impacts (associated with maintenance of desiltation basins). The following mitigation measures are incorporated into the Conditions of Approval for the project: golf ball retrieval program; implementation of an Integrated Pest Management Plan (IPMP); implementation of a Biological Enhancement and Landscape Plan (BELP); vernal pool & setbacks; fencing and/or vegetated buffers and signage along drainages; and implementation of a Restricted Access Plan which prohibits vertical access during the harbor seal pupping/breeding season. These measures will mitigate these impacts to insignificant levels.

2. Traffic/Circulation

The Final EIR indicates that the Golf Links project has the potential to create significant impacts to: motorists on U.S. Highway 101 related to errant golf balls; elimination of direct access to and from U.S. Highway 101 southbound; the Dos Pueblos Canyon Road interchange; and parking during tournament events. The following mitigation measures are incorporated into the Conditions of Approval for the project: provision of low vegetation adjacent to the tee boxes on holes 1, 3 and 4; provide funds to reopen and maintain the private portion of Calle Real or obtain approval from affected property owners to close median break on U.S. Highway 101; provide fair-share funding to the County "Pavement Management System" to repair the pavement between northbound and southbound ramps at the Dos Pueblos Canyon Road interchange; and, development of a parking program for tournament days when the on-site parking lot's capacity would be exceeded. These measures will mitigate these impacts to insignificant levels.

avoiding sensitive areas, inclusion of vegetated buffers and revegetation would reduce this impact however, residual cumulative impacts would remain significant.

5. Aesthetics

Together with other development in the project vicinity, the project would result in a cumulative aesthetic impacts through altering the existing visual character of the area. Mitigation proposed for project specific aesthetic impacts including review of the project design and landscaping by the Board of Architectural Review. Residual cumulative aesthetic impacts would remain significant.

6. Public Services

The EIR found that the project would contribute to a cumulative impact to police and fire services through increasing service demand together with other development proposed in the service area. The EIR identified mitigation to address this impact that the County could consider implementing. This includes analyzing the need for additional sheriff staff, as well as relocation of fire station 11. These mitigations are provided as information to the decision-makers, and would have to be implemented by the county rather than on a project specific basis.

D. FINDINGS THAT CERTAIN IMPACTS ARE MITIGATED TO INSIGNIFICANCE BY CONDITIONS OF APPROVAL

The Final EIR identified several subject areas for which the project is considered to cause or contribute to significant, but mitigable environmental impacts. Each of these impacts is discussed below along with the appropriate findings as per CEQA Section 15091:

1. Biological Resources

a. The Final EIR concludes that <u>construction</u> of the Golf Links project has the potential to create significant impacts to biology, including: willow trees and willow scrub habitat; windrow trees; riverine intermittent streambeds; non-native annual grass wetlands; southern tarplant populations; terrestrial, aquatic and marine habitats (related to erosion and sedimentation); the seasonal pond in Tomate Canyon; reptile and amphibian populations in the desiltation basin areas; the harbor seal haul-out area; native animal species (related to habitat fragmentation); reduction of bat population (related to tree removal) and the monarch butterfly site at Eagle Canyon. The following mitigation measures are incorporated into the Conditions of Approval for the project: replacement of impacted trees; implementation of a Biological Enhancement and Landscape Plan (BELP); protection of enhanced drainage areas; revegetation plan for southern tarplants; im-

The Final EIR concludes that, during the construction and decommissioning phase, PM-10 particulate emissions will be generated which exceed the threshold of significance. The following mitigation measures are incorporated into the Conditions of Approval for the project: restrictions and specifications on contractor's equipment to be used in the construction and decommissioning phase, as well as other detailed construction measures, including increased site watering frequency when wind speed exceeds 15 mph, suspending grading and scraping when wind speed exceeds 20 mph, on-site construction speed limit of 15 mph. No other feasible mitigation measures were identified. Although these measures will mitigate in part the significant short term air quality effects of the project, such effects cannot be mitigated to insignificance and, therefore, there will be a residual significant adverse effect on short term air quality due to increased PM-10 emissions.

2. Agriculture

The Final EIR concludes that there will be a significant adverse effect on agriculture as a result of the project because the golf course would remove 61 acres of Class II prime soils from potential agricultural productivity on land zoned for agriculture. A cumulatively significant impact would result as the project would reduce the Countywide inventory of prime soils by approximately 61.
The Conditions of Approval provide for the preservation of prime soils during grading and that, in the event of permanent closure of the Golf Links facility, agricultural land use shall be given preference on the project site's prime soils. While these conditions mitigate in part the potential effects of the project, the project will cause a loss of the use of prime soils during the life of the project and, there are no other feasible mitigation measures and the residual effect of the project on agriculture under County environmental thresholds remains significant, adverse and unavoidable.

3. Archaeology

The EIR found that the project would cumulatively contribute to the overall reduction in the number of undisturbed archaeological sites available for scientific study. Mitigation involving data collection (Phase III studies) for project specific impacts would also mitigate this cumulative impact however, the residual cumulative impact would remain significant.

4. Biology

The EIR found that the project would contribute to cumulative biological resources impacts through removal of plant communities and habitat and would increase human activity in the vicinity of sensitive habitats. Mitigation proposed for project specific biological impacts including

Santa Barbara County Planning Commission
Staff Report and Recommendations
(Excerpts)

P/C Date: April 14, 1993
Area: Gaviota
Sup. Dist.: Third
Staff: S. Goggia
G. Wheeler

91-CP-085 ARCO Dos Pueblos Golf Links
92-EIR-16

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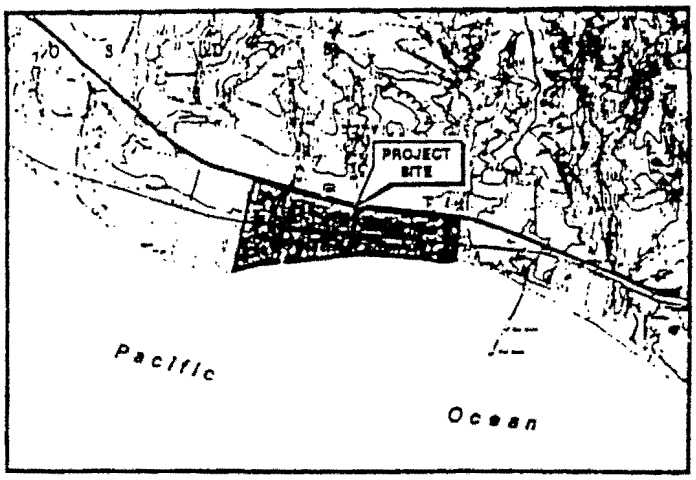

I. REQUEST

Hearing at the request of the ARCO Oil and Gas Company for approval of a Conditional Use Permit to allow for the development of a public day-fee 18-hole "links" style golf course, nine-hole par three golf course, driving range, putting green, clubhouse, cart barn, maintenance building, and accessory uses/structures. Irrigation water is proposed to be provided through the extension of a reclaimed water line to the site or through the development of a desalination plant on the site. In addition, oil and gas production facilities currently located on the site would be abandoned.

Application received October 29, 1991.

II. LOCATION

The project site encompasses approximately 202 acres located along the coastal bluff 1.5 miles west of the Winchester Canyon exit on north-bound U.S. Highway 101 in the unincorporated area of Santa Barbara County. The site is bounded to the east by Eagle Canyon Creek, to the north by U.S. Highway 101, to the west by the Morehart land holdings (Naples), and to the south by the mean high tide line of the Pacific Ocean. The site is located in the Gaviota area of the Third Supervisorial District. The site is bisected by the Southern Pacific Railroad (SPRR) tracks. Assessor's Parcel Numbers for the site are: 079-18-05, 16, 18; 079-200-04, 08.

III. RECOMMENDATION

Follow the procedures outlined in Section XI of this report and deny 91-CP-085, Attachment A; along with Planning Commission Exhibit C dated April 14, 1993 based upon the project's inconsistency with the Coastal Land Use Plan and the Comprehensive Plan and based on the inability to make the required findings.

IV. ISSUE SUMMARY

The project site has been used since the 1920s for oil and gas extraction and processing. The Land Use and Zoning Designations for the parcel were changed from Coastal Dependent Industry to Agriculture II in 1991 at the request of the County as part of the South Coast Consolidation effort. During the Coastal Commission hearings, the Commission included a historical perspective in the findings that the site was an oil facility, and while they were aware of ARCO's plans for a golf course on the site, they would approve the agricultural designation, noting that a golf course is a conditionally permitted use in the Agriculture II zone district, as long as the specific project can be found to be compatible with surrounding land use and be compatible with the continued viability of adjacent agricultural lands. ARCO had yet to submit a formal application for the golf course to the County. A designation of Recreation would allow for a more intensive recreational use of the property. The Agricultural designation was eventually approved for the site as the property contained prime soils, and the use of the site for agriculture was considered the "environmentally preferred" use in the South Coast Consolidation EIR.

The applicants claim that due to site specific circumstances such as lack of sufficient water, poor soils, salt, and wind, agriculture is not viable. A market feasibility study conducted for ARCO concluded that the Santa Barbara County area has an existing demand for 4 additional 18-hole public golf courses including the proposed Golf Links. Since its original submittal, the Golf Links project has undergone a number of revisions in response to identified environmental impacts and in order to be found more compatible with the scenic and rural character of the area.

The proposed project has been analyzed and was found to be inconsistent with Public Resources Code Section 30222 regarding the priority agriculture has over the use of private lands for visitor-serving commercial recreation facilities, and Public Resources Code Section 30250 regarding locating new development contiguous with, or in close proximity to existing developed areas able to accommodate it and where it would not have significant adverse effects. In addition, the Golf links project was found to be inconsistent with Public Resources Code Section 30241, 30242, Policy 8-2 of the Coastal Land Use Plan, and the Agricultural Element Goal #1 regarding the encouragement and maintenance of the maximum amount of prime agricultural land because project implementation would result in the removal of 61 acres of Class II prime agricultural soils from

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quality. As the EIR for the Golf Links project indicates, the long-term air and water quality is not expected to be degraded with the development of the golf course. However, there is no way to assure that the development of a golf course on the property which requires the extension of the reclaimed water line, or the construction of the desalination plant, would not impair agricultural viability of adjacent agricultural lands through increased property values and in turn increased pressure to convert the adjacent properties to non-agricultural development. Therefore, based on the project's potential indirect impact to offsite agricultural resources, the project would be inconsistent with the provisions of Public Resource Code Section 30241 (e).

Public Resources Code Section 30241 (f) requires assurance that all development adjacent to the prime agricultural lands shall not diminish the productivity of such prime agricultural lands. As the maintenance activities of a golf course are similar to those of agriculture, no operational conflicts are expected. However, as discussed above, there is no way to assure that the development of the Golf Links project would not increase the pressure for adjacent agricultural lands to convert to non-agricultural uses, and thus diminish their productivity as well. Therefore, the project would be inconsistent with the provisions of Public Resource Code Section 30241 (f).

Public Resources Code Section 30242 — *All other lands suitable for agricultural use shall not be converted to non-agricultural uses unless: (1) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.*

Due to the presence of prime soils, 40 AFY of agricultural irrigation water available, and adjacent agricultural uses, a finding can be made that continued or renewed agricultural operations would be feasible on the project site. Therefore, the project is inconsistent with the above Section as land suitable for agricultural use would be converted to a non-agricultural use.

Agricultural Element Goal #1: — *Santa Barbara County shall assure and enhance the continuation of agriculture as a major viable production industry in Santa Barbara County. Agriculture shall be encouraged. Where conditions allow, (taking into account environmental impacts) expansion and intensification shall be supported.*

Staff notes that with the approval of the Rancho San Marcos Public Golf Course, the Board of Supervisors found that golf course development will not preclude

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agricultural use of the site in the future, and in fact the soil enhancement and development of the irrigation lines associated with the golf course would enhance future agricultural use of the property in the event of termination of the golf course use.

In the Comprehensive Plan Consistency Section of the Staff Report prepared for the Alisal Ranch Public Golf Course (87-CP-35), analysis under Agricultural Resources states: " The cultivation and expansion of agricultural lands is a primary goal of the Land Use Element. While the proposed golf facility will reduce the likelihood of future use of agricultural activities onsite, the improvements will not preclude a possible reversion of the site back into agricultural production, as no rezone is proposed."

The applicant for the Golf Links project makes the same argument. In a submittal regarding the site's agricultural potential, Orrin Sage of Sage Associates, an environmental consulting group, indicates that during the development of the project, the topsoil would be preserved, amended, and replaced in its original location. He contends that if the Golf Links are no longer utilized in the future, the site would be suitable for agricultural uses including grazing, turf, nursery, hay, lemons, and avocados, and that the Class II soil would not be lost but would be available for future agricultural uses. However, it should be noted that staff is unaware of any cases in which conversion from a golf course back to agriculture has occurred. In fact, the only example of a golf course terminating its use in the south County was the San Marcos Golf Course which was located in a residential zone district at the base of San Marcos Pass. This course was replaced with the Shadow Hills residential development. Considering the capital outlay required to develop a water system to serve the requirements of the Golf Links development, it is not reasonable to assume that the site would revert to agricultural production if the Golf Links were to be terminated. Therefore, the Golf Links project is inconsistent with Goal #1 of the Agricultural Element.

ENVIRONMENTALLY SENSITIVE HABITAT AREAS:

Public Resources Code
Section 30231: *The biological productivity and the quality of coastal water, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of groundwater supplies and encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

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The project site, adjacent to the ocean, contains wetlands and streams. The application of pesticides and fertilizers on the site would have the potential to result in certain chemicals and nitrates to be exported from the areas of application. Soil and climate characteristics of the site in conjunction with the implementation of mitigation measures including an Integrated Pest Management Program, a Biological Enhancement and Landscape Plan, buffer areas to keep pesticides and fertilizers away from the drainages, and surface water conveyance systems function to minimize the potential for export of turf chemicals from areas of application. Therefore, no impacts associated with chemical migration are expected to affect the seals located on the beach below the golf course. (See the additional discussion under Policy 3-19).

If the desalination option is implemented, the brine discharge may result in significant impacts to sensitive benthic resources; this cannot be positively determined until a subtidal survey is conducted. However, it is highly likely that the proposed pipeline could be realigned to avoid hardbottom surfaces. The project shall be conditioned such that prior to the issuance of the Coastal Development Permit for the Golf Links a subtidal survey be conducted in the area of the proposed pipeline and that the outfall line be designed to avoid hardbottom areas. Based on similar studies in the general vicinity of the proposed pipeline, it is likely that hardbottom areas could be feasibly avoided. The project is therefore consistent with the above PRC Section.

Public Resources Code Section 30240: *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.*

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

CLUP Policy 2-11: *All development, including agriculture, adjacent to areas designated on the land use plan or resource maps as environmentally sensitive habitat areas, shall be regulated to avoid adverse impacts on habitat resources. Regulatory measures include, but are not limited to, setbacks, buffer zones, grading controls, noise restrictions, maintenance of natural vegetation, and control of runoff.*

CLUP Policy 9-1: *Prior to the issuance of a development permit, all projects on parcels shown on the land use plan and/or resource maps with a Habitat Area overlay designation or within 250 feet of such*

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designation or projects affecting an environmentally sensitive habitat area shall be found to be in conformity with the applicable habitat protection policies of the land use plan. All development plans, grading plans, etc., shall show the precise location of the habitat(s) affected by the proposed project. Projects which could adversely impact an environmentally sensitive habitat area may be subject to a site inspection by a qualified biologist to be selected jointly by the County and the applicant.

A portion of the beach on the western half of the project site is used by harbor seals as a hauling out area and is a designated Environmentally Sensitive Habitat (ESH) area. The proposed project would not develop any beach area, and would place restrictions on the access from the property to the beach. In addition, the project has been designed with the 30-foot bluff setback fencing to ensure that golfers are not visible to the seals located in the haul out area below the bluffs.

Tomate Canyon is also a designated ESH area. The proposed project design avoids impacts to the brackish marsh at the north end of Tomate Canyon; however, the seasonal pond located north of the railroad tracks would be removed to accommodate the project. This pond provides an important source of surface water for local wildlife and its removal is considered to be significant. Additionally, the project would result in the removal of native vegetation within the canyon and reduce the value of the canyon as a wildlife movement corridor. These impacts are proposed to be mitigated to a less than significant level through the following measures: revegetation with native plants and erosion control measures, removal of non-native plants in the drainages, avoidance of excavation work within and adjacent to sensitive habitats or restricting the use of certain construction equipment if avoidance is not feasible, and the consultation with a qualified biologist to provide input in the final design of the 5-acre-foot reservoir in order to maximize its wildlife value as a replacement for the seasonal pond proposed to be removed.

The golf links proposes to preserve a 400 foot buffer from Eagle Canyon, a third designated Environmentally Sensitive Habitat area. The proposed Coastal Access Trail however, will follow an existing road through the canyon to the site's east property boundary at Eagle Creek. Based on the above discussion, the project is consistent with PRC Section 30240 and CLUP Policies 2-11 and 9-1.

CLUP Policy 9-9: *A buffer strip, a minimum of 100 feet in width, shall be maintained in natural condition along the periphery of all wetlands. No permanent structures shall be permitted within the wetland or buffer area except structures of a minor nature, i.e., fences, or structures necessary to support the uses of Policy 9-10.*

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The upland limit of a wetland shall be defined as: (1) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover; and (2) the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or (3) in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitations and land that is not.

Where feasible, the outer boundary of the wetland buffer zone should be established at prominent and essentially permanent topographic or man-made features (such as bluffs, roads, etc.). In no case, however, shall such a boundary be closer than 100 feet from the upland extent of the wetland area, nor provide for a lesser degree of environmental protection than that otherwise required by the plan. The boundary definition shall not be construed to prohibit public trails within 100 feet of a wetland.

CLUP Policy 9-14: *New development adjacent to or in close proximity to wetlands shall be compatible with the continuance of the habitat area and shall not result in a reduction in the biological productivity or water quality of the wetland due to runoff (carrying additional sediment or contaminants), noise, thermal pollution, or other disturbances.*

CLUP Policy 9-13: *No unauthorized vehicle traffic shall be permitted in wetlands and pedestrian traffic shall be regulated and incidental to the permitted uses.*

CLUP Policy 9-20: *Grass cutting for fire prevention shall be conducted in such a manner as to protect vernal pools. No grass cutting shall be allowed within the vernal pool area or within a buffer zone of five feet or greater.*

CLUP Policy 9-21: *Development shall be sited and designed to avoid vernal pool sites as depicted on the resource maps.*

A vernal pool resulting from the excavation of an oil sump is located under the south end of the existing bridge. It is considered wetland by definition. The proposed golf course design avoids direct impacts to the vernal pool and incorporates the buffer required under Policy 9-9. A portion of the golf path service road is located within this buffer, however staff considers this a structure of a minor nature as it overlies an existing paved oil field access road. Mitigation measures including fencing, limiting grass cutting or disking within the buffer, and the incorporation of an Integrated Pest Management plan to reduce the impact to

vernal pool

the vernal pool from the use of herbicides and pesticides to less than significant levels. Additional riparian-type wetlands have been identified on the site. However, as these all are directly associated with the on-site drainages, the Streams and Creeks Policies (9-38 and 9-40) apply and are discussed below. Therefore the project is consistent with the intent of these Policies.

CLUP Policy 9-15: *Mosquito abatement practices shall be limited to the minimum necessary to protect health and prevent damage to natural resources. Spraying shall be avoided during nesting seasons to protect wildlife, especially the endangered light-footed clapper rail and Belding's savannah sparrow. Biological controls are encouraged.*

CLUP Policy 9-19: *No mosquito control activity shall be carried out in vernal pools unless it is required to avoid severe nuisance.*

Implementation of the Integrated Pest Management plan would limit mosquito abatement activities to the minimum required and prohibit spraying during the spring nesting period (months of March through June). The project would be consistent with the above Policies.

CLUP Policy 9-18: *Development shall be sited and designed to protect native grassland areas.*

The biological evaluation of the site concludes that the project would impact a total of several hundred square feet of native bunchgrass that occur within the non-native grassland in small patches over the entire site. The revegetation plan for the project would include measures such as a grassland restoration plan, an exotic plant/weed control plan, a detailed maintenance and monitoring plan, and a contingency plan to be carried out in the event of a high mortality of revegetated grasses in order to mitigate the loss of these grasses. Given the relatively small size of the native bunchgrass sites (less than one acre) and the required mitigation measures, the project would be consistent with the intent of this Policy.

CLUP Policy 9-22: *Butterfly trees shall not be removed except where they pose a serious threat to life or property, and shall not be pruned during roosting and nesting season.*

CLUP Policy 9-23: *Adjacent development shall be set back a minimum of 50 feet from the trees.*

Recent Monarch butterfly studies have concluded that there are no known butterfly trees on site. Nearby trees (located in Eagle Canyon approximately 400 feet from the golf course) that serve as a small autumnal site would not be affected by the project. As such, the project is consistent with the above Policies.

CLUP Policy 9-24: *Recreational activities near or on areas used for marine mammal hauling grounds shall be carefully monitored to ensure continued viability of these habitats.*

CLUP Policy 9-25: *Marine mammal rookeries shall not be altered or disturbed by recreational, industrial, or any other uses during the times of the year when such areas are in use for reproductive activities, i.e., mating, pupping, and pup care.*

CLUP Policy 9-30: *In order to prevent destruction of organisms which thrive in intertidal areas, no unauthorized vehicles shall be allowed on beaches adjacent to intertidal areas.*

CLUP Policy 9-31: *Only light recreational use shall be permitted on public beaches which include or are adjacent to rocky points or intertidal areas.*

In order to protect the harbor seal haul out area the Golf Links project has been designed with sufficient bluff setbacks to ensure that golfers are not able to be viewed from above by seals on the beach. Tees have been designed to minimize the occurrence of errant balls which could disturb the seal haul out area. Construction activity shall not be allowed within 300 feet of the bluff edge along the haul out area during the breeding season. Beach access will be discussed in a memo to follow. The project is therefore consistent with these Policies.

CLUP Policy 9-32: *Shoreline structures, including piers, groins, breakwaters, drainages and seawalls and pipelines, should be sited or routed to avoid significant rocky points and intertidal areas.*

Should the desalination option be implemented, the project would include the extension of desalination intake and outfall lines from the Ellwood pier. The intake and a portion of the outfall line is proposed to be suspended from the pier pilings. Installation of the outfall line includes the extension of the pipeline 500 to 1,000 feet east of the pier. The severity of impacts associated with the installation of the outfall pipeline depends on the ocean floor condition (hard or soft bottom) in the installation area. Nearby areas have been surveyed indicating that the ocean bottom consists of both hard and soft bottom areas. The exact area of the proposed pipeline, however, has not been surveyed. Installation would result in minimal short term construction related impacts (Class III) to benthic and pelagic species found in soft bottom areas as these areas are subject to rapid recovery rates. Construction of the pipeline on hardbottom areas would result in direct mortality to species present and long term impacts due to the slow recovery rates. Mitigation measures require that a subtidal survey be conducted in the area of the proposed pipeline and that the outfall line be designed to avoid hardbottom areas. Based on similar studies in the general vicinity of the proposed pipeline, it is likely

that hardbottom areas could be feasibly avoided. The project is therefore consistent with the above Policy.

CLUP Policy 9-36: *When sites are graded or developed, areas with significant amounts of native vegetation shall be preserved. All development shall be sited, designed, and constructed to minimize impacts of grading, paving, construction of roads or structures, runoff, and erosion on native vegetation. In particular, grading and paving shall not adversely affect root zone aeration and stability of native trees.*

The links style course has been designed such that areas with significant amounts of native vegetation would be preserved. These areas are primarily within Eagle and Tomate Canyons and within the incised drainages. Invasive non-native species would be removed in some areas, and limited removal of native vegetation would occur in the process of grading. Mitigation measures to minimize the impacts of grading and construction on native vegetation include construction envelopes and setbacks to keep construction activities outside of the drainages, the implementation of erosion control measures, a revegetation plan and a tree replacement program as a component of the Biological Enhancement and Landscape Plan to restore native vegetation. Therefore, the project is consistent with this Policy.

CLUP Policy 9-37: *The minimum buffer strip for major streams in rural areas, as defined by the land use plan, shall be presumptively 100 feet, and for streams in urban areas, 50 feet. These minimum buffers may be adjusted upward or downward on a case-by-case basis. The buffer shall be established based upon an investigation of the following factors and after consultation with the Department of Fish and Game and Regional Water Quality Control Board in order to protect the biological productivity and water quality of streams:*

(a) Soil type and stability of stream corridors;
(b) How surface water filters into the ground;
(c) Slope of the land on either side of the stream; and
(d) Location of the 100-year flood plain boundary.

Riparian vegetation shall be protected and shall be included in the buffer. Where riparian vegetation has been previously removed, except for channelization, the buffer shall allow for the reestablishment of riparian vegetation to its prior extent to the greatest degree possible.

The Coastal Zoning Ordinance defines a major stream as a stream with a drainage area in excess of 500 acres. Eagle Canyon Creek is the only major stream on the site under this definition. A buffer strip is defined as a width of land adjacent to the stream which is necessary to protect biological productivity, water quality, and hydrological characteristics of the stream. A buffer strip is measured horizontally from the banks or high water mark of the stream landward. With the exception of the proposed project water supply pipes to be placed on the existing pipe racks, the Golf Links development will occur outside of the 100 foot buffer of Eagle Canyon Creek. The Department of Fish and Game and the Regional Water Quality Control Board have reviewed the project during the preparation of the Environmental Impact Report, and their comments have been incorporated into the project design and mitigation measures. Therefore the project is consistent with this Policy.

CLUP Policy 9-38: *No structures shall be located within the stream corridor except: public trails, dams for necessary water supply projects, flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development; and other development where the primary function is for the improvement of fish and wildlife habitat. Culverts, fences, pipelines, and bridges (when support structures are located outside the critical habitat) may be permitted when no alternative route/location is feasible. All development shall incorporate the best mitigation measures feasible.*

CLUP Policy 9-40: *All development, including dredging, filling, and grading within stream corridors, shall be limited to activities necessary for the construction of uses specified in Policy 9-38. When such activities require removal of riparian plant species, revegetation with local native plants shall be required except where undesirable for flood control purposes. Minor clearing of vegetation for hiking, biking and equestrian trails shall be permitted.*

The Coastal Land Use Plan and Zoning Ordinance defines the stream corridor as a stream and its minimum prescribed buffer strip. Buffer strips are applied to major streams in rural areas per Policy 9-37. As Eagle Canyon Creek is the only major stream on the site, the other identified minor streams and drainages are without a prescribed buffer strip. Therefore, the above policies apply to Eagle Canyon Creek and its buffer and the minor streams and drainage channels. It should be noted that buffers varying between 25 and 100 feet are required as part of the EIR in order to mitigate biological impacts. Consistent with the above Policies, no development is proposed within Eagle Canyon Creek or its buffer (the entire stream corridor). Additionally, two bridges are proposed over the minor stream within Tomate Canyon, however the support structures are located outside

of the top of bank critical habitat (areas with the elements present to preserve species survival). The grading and drainage plans call for the placement, or extension of existing culverts and fill material within three of the site's drainages. However, due to the minor nature of the drainages and the fact that they have been previously disturbed with fill material and culverts, consistency with the Policies cited above can be found.

CLUP Policy 9-41: *All permitted construction and any grading within stream corridors shall be carried out in such a manner as to minimize impacts from increased runoff, sedimentation, biochemical degradation, or thermal pollution.*

Grading and construction within the stream corridor would require the implementation of mitigation measures in order to minimize impacts from increased runoff, sedimentation, biochemical degradation, or thermal pollution. Mitigation measures include the restricting of grading activities to the dry season, the installation of erosion control devices, and the immediate reseeding of disturbed areas within the stream corridor would provide consistency with the above Policy.

CLUP Policy 9-42: *The following activities shall be prohibited within stream corridors: cultivated agriculture, pesticide applications, except by a mosquito abatement or flood control district, and installation of septic tanks.*

The golf links project does not propose cultivated agriculture or the installation of septic tanks within stream corridors on the site. The Integrated Pest Management Plan required as a condition of project approval will restrict the application of pesticides within stream corridors. Therefore, the project in consistent with Policy 9-42.

ARCHAEOLOGICAL and HISTORICAL RESOURCES:

Public Resources Code Section 30244: *Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation officer, reasonable mitigation measures shall be required.*

CLUP Policy 10-2: *When developments are proposed for parcels where archaeological or other cultural sites are located, project design shall be required which avoids impacts to such cultural sites if possible.*

that structures are sited and designed to preserve unobstructed broad views of the ocean from Highway 101, and are clustered to the maximum extent feasible. Building height shall not exceed one story or 15 feet above average finished grade, unless an increase in height would facilitate clustering of development and result in greater view protection, or a height in excess of 15 feet would not impact public views to the ocean. Additionally, landscaping, when mature, shall not impede public views.

Consistent with the provisions of the View Corridor Overlay District, the structures have been clustered in the northeast portion of the site, where existing structures associated with the oil and gas facilities would be removed. A site visit performed by County staff and the Board of Architectural Review verified that the one story clubhouse and cartbarn structures would be partially visible from U.S. Highway 101. However, their location on the site approximately 350 and 150 feet from the highway, would not obscure broad views to the ocean. Both the single story maintenance building and the desalination plant would be located south of an existing row of trees on a knoll that obstructs views of the ocean from the Highway in this area. The majority of the site would be developed as the golf links course which would preserve unobstructed broad views of the ocean from the Highway. A landscape plan has been reviewed, and received preliminary approval from the Board of Architectural Review. It is the finding of the Board of Architectural Review that the landscaping, when mature, will not impede public views. The detailed findings required by the BAR are found in the Policy Consistency section of this Staff Report in the Visual Resources section.

2. ESH Environmentally Sensitive Habitat Area Overlay District Sec. 35-97.

Portions of the project site, at the Eagle and Tomate Creeks, as well as the Naples reef offshore the site, are located within the Environmentally Sensitive Habitat (ESH) Area Overlay District. In addition to these areas, Sec. 35-97.3 provides for the application of the ESH regulations to environmentally sensitive habitat areas which have been identified during application review. The intent of this overlay district is to ensure that all development in such areas is designed and carried out in a manner that will provide maximum protection to sensitive habitat areas. A finding has been made that with required mitigation measured imposed as conditions of approval, the proposed project complies with the applicable development standards for the following habitats: vernal pools, marine areas, subtidal reefs, native plant communities, streams. As these development standards reflect Coastal Plan policies, refer to the Policy Consistency section of this Staff Report for a detailed discussion.

does not include butterfly trees (habitat) - findings say none affected
does not include offsite - none known on site & ∴ no specific habitat impacts could have been addressed 4a pg 87

The clubhouse grill is intended to serve the golfers during daylight hours only and is not intended or programmed to compete with local restaurants. Conditions placed on the grill require that it close one-half hour after sunset and that the facilities shall not be rented out for private functions not associated with the Golf Links.

The day-to-day maintenance activities of the Golf Links project is not expected to interfere with the agricultural production on the adjacent lots. However, as stated in the Policy Consistency section of this staff report, there is no way to assure that the development of a golf course on the property which requires the extension of the reclaimed water line, and is considered as an expansion of urban services, or the construction of the desalination plant, would not interfere with agricultural production of adjacent lots through increased property values and in turn increased pressure to convert the adjacent properties to non-agricultural development. The finding that the project does not interfere with agricultural production on or adjacent to the lot on which it is located, or does not require an expansion of urban services which will increase pressure for conversion of the affected agricultural lands cannot be made. For this reason the Golf links project cannot be found consistent with Article II.

The purpose of a Conditional Use Permit is to provide for uses that are essential or desirable but cannot be readily classified as principal uses in individual zone districts by reason of their special character, uniqueness of size or scope, or possible effect on public facilities or surrounding uses. Section 35-172.5. 2. k. of Article II states golf courses and driving ranges may be permitted in any district that they are not otherwise permitted with a Major Conditional Use Permit. The clubhouse and grill is considered subordinate to the golf course. The findings required for approval are presented in Section X of this report.

As the proposed cart barn is located over the property line with some of the structure located on property owned by Caltrans, a Lot Line Adjustment must first be executed before a Coastal Development Permit will be issued for construction of the cart barn.

The site contains several Overlay Districts:

1. VC View Corridor Overlay District; Sec. 35-96.

   The eastern half of the site lies within the View Corridor (VC) Overlay District. The purpose of this district is to protect significant coastal view corridors from U. S. 101 to the ocean in areas of the County where such view corridors currently exist.

   Any structural development in areas within the View Corridor Overlay district shall be subject to approval by the Board of Architectural Review for compliance with Policies 4-9 through 4-11 of the Coastal Land Use Plan such

A harbor seal haul out and rookery area exists at the beach near the mouth of Tomate Canyon. In an effort to avoid impacting harbor seal activity in this area, the golf links has been designed with fencing to avoid encroachment into the portions of the project site from which views of the harbor seal haul out area can be gained. Construction activities adjacent to the bluffs that are above the seal haul out area would be scheduled to avoid the most sensitive seasons, such as when pups are present.

Revegetation and habitat enhancement components are also included in the project. Removed trees greater than six inches in diameter shall be replaced with native trees at the ratio of three to one (willows would be replaced at five to one). Removed tamarisk trees would not be replaced. Wildlife habitat would also be enhanced by the use of native vegetation throughout the site.

The project is being proposed with two water supply options; reclaimed or desalinated water. The construction schedule for the project would vary depending upon which water supply option would ultimately be implemented. The scheduling and time in months for completion of the various construction components, under both options, is presented in Appendix 3.0 of the EIR. The total estimated construction schedule for the reclaimed water option is 18 months. Construction with the desalination option is estimated to take 21 months. Based on the applicant's estimate that abandonment of the existing oil and gas operations could commence within six months after approval of the Conditional Use Permit, project construction (starting with abandonment) could begin in October of 1993 and be completed by April of 1995 for the reclaimed option or July of 1995 for the desalination option.

Implementation of the reclaimed water option would involve extension of the proposed 8-inch reclaimed water pipeline from the GSD/GWD Phase II extension which would terminate at Hollister Avenue and Las Armas Road, where the Phase II expansion to Sandpiper Golf Course leaves Hollister Avenue. The pipeline would continue westward within Hollister Avenue until reaching the entrance to the Sandpiper Golf Course and the existing public access road to ARCO's Ellwood facility. The pipeline would continue westward across the Hyatt property within the proposed access road. Should the access road not be constructed during the installation of the pipeline, a portion of the eastern half of the Hyatt property would have a temporary alternate route. The remainder of the Hyatt property would be crossed within the existing road to the boundary of the Eagle Canyon Ranch. From this point, the pipeline would turn southwest and continue approximately 220 feet within the existing access road to the Ellwood Pier. The lines would then be located on existing oil and gas piperacks (within an existing easement) crossing Eagle Canyon Ranch. The existing piperacks extend over two drainages including Eagle Canyon and an unnamed corridor north of

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would be finished with gunite or textured plaster to aesthetically conform to the architectural and golf course character of the 1930s. The tunnels would be approximately 100 feet in length with a height to ceiling of 10 feet.

Perimeter fencing and railroad right-of-way fencing would be constructed from rustic wood and possibly cable, no chain link or modern reflective materials would be used. All utilities including those presently located on the site, would be placed under ground.

The course is anticipated to operate from 350 to 360 days per year. An estimated 50,000 to 60,000 rounds of golf per year would be played on the 18-hole course and 20,000 rounds would be played on the nine-hole course. Hours of operation would be from dawn to dusk for the course. Restaurant service would close one-half hour after dusk. A maximum of two professional and/or amateur events which would draw galleries would be held at the site per year. The project applicant estimates that 32 full-time equivalent employees would be required for golf course operation (34 if desalinated water is used). This would result in a net increase of 17 new employees at the site (19 if desalinated water is used).

The project would involve 154,470 cubic yards of cut and 154,470 cubic yards of fill, to be balanced on-site. Some offsite grading would be required for the installation of pipelines and proposed addition of the acceleration and deceleration lanes. The above cut and fill estimate includes these offsite components. Overall, 115 acres of the 202 site would be graded. The maximum elevation that would result from grading would occur near hole number seven and would involve an increase in elevation of 25 feet (from 50 feet to 75 feet).

The proposed drainage plan includes a system of storm drains with associated energy dissipators to reduce erosion effects of drainage flows and five desiltation basins most of which would be located within the existing drainages of the site.

Slope stability on the bluffs and barrancas of the project site were a concern in the design of the golf links project. Therefore, the applicant has proposed a drainage system which would contribute to the control of erosion and enhance slope stability. A conceptual landscape design has also been proposed as part of the project that would incorporate deep-rooted, drought tolerant native plants on the bluff tops and drainages to provide slope stability.

setbacks

A structural setback from the top of the bluff has been included in the project design to mitigate potential geologic hazards associated with sea cliff retreat. This setback zone includes a 55 foot structural setback and a 30 foot non-structural setback.

Exh 4a
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dwelling. Boarding or lodging houses, dormitories, and hotels shall not be defined as dwelling units. *(Amended by Ord. 3834, 3/20/90)*

DWELLING, TWO-FAMILY: A single detached dwelling designed for and occupied exclusively by two families alone, and having but two kitchens.

DWELLING, MULTIPLE: A single detached building designed for and occupied exclusively by three or more families living independently of each other as separate housekeeping units, including apartment houses, apartment hotels and flats, condominiums, but not including trailer courts or camps, hotels or resort type hotels.

ELECTRIC SUBSTATION: Any receiving and transforming substation other than a major electric transmission substation designed to distribute electricity to customers of the surrounding area.

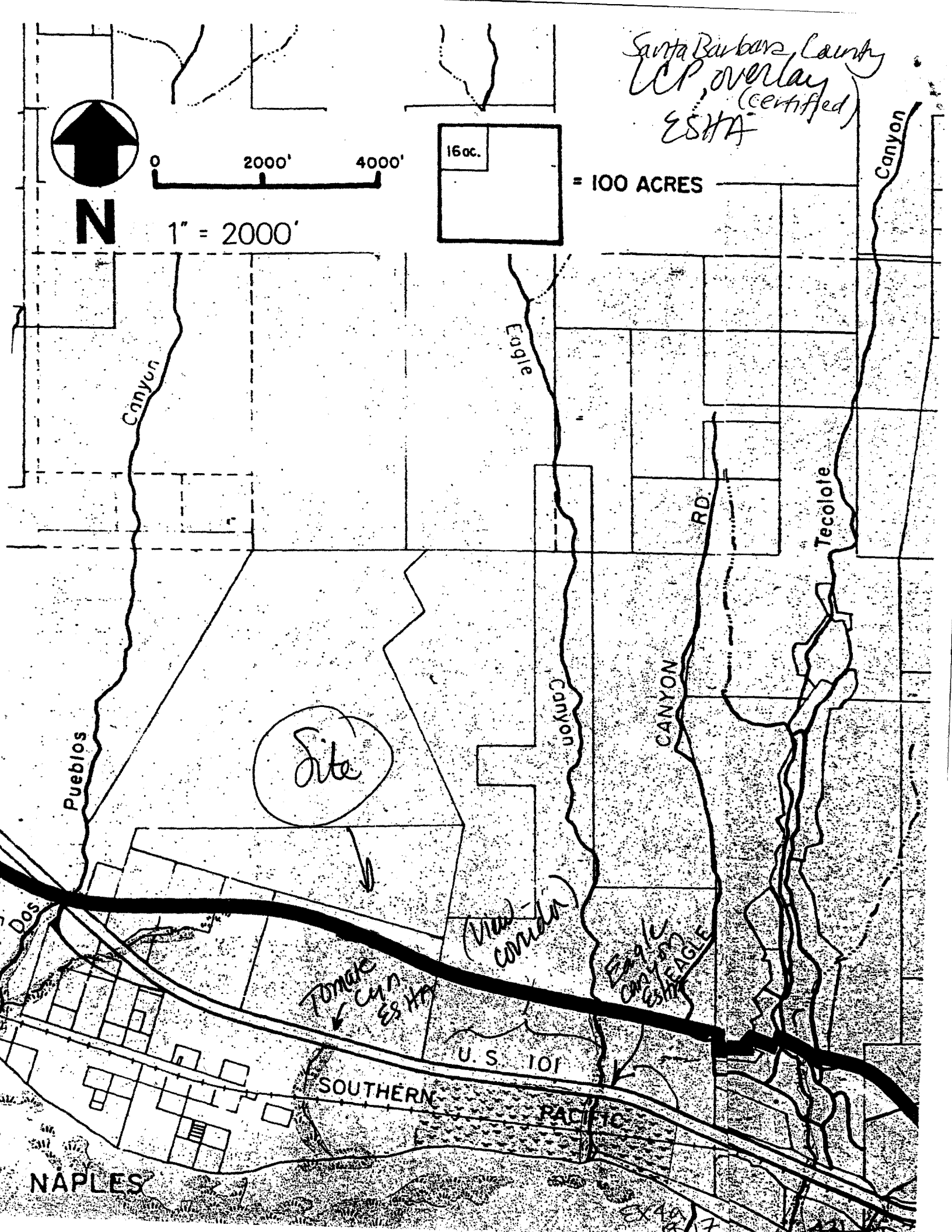
EMERGENCY: A sudden unexpected occurrence demanding immediate action to prevent or mitigate loss or damage to life, health, property, or essential public services. The definition extends to efforts by a public agency or utility performing a public service to restore, repair or maintain public works, utilities or services which have been destroyed, damaged, or interrupted by natural disaster, serious accident, or in other cases of emergency. *(Amended by Ord. 4040, 5/19/92)*

EMERGENCY SHELTER: A permanent supervised shelter or halfway house that provides temporary accommodations, up to 30 consecutive days and 90 days within a 12 month period, to individuals who have lost a permanent residence. *(Added by Ord. 4169, 10/11/94)*

ENERGY FACILITY: Any public or private processing, producing, generating, storing, transmitting, or recovering facility for electricity, natural gas, petroleum, coal, or other source of energy.

ENVIRONMENTALLY SENSITIVE HABITAT AREA: Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

FAMILY: One or more persons occupying premises and living as a single non-profit housekeeping unit, as distinguished from a group occupying a boarding or lodging house,


Santa Barbara County
LCP, overlay
(certified)
ESHA
N
0
2000'
4000'
1" = 2000'
16ac.
= 100 ACRES
Canyon
Eagle
Canyon
Tecolote
RD.
Pueblos
Site
Canyon
CANYON
(view corridor)
Tomate Canyon ESHA
U.S. 101
SOUTHERN
PACIFIC
NAPLES

M-RP INDUSTRIAL/RESEARCH PARK

M-1 LIGHT INDUSTRY

M-2 GENERAL INDUSTRY

Key — Lcl ESHA map & other overlays

OTHER

PU PUBLIC UTILITIES

OVERLAY DISTRICTS

ESH ENVIRONMENTALLY SENSITIVE HABITAT AREA

ARC AGRICULTURAL RESIDENTIAL CLUSTER

VC VIEW CORRIDOR

FA FLOOD HAZARD AREA

SD SITE DESIGN

D DESIGN CONTROL

F(APR) F(CLR) AIRPORT APPROACH & CLEAR ZONES

RESTRICTED RESOURCES DISTRICT

ES

JRAL

Ex 4a pg 18
432

DRAFT

FINAL
AGRONOMIC TURF MANAGEMENT
AND
INTEGRATED PEST MANAGEMENT PLAN

FOR

DOS PUEBLOS GOLF LINKS
SANTA BARBARA, CALIFORNIA

March 2002

(does not include pocket maps)

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GENERAL DISCUSSION

CONDITION COMPLIANCE

The Dos Pueblos Golf Links ("the Golf Links") received final discretionary approval by the County of Santa Barbara ("the County") in 1993 (91-CP-085) and the California Coastal Commission ("the Coastal Commission") in 1994 (A-4-STB-93-154). Both approvals contained the following permit conditions.

> 12. (B6) Pesticides. The project shall incorporate an Integrated Pest Management (IPM) program, utilizing an ecosystem approach, focusing on selective control of pests while maintaining populations of pest predators, parasites and non-pest competitors. The IPM program shall include buffer zones adjacent to the vernal pool and all drainages in which pesticide application would be prohibited or highly restricted. The plan shall prohibit the use of rodenticides such as diphacinone or other first-generation anticoagulants known to cause secondary poisoning effects in predators, and shall require proper and frequent disposal of poisoned carcasses. Mosquito abatement shall be conducted using a biological control agent (Vectobac-G or equivalent) specific to mosquito and black fly larvae. Conditions limiting the use of pesticides during specific wind conditions shall also be contained in the IPM program to limit the potential for aerial drift during pesticide application. To minimize the need for pesticides, the IPM program should also contain recommendations regarding the installation of bat and swallow boxes on the site. **Plan Requirements:** The applicant shall submit a plan for implementation of an IPM program. The plan shall be developed in coordination with the University of California Agricultural Cooperative Extension. The plan shall include an action level (pest density at which action is taken), pesticide (insecticide, fungicide, herbicide, rodenticide) application rates (i.e. pounds per acre) and application frequency for all expected pest species. The potential for importation of turfgrass pest predators or parasites or application of pathenogenic bacteria *(Bacillus thuringiensis* strains) shall be investigated and included in the plan if feasible. *The plan shall be updated annually, reviewed by RMD and include a monitoring section*. The applicant shall submit a written request for RMD review and approval of any changes in the IPM program throughout the life of the project. A written approval from RMD shall be required prior to implementation of such changes.
> ***Timing:*** *The plan shall be submitted to and approved by RMD prior to issuance of CDP.*
>
> **MONITORING:** RMD/EQAP staff shall ensure compliance by conducting periodic site inspections throughout the life of the project.
>
> *(Emphasis added)*

24. (WQ1) Water Quality. The applicant shall submit a final turf management plan to RMD for review and approval. The plan shall include information regarding irrigation, pest management and fertilization practices. Pest management shall be conducted as an Integrated Pest Management (IPM) program which relies on frequent scouting of golf course areas for pests. Chemicals are applied on localized areas only when needed. **Plan Requirements and Timing:** The plan shall be submitted and approved by RMD prior to CDP.
MONITORING: RMD/EQAP staff shall review and approve plan. Periodic inspections shall be made at the discretion of RMD through the life of the project to ensure implementation.

The County approved the Agronomic Turf Management and Integrated Pest Management Plan for Dos Pueblos Golf Links–Santa Barbara, California, dated December 1, 1998 ("the ATMIPM" and/or "this Plan") on December 2, 1998 and issued Coastal Development Permit 98-CDP-274 on December 3, 1998.

RELATIONSHIP WITH OTHER CONDITIONS AND PLANS

This Plan is designed to comply with the two conditions of approval provided above. This Plan controls the management of the Golf Links' turfgrasses, and the non-chemical and chemical strategies to prevent and eliminate insects, disease and weeds. This Plan is only one of a number of plans that combine to provide environmental protection and enhancement. The following is a list of the other plans:

Biological Enhancement Landscape Plan
Conservation Easement
Erosion Control Plan
Fertilizer/Pesticide Storage Plan
Grading & Drainage Plan
Habitat Conservation Plan
Habitat Enhancement Plan
Habitat Management Plan
Irrigation Plan

The Conservation Easement, Habitat Enhancement Plan and the Habitat Management Plan almost entirely deal with the approximately 7.53 acres conservation easement areas. The remaining plans combine to provide water quality protection measures.

The Grading & Drainage Plan requires bioswales and buffers be incorporated into the construction of the Golf Links. The Erosion Control Plan provides protection from runoff during construction and initial establishment of new vegetation. This newly created vegetation is managed by the Biological Enhancement Plan under which vegetative buffers are established between the golf course any the properties' drainage features. The Irrigation Plan requires the irrigation system to provide maximum effectiveness, thus avoiding overwatering. Lastly, this Plan regulates the application of fertilization and chemical application. This Plan, as required by the HCP, requires extensive monitoring of the surface water, sediment and soils in order to police the overall operations of these plans.

THE 2002 FINAL PLAN

The December 1998 Plan required: "The first plan update shall be done prior to occupancy clearance for the golf course, with subsequent annual updates thereafter."

The County's December 3, 1998 ministerial permit approval was appealed to the Coastal Commission on December 16, 1998. On February 3, 1999, prior to the Coastal Commission's substantial issue hearing on this appeal, the California red-legged frog was discovered to be present in Eagle Canyon on the eastern edge of the property. The appeal remains pending before the Coastal Commission.

On January 16, 2002 the Department of the Interior, United States Fish and Wildlife Service ("the Service") issued Federal Fish and Wildlife Permit #TE045997-0, the Habitat Conservation Plan Dos Pueblos Golf Links County of Santa Barbara, dated January 2002 ("the HCP") and other related documents allowing for the construction and operation of the Dos Pueblos Golf Links. Section 3 of the HCP, which is attached as Appendix A, requires this Plan to be revised. Specifically, the HCP states:

> The final ATMIPM program shall be submitted to the Service, and the County of Santa Barbara for review and written approval *90 days prior to commencement to turf maintenance activities.* HCP, page 29 *(Emphasis added).*

Also attached is the HCP Site Plan ("the Site Plan") as Appendix B.

The 1998 edition of this Plan listed 48 (49 were listed however, one was a miss-spelling of another listed chemical) chemicals to be used. The HCP requires three of these previously listed chemicals to be removed from this Plan. The HCP also requires the remaining chemicals be grouped into "preferred use" and "more toxic chemicals" groupings. "Preferred use" chemicals will be used first over "more toxic chemicals" when addressing a specific problem. Only after a "preferred use" chemical has been used and proven ineffective can a chemical from the "more toxic chemicals" group be used. Such a need will be demonstrated by providing written notice to the County and the Service. The "more toxic chemical" can be used if the County and/or Service do not provide written objection within 24-hours of receipt of the demonstration of need.

The following is a list of the 1998 chemicals, as grouped by the HCP. The previously approved chemicals that are being removed in this revision (10) are so indicated. Also identified are the nine new chemicals being proposed to be included in the "preferred use" category. Product specifications for each of the new proposed chemicals are attached as Appendix C.

Chemicals that will not be included in the final ATMIPM:
Methyl bromide
Atrazine
Chlorpyrifos

"Preferred use" chemicals
Mancozeb
Procopiconazole
Triadimefon – no longer available

Thiophanate-Methomyl – a miss-spelling of Thiophanate-Methyl.
Thiophanate-Methyl
Iprodione (Rovral)
Vinclozolin
Metalaxyl
Napropamide (Devrinol)
Bentazon (Basagran) 4 EC
Bentazon plus 2,4-D
Dicamba (Banavel 4-S)
Dicamba and 2,4-D (Trimec)
Glyophosate (Roundup)
Mecoprop (MCCP)
2,4-D Water soluble Amines (Weedar 64)
2,4-D plus MCCP (MCPP)
2,4-D plus MCCP (MCPP) plus Diamba
2,4-D plus Triclopyr

More toxic chemicals:
PCNB
Pendimethalin (Pre-M)
Captan
Benefin and Triluralin (Team 2G) – no longer available
Dithiopyr (Dimension)
Pronamide (Kerb) (50 WSP)
Acephate
Carbaryl (Chipco Sevin)
Cyfluthrin (Tempo) 20WP
Fluvalinate (Mavrik Auqaflow)
Trichlorfon (Dylox) 80S
Myclobutanil
2,4-D low-volatile esters (Weedone LV4)
Chlorothalonil
Ferarimol
Nclozolin – no longer available
Thiram
Fosetyl-al (Fosetyl-aluminum)
Benefin (Balan) – no longer available
Bensulide (Presan) – remove from use
DCPA (Dacthal) – no longer available
Isoxaben (Gallery)
Oryzalin (Surflan)
Oxadiazon (Ronstar)
DSMA (Methar)
Fluazifop (Fusalide)

Chemicals to be added as "Preferred use chemicals" to this Plan
Azoxystrobin (Heritage)
Flutolanyl (Prostar)
Trifloxystrobin (Compass)
Bifenthrin (Talstar)

Halofenozide (Mach 2)
Imidaclorpid (Merit)
Prodiamine (Barricade)
Ethephan (Proxy)
Trinexapac-ethyl (Primo)

The HCP also identified buffer areas for Eagle Canyon, Tomate Canyon and Drainage 4 North as identified on the Site Plan. Surface water and sediments will be tested for all chemicals (and any additives *e.g., surfactants, carrier oils and spreading agents*) used within the buffer areas. See the "Reclaimed Water, Surface Water and Soils Testing" section below for more discussion.

Over the past year the Golf Links has investigated which turfgrasses can best fit the various environmental conditions (*e.g. soil, water, temperature, etc.)* of the property. This research allows this Plan to identify four grasses for use at Dos Pueblos. With the selection of these grasses, the potential for diseases can be better estimated. In turn the methods to treatment can be better estimated.

The Coastal Commission staff has recently requested this Plan to be updated prior to the pending hearing on the Golf Links Coastal Commission permit extension (tentatively scheduled for April 2002).

Therefore, this plan has been revised as required by the HCP. This Plan is being submitted for the approval of the County, Coastal Commission, RWQCB and the Service.

This Plan has been revised using the information, as well as documentation provided by the following:

- United States Golf Association (USGA) Greens Section,
- University of California Statewide Integrated Pest Management Project,
- Environmental Horticulture Department at California Polytechnic State University San Luis Obispo,
- Golf Course Superintendent's Association of America (GCSAA), and
- Central Coast Golf Course Superintendent's Records and Experiences.

Any questions and or specific implementation strategies during the construction and operation of this golf facility should be directed to the on-site Golf Course Superintendent and on-site Project Manager.

The Golf Links will be constructed and maintained in accordance with all: 1) project specific permit(s), 2) all applicable laws, rules and regulations, and 3) in a manner to provide a sound agronomic balance with minimal weeds, insects, and diseases in order to maintain a links style playing conditions for the golfing public while integrating the course with its existing natural habitat and wildlife. This standard may require grasses to be grown outside their natural range of agronomic adaptability.

The Golf Links will incorporate a common sense proactive approach to golf course maintenance by emphasizing preventative measures. To ensure the preservation of

the natural environment and to incorporate the most environmentally compatible materials wherever possible in solving agronomic problems.

The Golf Links will be a member of the Audubon Cooperative Sanctuary Program, which recommends and supplies information and implementation programs for enhancing habitat for local wildlife proliferation. The installation of bat and swallow boxes as well as the establishment of other beneficial species habitat within these guidelines is a principle element of the Integrated Pest Management (IPM) implementation at the Golf Links.

The Golf Links will implement management practices that encourage optimum plant health and vigor, while minimizing fertilizer, water and chemical pest control to the extent feasible possible. A dense, vigorously growing, competitive stand of turfgrass will resist invasion by weds, disease and other pest. The Integrated Pest Management system is designed to optimizes prudent maintenance practices by combining proper plant selection, careful monitoring of pests and environmental conditions, biological control measures, and judicial pesticide use.

TURF SELECTION

The first step is preparing the site properly and choosing an appropriate turfgrass species for the location. Once accomplished, practices will be implemented which contribute to turf vigor, such as proper irrigation, mowing, fertilization, thatch removal and aeration. Increased vigor allows turf to better withstand insect, disease damage and to recover more quickly. Healthy turf can also out-compete weeds and reduce the chances of their becoming established. Herbicides, insecticides, and fungicides are used as tools in turf management where high quality turf is required; however, their use should be the final method of control when integrated with a sound agricultural program.

Turf species and cultivars (specific turf varieties) vary in their adaptability to different areas of California. Choosing a well-adapted cultivar to plant is an important turf management decision. For the Golf Links, the focus of choosing an adaptive cultivar is its ability to handle low fertility and chemicals applications, reclaimed water, heavy soil, and varying typls of light intensity due to fog and cloudiness. Dos Pueblos has undergone an extensive test process conducted in 2001-2002 to identify turfgrasses that adapt to this climate. Test plots have been placed on golf courses at different locations along the Central Coast to judge their ability to thrive in a links-style management scheme. The grasses that have flourished are the bentgrasses and annual bluegrasses for greens, as well as bermudagrasses and fine fescues for fairways and roughs. Each of these grasses has shown vigor and growth in a year round setting. This may eliminate or minimize the need for winter overseeding, which in turn will lower water and fertilizer usage greatly on the golf course.

Common Name	Scientific Name
Bentgrasses	Agrostis spp.
Bermudagrass	Cynodon
Bluegrass, Annual	Poa annua

Fescue, fine	Festuca rubra

Santa Barbara has a Mediterranean climate that is characterized by rainfall in winter and spring and very little rainfall in summer and fall, (16.1" annually). In addition, temperatures are very mild year round with annual average lows in the 40's to high 50's and annual average highs in the 60's and 70's. These climactic characteristics allow for the effective management of both warm season (Bermudagrass) and cool season (Bentgrass, bluegrass and fescue) turfgrasses.

Reclaimed Water, Surface Water & Soil Testing

Investigation has uncovered an unusually high salt content in the reclaimed water irrigation source (1,000 – 1,200 ppm) from the Goleta Water District. The varieties selected have shown to have a high level of salt and drought tolerant.

The preliminary water testing of the Goleta Water Districts' reclaimed water source has been conducted for use of the irrigation system. Testing has reflected salt concentrations (TDS) (1200+ ppm), Bicarbonates (HCO3) (350+ ppm),and moderate nitrate levels (25 ppm) (Brookside Labs, 2001). . To combat this problem, The Golf Links intends to utilize an ion-exchange unit that will minimize these inordinately high figures as the water leaves the golf course pump station and is delivered to the turfgrasses. This system is being utilized with great success on many golf courses in California, but has shown particular promise on Santa Barbara area courses.

Surface water testing will be implemented as specified in the following table. Baseline surface water testing will be conducted prior to use of any pesticides or fertilizers on the Golf Course and shall be used as baseline data. In order to acquire an accurate representation of water quality conditions on site, sampling will be conducted three times and during different levels of storms. A third party designee shall conduct surface water sampling and testing. An EPA-approved laboratory will implement testing and the samples will collect and analyzed in accordance with approved EPA methodologies. Samples will be taken from locations designated by the Regional Water Quality Control Board (RWQCB), the County and the Service. Such sample locations are indicated on the Water and Soil Monitoring Plan, which is attached as Appendix D.

In addition to the sampling frequency detailed in the following table, surface water and sediment sampling in Eagle Canyon, Tomate Canyon and Drainage 4 North will also be tested for all chemicals used within the buffer areas and any additives (*e.g.,* surfactants, carrier oils and spreading agents) to be used within the buffer areas. Testing will be conducted within 48 hours of chemical use in buffer areas. Standard EPA panels will be run for the chemicals.

All sampling results will be provided to the Service and the County, as described in Section 8.2 of the HCP.

Surface water quality monitoring will be performed for the first three years of Golf Links' operation Sampling frequency may be reduced after three years, as approved by the County and Service if IPM practices are shown to be effective.

SURFACE WATER SAMPLING SCHEDULE			
Location	**Parameter**	**Species**	**Frequency**
Creeks of seasonal water flow	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Monthly with most sensitive species until flow ceases.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Twice annually at first creek flush and again approx. 90 days after first test.
	Nutrient (N, P)		Monthly at first creek flush and until flow ceases.
Creeks of perennial water flow	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
	Nutrient (N, P)		Monthly.
On-site bodies of water (vernal pool and pond)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Quarterly.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Quarterly.

The threshold standards for the surface water and sediment sampling for Eagle Canyon, Drainage 4 N and Tomate Canyon are:

Nitrates:	– 90mg/L*
Nitrites:	– 5 mg/L*
Phosphates:	– 50mg/L*
Dissolved Oxygen Level:	- < 5ppm*
PH:	- < 6.0 or > 9.0*
Chemicals and additives used w/n buffers:	– any trace

- When water entering the property from the north is within acceptable limits for these parameters

If sampling indicates any of these thresholds have been exceeded, this Plan shall be modified to eliminate practices, which contribute to such excesses and cause the Golf Links to reach acceptable levels. The Golf Links will notify the County, Coastal Commission, RWQCB and the Service within 48 hours of receipt of the monitoring data. At the same time the Golf Links will consult with the County, Coastal Commission, RWQCB and the Service regarding the need for additional sampling to

evaluate the exceedence or corrective action to minimize such exceedence. The Golf Links will report to the County, Coastal Commission, RWQCB and the Service on possible causes of the exceedence and proposed corrective actions within 30 days of the initial receipt of the data.

If any exceedence, proven to be directly caused by the Golf Links, persist after one year of detection, not withstanding any corrective action(s) taken by the Golf Links, all future use of the chemical that exceed the threshold will cease until the exceedence is eliminated. Prior to resumption of any chemical for which caused an exceedence to persist for one year, the Golf Links will receive approval to resume applications from the County, Coastal Commission, RWQCB and the Service, for which approval for resumption will not be unreasonably withheld.

Soils tests have been conducted at six different locations, three north of the railroad and three south of the railroad (Brookside Labs, 2001 and 2002). These locations are indicated on the Site Plan. The data obtained from these tests has been used as both base line data and for further testing comparisons described below. Turfgrass selection has reflected the varieties conducive to the soils growth medium as shown in the soils tests.

Additional soil test cores shall be taken by a third-party designee and delivered to a certified soils lab for analysis. Such tests shall reflect basic fertility, composition, and nematode levels. . Future testing at the same site-specific locations shall be conducted semi-annually for the first three years of golf course operation. Soil sampling frequency may be reduced after three years, as approved by County and Service , if IPM practices are shown to be effective.

TURF ESTABLISHMENT

Before planting turfgrasses, annual weeds can be controlled by irrigating to allow germination, followed by cultivation or application of a contact herbicide. This process should be repeated two or three times to improve the chances of establishing a turfgrass with a minimum of weed populations.

MANAGING ESTABLISHED TURF

Turfgrass can be established and maintained to discourage weeds in the turf or to decrease chances for weeds invasion. Any condition that exposes the soil surface to additional light allows weeds to invade. Weed problems are often the result of overwatering or underwatering, mowing too low or too high, low fertility, excessive wear, disease or insect damage, soil compaction, and excessive shading.

AGRONOMIC TURF MANAGEMENT

The following is a description of the agronomic turf management practices that will be used at the Golf Links in the daily maintenance of the golf course. The practices described below are formulated to foster healthy stand of turf.. All mowing heights and frequencies will be periodically evaluated and adjusted to reflect changes in agronomic conditions.

MOWING

Maintenance personnel conducting mowing operations will be trained in identification of California red-legged frogs and the importance of avoiding any observed during mowing.

Tees

All tees will be mowed a minimum of 3 times weekly.

Tees will be hand mowed and triplex mowed depending on design contours and tee square footage.

Tees will be mowed to a height of ¼"- 3/8" depending on agronomic conditions.

Grass clippings are collected and composted so as to not spread potential disease around tee surfaces.

All tees will be cut for promotion of turf quality.

Fairways/Roughs

All fairways/roughs will be mowed a minimum of 3 times weekly. Mowing within the roughs will be limited to dry, sunny days.

Fairways/roughs will be mowed with lightweight mowing units to reduce compaction and promote healthy turf conditions.

Fairways will be mowed to a height of 3/8" to 5/8" depending on turf conditions and playability. Roughs will be mowed to a height in excess of 1". A mulcher-type mower will be used to recycle grass clippings into the ground.

All fairways will be cut for promotion of turf quality.

Greens

All greens will be hand mowed and/or mowed triplex daily.

Standard green mowing height is 1/8" to 3/16". Green clippings will be collected and composted so as spread potential disease around green surfaces.

All greens will be cut for promotion of turf quality.

Collars and Green Surrounds

All collars and green surrounds will be mowed a minimum of 3 times weekly.

Standard collar mowing height is 3/8" to 5/8". A mulcher-type mower will be used to recycle grass clippings into the ground.

BUNKER MAINTENANCE

All Bunker bases will be hand raked with Bunker faces being hand raked.

All Bunker faces will be edged as agronomic conditions dictate.

The depth of sand in each bunker will be adjusted as necessary to maintain uniform playing conditions (approximately 4"- 6").

IRRIGATION MANAGEMENT

As previously noted, Santa Barbara has a Mediterranean climate that is characterized by rainfall in winter and spring and very little rainfall in summer and fall, (16.1" annually). In addition, temperatures are very mild year round with annual average lows in the 40's to high 50's and annual average highs in the 60's and 70's. These climactic characteristics allow for the effective management of both warm and cool season turfgrasses. Irrigation is needed for both cool and warm season turfgrasses. It is very important to follow good irrigation practices, regardless of turfgrass species used, so that optimum shoot growth and development of turfgrass is obtained. A rapidly growing, competitive turfgrass sward resists weed invasion.

Dos Pueblos will be irrigated with a current state-of–the art computer controlled irrigation system designed to maximize irrigation effectiveness. A uniform application of water is important for maximum efficiency to avoid wet and dry spots within the sward. The daily monitoring of evapotranspiration rates (E.T.), temperature, humidity, wind speed, solar radiation levels, and the use of a Global Positioning System (GPS) allow for the most precise irrigation scheduling and reduction of water usage. Also, the ion-exchange system described above will minimize the salt concentration, bicarbonate and nitrate levels of the reclaimed water in order to make the water a better source for the turfgrasses.

Turf is weakened in wet spots because of poor soil aeration and/or drainage fostering disease that can result in the invasion of shallow-rooted weeds such as crabgrass, plantain and oxalis. Further, runoff from over irrigated areas is wasteful and results in accumulation of water in low parts of the sward. In contrast, dry sites will be characterized by turf of poor color, density, and uniformity that allows the invasion of deep-rooted weeds such as dandelions, clover, knotweed, and yarrow.

Proper timing and an adequate amount of irrigation therefore are necessary for optimum growth, maximum quality and best appearance of the respective turf species. For the most part, warm season turf species require less irrigation than cool season turf species. Also, cool season grasses grown on greens require slightly more water due to the fact that they are growing on a sand base. Water use rates vary based on location.

Key points for maximum irrigation efficiency are as follows:

Irrigate deeply, but infrequently.

Irrigate late at night or early in the morning. At these times water loss from evaporation is minimal and distribution is usually good because of good water pressure and limited wind.

Avoid runoff by matching water application rates to soil infiltration rates (the rate water is absorbed by the soil).

In general, use less water in shaded areas than in open sun.

Remove thatch in spring if it is more than one-half inch thick.

Do not overfertilize; fertilize moderately according to the individual species and location.

A preventative irrigation system maintenance program will be instituted with periodic checks and adjustments as follows:

Pump Stations - Weekly
Central Controller - Daily
Scheduling - Daily
Injection System - Daily (if applicable)
Satellite Controller - Weekly
Pressure Relief/Release Valves - Bimonthly
Air Release Valves - Semiannually
Lake Circulation System - Monthly

Finally, part-circle irrigation heads will be utilized on all in order to control coverage. Precise spacing of heads throughout the irrigation system is omnipotent in controlling uniformity of fertilizer and chemical degradation, as well as dispersement control through irrigation and fertilization system.

FERTILIZATION

Greens are fertilized based on desired growth and annual soil and tissue analysis. Fairways, tees and roughs will be fertilized on an as needed basis according to annual soil and tissue analysis and turf conditions. The Golf Links will be diligent in monitoring and minimizing the use of fertilizers that have shown high leaching capabilities, and will promote a program based upon minimal usage of macronutrients (Nitrogen, Phosphorus and Potassium) thus balancing the soils utilizing organic matter, natural humates, calcium, magnesium, and other trace elements. This program has been used on many other successful golf courses during construction, grow-in and for long-term maintenance with an outstanding track record of minimizing diseases, pests and weeds (Brookside Laboratories, 2002).

Greens will be liquid fertilized using both granular and sprayable fertilizers during the grow-in and continuing maintenance periods . Based upon balanced fertility program designed to promote both the bentgrass and bluegrass turf varieties the correct amounts of nutrients. The sand-based greens contain their own closed system drainage complex, which holds all nutrients and applied chemicals within the

boundaries of the greens and do not allow for any excess drainage into surrounding areas.

An irrigation and fertilization injection system will be utilized for tees, fairways and roughs as an added tool to compliment the use of granular fertilizers applied by hand. Tangible benefits include immediate and uniform applications as will as reducing the amount of leaching in the soil. This system allows for the delivery of nutrients, minerals humates and trace elements, to specific areas or course wide, more often and in a reduced concentration, which promotes a more vigorous turf stand.

CHEMICAL APPLICATIONS

Licensed Pest Control Applicators, shall on a daily basis, will observe, recommend and implement pesticide applications as agronomic conditions warrant.

The following is a list of restrictions upon the applications of pesticides, herbicides and rodenticides the Golf Links will conform all operations to.

No application of any chemical not approved for use in this Plan.
No application of rodenticides unless trapping efforts fail.
No application w/n 24 hours prior to forecasted rain (Nov. thru April).
No application w/n 24 hours after rainfall (Nov. thru April).
No application until morning dew has evaporated.
No application after evening dew has set.
No application when wind conditions exceed 5 miles per hour.
No application within 10' of Storage Pond.
Spot spraying only within 10' to 25' of Storage Pond.
All Applications restricted to daylight hours.
All applications in accordance with label instructions.
Hand applications (limited to Karmex, Roundup, or Redeo) within landscape buffer and revegation areas only when necessary.

SPECIALIZED PROCEDURES

Aerification

Aerification of the entire course is performed in stages. Greens are aerated 2 to3 times a year, tees 2 times a year, and fairways 1 to 2 times a year.

Verticutting

Ordinarily verticutting is implemented on greens, tees and fairways with varying degrees of frequency depending on turf growth rates, mowing heights and amount of grooming implemented in the mowing program.

Topdressing

Greens are lightly sand topdressed on a weekly to monthly basis depending on growth rates and climatic conditions. Topdressing is performed to minimize the accumulation

of thatch and maximize the consistency of the putting surface. Tees are to be sand topdressed twice annually to coincide with aerification. Fairways are sand and/or compost topdressed for water infiltration purposes and drainage considerations.

Equipment Maintenance

In an effort to avoid the high costs associated with replacing maintenance equipment and promote consistent cultural practices, it will be important to incorporate a comprehensive preventative maintenance program, as well as sending all course mechanics to extensive maintenance procedural programs in order to maximize equipment performance and longevity.

Maintenance Crew Training

The golf course superintendent will be responsible for educating and training maintenance crewmembers in the intricacies associated with this Plan, the HCP, the Biological Enhancement and Landscape Plan (BELP), and other Golf Links' conditions of approval. Prior to golf course operation, tables, simplifying correct IPM procedures, and checklists will be designed and kept by the superintendent so that historical records of may be maintained.

INTEGRATED PEST MANAGEMENT

Agronomic conditions and the University of California IPM Program will govern treatment thresholds turf management. This will enable the superintendent the flexibility to treat pests in an environmentally beneficial manner.

Effective implementation this Plan requires reliable information about the following:

1. **The Complete Ecological Situation Involving a Pest**

   Identifying all ecological factors affecting the pest so those factors may be manipulated to either reduce the pests' population, or cause plant material to overcome and/or tolerate the pest.

2. **A Monitoring System to Carefully Follow Pest Trends**

   Determining if a pesticide will be necessary, and if so, when it would be most effectively applied.

3. **Maintain Accurate Records Measuring IPM Effectiveness**

   The IPM system is broken down into two distinct categories. The first is of a non-chemical nature, which is the most desirable. The second is of a chemical nature, which is used as a second line of defense.

NON-CHEMICAL STRATEGIES

The following contributes to the integration of non-chemical strategies for pest management: host-plant resistance, pest-free propagation, site preparation, cultural practices, biological control and habitat enhancement.

Host Plant Resistance

One of the oldest means of pest control is the proper selection of pest-resistant or pest-tolerant plants. Many turfgrass varieties have been developed as a direct result of this type of selection process. The Golf Links, over the past few years, has grown and tested many varieties of turfgrasses in order to find the best plant resistance to disease, insects and poor water quality, which will be utilized during the grow-in period.

Pest-Free Propagation

One of the most often overlooked means of preventing pest establishment in turf and plant material is by using pest-free planting material.

By visually examining root systems at the time of purchase, it can be determined if root pests have been severe in the production field. In addition, the turf should also be inspected for other pests such as weeds and insects. Soil that is free of noxious pests will also be used

Site Preparation

Properly preparing the planting site is an important step of this Plan. This involves planning and constructing the Golf Links with exacting water management capabilities. Precise water management is the major key to successful turf maintenance under intense playing conditions. The Golf Links will build a state-of-the-art irrigation system with the latest technology in water placement, with sprinklers measured to the inch, and a Global Positioning System (GPS) to help monitor water usage and delivery. The data created and produced by this system will allow the Superintendent to save water by delivering it only to the dry areas that require water instead of blanketing the entire course with water whether or not needed. These procedures can greatly reduce water consumption.

Cultural Practices

The best defense against pest invasion is maintaining a dense, healthy, competitive turf. This is achieved by conducting soil tissue tests and reflecting the results with sound cultural practices to encourage solid turf and root growth over pest proliferation and disease. These practices include proper irrigation, fertilization, mowing, aerification and topdressing.

Biological Control

Biological pest control uses natural enemies to reduce pest populations. Criteria for a successful biological control agent include:

1) Absence of effects on non-target desirable plants or other organisms.

2) Ability to reproduce quickly to prevent the pest from attaining damage thresholds.

3) Persistence in the environment of the host.

4) Freedom from predators, parasites and pathogens.

The concept of biological control has been so widely publicized that the general public views it as a viable and readily available alternative for all pesticides. Unfortunately, this is not yet the case, but it is an area currently receiving funding for research and development, and hopefully will provide additional control strategies in the future.

Habitat Enhancement

A site-specific habitat enhancement program will be developed as beneficial species habitat is observed and documented by the Superintendent. A site visit will be conducted by an Audubon Ecologist prior to design of the habitat enhancement program and prior to implementation of any enhancement program, it willl be submitted to the County for review and approval. The Audubon Cooperative Sanctuary Program (ACSP) for existing golf courses promotes ecologically sound land management and the conservation of natural resources. Golf courses can enhance and protect wildlife habitat and water resources. The ACSP provides an advisory information service about how to conduct proactive environmental projects for golf courses. The ACSP was created by Audubon International and is sponsored by the United States Golf Association (USGA). Together, the USGA and Audubon International are striving to:

1. Enhance wildlife habitats on existing golf courses by working with the golf course superintendents and providing advice for ecologically sound course management.

2. Encourage active participation in conservation programs by golfers, golf course superintendents, course officials and the general public.

3. Recognize golf courses as important open spaces and credit the people actively participating in environmentally responsible projects.

4. Educate the public and golf community on the benefits of golf courses and the role they play relative to the environment and wildlife.

Information regarding the ACSP and specific habitat enhancement and housing for beneficial species is attached as Appendix E. Targeted species for habitat enhancement and their primary food sources are listed below.

Predator	Food Source
Barn Owl	Rodents

Bat	Mosquitos, other Insects
Swallow	Insects
Kestral	Insects

CHEMICAL STRATEGIES

Not all pest problems can be solved by host plant resistance, manipulating cultural practices in the plant environment, or by the use of biological control agents. In such cases, pesticides become the second line of defense. The Golf Links' will eliminate indiscriminate spraying and will implement only the practical use of pesticides. However, when a pesticide is needed, it should be selected with its environmental affects taken into consideration. This requires extensive knowledge of the pest colony and the interrelation of the pest, host plant and beneficial natural enemy population. The Golf Links Superintendent will make such determinations within the guidelines presented in this Plan

The use of chemicals will be restricted to the maintained turf areas and used only in accordance with label instructions. Areas of the Golf Links considered to be highly sensitive, such as buffer zones, native areas and natural drainage areas shall not be treated with chemicals unless otherwise called for in the HCP and BELP. Those areas in which maintained turf and sensitive areas merge shall be spot sprayed only when necessary in order to minimize the chemical effects to the area, if any. In all cases, spot treatment in these areas, if applicable, shall always be in compliance with the requirements of the BELP.

In no case shall any spaying of chemicals take place anywhere on site when wind conditions exceed 5 miles per hour.

Considerations for strategic pesticide use involve making management decisions concerning the following:

1. Locate the Pest Using Reliable Monitoring Techniques

Pest identification is a fundamental requirement in this IPM program. The Golf Links will be examined on a daily basis in order to identify pests and monitor their levels. Monitoring ranges from visual inspection, sampling and analyzing soil and plant tissue, to the use of sophisticated detection techniques. such as Nematode assays, detection and accurate identification of certain viruses and species identification of some fungi. Once pests have been identified and their infestation levels recorded, a control action is initiated at a predetermined pest threshold level as supplied and continually updated by the University of California IPM Program for Turf.

Highly maintained areas such as putting greens have a lower aesthetic threshold than less maintained areas such as roughs, which can withstand a higher degree of pest damage before action is required. These thresholds also vary with the maintenance level expectations of a particular golf course, the availability of financial resources, and the available alternative control measures.

2. **Attack the Pest During Its Most Susceptible Point in the Life Cycle**

   Each pest has a point in its life cycle when it is less difficult to control. Usually, this point is during the early stages of development. This is also true for most weeds. Young, actively growing weeds are usually the easiest to control. Once weeds begin to mature, they become more difficult and expensive to control.

3. **If a Pesticide is Necessary, Use One That is the Least Harmful to Non-Target Organisms and the Environment**

   The superintendent will be, or will employ a licensed pesticide applicator with extensive knowledge and understanding of pesticides usage and affects. Were possible, spot treatment will be utilized instead of blanket treatment.

Insect Control

There are many insects that can be found on a golf course. Fortunately, only a few are of major importance. Regular monitoring and immediate remedial action can prevent most turfgrass injury from insect pests. Good control depends on correct identification and knowledge of a pest's behavior and biology as well as the environmental factors surrounding the pest, such as temperature, moisture, soil type and location, all of which may affect population buildup. The first line of defense against turfgrass pests is a program of sound cultural practices. A sound fertilization program based on providing only nutrients the soil and plants need, based upon soil tissue analysis, as well as prudent watering and aerification programs.. The healthier the turf, the fewer insecticide treatments required, if they are needed at all.

The Golf Links has entered into an agreement with the Santa Barbara Coastal Vector Control District for the ongoing abatement of mosquito and black fly infestation.

Although it is impossible to list all potential insects and recommend treatment, without the specific environmental and agronomic factors present at the time of infestation, the following list of insects and potential treatment information are those most likely to occur. It is important to note that this information is taken directly from the University of California IPM Program information.

Cutworms and Armyworms

DESCRIPTION OF THE PESTS:

Cutworms and armyworms are larvae of heavy-bodied, night-flying moths [53K] in the Family Noctuidae. The white or greenish eggs of these noctuids are laid in masses, darkening as they approach hatching. Larvae can grow up to 2 inches (5 cm) long and typically curl up and lie still when disturbed.

Although damage is similar, armyworms are distinct from cutworms in their behavior. While cutworms are usually solitary feeders, armyworm eggs are laid in masses and larvae will feed as a group. If there is a high population and food is scarce, armyworms will move as a group, feeding indiscriminately on plants in their path. Variegated cutworms also are known to march like armyworms when populations are high.

DAMAGE:

Any turf species can be affected by any of these noctuid larvae. Armyworms prefer damp areas. Cutworms and armyworms are active from mid-March to October. Cutworms and armyworms feed on leaves and crowns and may cut off plants near the soil surface. The larvae feed at night and hide in the thatch layer or in a burrow in the soil during the day. Close clipping of grass around aeration holes, which are commonly occupied by larvae, is evidence of infestation. Damage appears as circular spots of dead grass or depressed spots.

BIOLOGICAL CONTROL:

Larvae are parasitized by braconid wasps (Apanteles spp.) and by tachinid flies. Birds also commonly feed on armyworms and cutworms. The extensive contact noctuid larvae have with soil or thatch makes Steinernema carpocapsae nematodes a valuable control measure. Bacillus thuringiensis subsp. kurstaki (Bt) is not as effective against cutworms and armyworms as for sod webworms; consider using Bt only when armyworms and cutworms are in the first and second instars.

CULTURAL CONTROL:

Remove thatch to eliminate much of the daytime resting habitat for noctuid larvae. Armyworms tend to lay eggs in damp areas with rank growth, so eliminate such areas, if possible.

WHEN TO TREAT:

Conduct a pyrethrum or detergent test to determine the infestation level. Consider treatment when there are more than five larvae per square yard. Mow the turf and irrigate before treating. After treatment, do not mow or irrigate for at least 24 hours (in the case of Bt, delay watering a couple of days) unless nematodes were applied, in which case apply post-treatment irrigation.

TREATMENT: [1]

Pesticide (Commercial Name)	Amount/1000 sq ft
A. **Bifenthrin** (Talstar)	0.25 fl. oz.
B. CARBARYL* (Chipco Sevin)	3.0 fl oz.

[1] Throughout this Plan, all HCP "Preferred Use" chemicals are italicized. Newly proposed chemicals are in bold.

C **CYFLUTHRIN (Tempo) 20 WP**	0.175 oz. (5 grams)
D FLUVALINATE (Mavrik Aquaflow)	0.23 fl oz.
E. **HALOFENOZIDE (Mach 2)**	0.50 fl. oz.
F. IMIDACLORPID (Merit)	0.40 fl. oz.
G. TRICHLORFON (Dylox) 80S	2.5-3.75 fl. oz.

Leafhoppers

DESCRIPTION OF THE PESTS:

Adults are 0.125 to 0.25 inch long, wedge-shaped, active insects that jump and fly short distances when disturbed. Their colors vary by species; whitish green, yellow and brownish gray are common colors often the colors are speckled or mottled. Adults lay eggs into host leaves. Nymphs lack wings; their color varies with species. Disturbed nymphs have a characteristic habit of moving sideways or backwards. Generation time varies from 12 to 30 days, depending on species and temperature.

DAMAGE:

All grasses can be affected by leafhopper feeding. Though these species are common, observations of injury are unusual. Both nymphs and adults suck sap from the leaves, resulting in yellowing or bleaching. Turf can lose vigor and die as a result of extended presence of high populations of leafhoppers.

WHEN TO TREAT:

Treat if populations are high enough that damage may occur.

TREATMENT:

Pesticide (Commercial Name)	Amount/1000 sq. ft.
A. FLUVALINATE (Mavrik Aquaflow)	0.11-0.23 fl.oz.
B CARBARYL (Chipco Sevin)	1.5-3.0 fl.oz.

Disease Control

Turfgrasses receiving proper cultural practices and sound irrigation management are less likely to develop diseases and are not as likely to be seriously damaged if attacked by an undesirable organism. Most diseases of turfgrasses are easier to prevent than to cure. Weakened, non-adapted grasses are susceptible to certain air and soil born fungi and to stresses such as drought and winds. To minimize the possibility of disease, the Golf Links has tested for the appropriate grasses for its' particular climatic zone that have exhibited a greater tolerance and resistance to common diseases that have plagued other courses in the region.

Recommended cultural practices such as prudent irrigation, proper mowing heights, fertilization based on soil and plant needs and a diligent aerification program will help prevent diseases by maintaining a vigorously growing turf. By enhancing plant vigor, diseases will be minimized and the need for fungicides will be reduced.

Although it is impossible to list all potential diseases and recommend treatment without the specific environmental and agronomic factors present at the time of infestation, the following list of diseases and potential treatment information are those most likely to occur. It is important to note that this information is taken directly from the University of California IPM Program information.

Anthracnose

SYMPTOMS:

Anthracnose appears as irregular patches of diseased turf that can be up to 12 inches in diameter but usually is much smaller, about the size of a dime. Leaf blotches are brown, fading to light tan. The fungus forms minute, black fruiting structures on dead grass blades.

COMMENTS ON THE DISEASE:

Most grasses are susceptible to anthracnose under the right set of environmental conditions. The disease is most severe under high temperatures (80° to 90°F), when foliage remains wet, and soil fertility is low.

CULTURAL CONTROL:

Apply adequate balanced nutrients, especially potassium and phosphorus. Do not fertilize during periods of high temperatures. Do not irrigate any more than necessary to maintain vigorous growth of turf and do not water in late afternoon or evening. Alleviate compaction and avoid low mowing and high traffic.

WHEN TO TREAT:

Fungicides are not recommended for use on grass other than golf greens, where they may be helpful when the disease is severe. At the onset of damage symptoms, use one of the following fungicides.

TREATMENT:

Fungicide	Amount/ 1000 sq. ft.
A. AZOXYSTROBIN (Heritage)	0.25 – 0.50 fl. oz.
B. CHLOROTHALONIL (Daconil 2787)	4.0 – 6.0 fl. oz.
C *PROPICONAZOLE (Banner)*	2.0 fl. oz.
D. *TRIADIMEFON (Bayleton)*	2.0 – 4.0 fl. oz.
E. *THIOPHANATE-METHOMYL (Clearys 3336)*	1.0 – 2.0 fl. oz.
F. **TRIFLOXYSTROBIN (Compass)**	0.15 – 0.20 fl. oz.

Dollar spot

SYMPTOMS:

Dollar spot affects small, circular areas of turf, about 1 to 5 inches in diameter. The spots may merge to form large, irregular areas. Leaves appear water-soaked at first, then later turn brown; they often have a reddish band extending across the leaf. Fine, white, cobwebby hyphae (fungal threads) may be seen in early morning.

COMMENTS ON THE DISEASE:

Most grasses are susceptible to dollar spot under the right set of environmental conditions. The disease is common near the coast, especially on creeping bentgrass and annual bluegrass. Moderate temperatures (60° to 80°F), excess moisture or water stress, fog, and excess mat and thatch favor dollar spot. The fungus survives in soil as sclerotia, which are tiny, hard, often dark, resting bodies. Turf deficient in nitrogen tends to develop more dollar spot than turf adequately fertilized.

CULTURAL CONTROL:

Keep thatch to a minimum. Irrigate only when needed to a depth of 4 to 6 inches, but do not stress the plants between irrigations. Apply adequate nitrogen. Maintain good air circulation by keeping the turf mowed and pruning barrier trees and shrubs. Composted top dressings may suppress dollar spot.

WHEN TO TREAT:

Fungicides are usually needed to control this disease, especially on closely clipped grass such as golf greens. If the disease has been present in previous years, apply fungicide in early spring or fall before disease develops.

TREATMENT:

Fungicides	Amount/ 1000 sq. ft.
A. **AZOXYSTROBIN (Heritage)**	0.2 – 0.4 fl. oz.
B. CHLOROTHALONIL (Daconil 2787)	5.0 fl. oz.
C *IPRODIONE (Chipco 26019)*	3.0 – 4.0 fl.oz.
D *MANCOZEB (Fore)*	6.0 – 8.0 fl. oz.
E. MYCLOBUTANIL (Eagle WSP)	2.0 – 4.0 fl.oz.
F. *THIOPHANATE-METHYL (Clearys 3336)*	1.0 fl. oz.
G. *TRIADIMEFON*	1.0 – 2.0 fl. oz.

Fairy ring

SYMPTOMS:

Fairy ring appears as a dark green band of turf that develops in a circle (from 10 to 20 cm up to 10 m) or semicircle in moist turf; mushrooms may or may not be present. Frequently, just behind the dark green band is an area of sparse, brown, dying grass caused by lack of water penetration. A second ring of thin dying grass may appear inside the circle. Weeds commonly invade infested areas.

COMMENTS ON THE DISEASE:

All grasses are susceptible to fairy ring, which is caused by several species of mushroom-forming fungi in the soil. In northern and central California, the predominant fungus is Marasmius oreades. Lepiota spp. are predominant in southern California.

Fairy ring develops most frequently in soils high in undecomposed organic matter containing lignin. Thus, adding woody plant materials, such as sawdust, wood chips, bark and other uncomposted material, favors fairy ring development.

CULTURAL CONTROL:

Apply adequate nitrogen. Aerate soil for better water penetration and water heavily in holes for several days; soil wetting agents may improve water penetration. De-thatch the turf because fairy ring often develops in soils with high levels of thatch. In some situations, replace infested soil. If fairy ring symptoms consist only of mushrooms and there is no zone of dark green grass, the mushrooms can be raked off and disposed of. While this will not weaken or control the fungus, it will improve the turf's appearance.

TREATMENT:

Fungicide	Amount / 1000 sq. ft.
A. **Flutolanyl (Prostar)**	6.0 fl. oz.

Fusarium blight

SYMPTOMS:

Fusarium blight first appears as small, circular, grayish green areas, ranging from a few inches up to a foot in diameter. Some plants in the center of the circles may survive, giving them a frog eye or donut appearance. The crown or basal area [49K] of the dead stems is affected with a reddish rot and is hard and tough. The dead foliage appears bleached.

COMMENTS ON THE DISEASE:

CULTURAL CONTROL:

Provide the appropriate amount of irrigation to avoid moisture stress in the plants. Keep the thatch moist, but not overly wet. Avoid heavy nitrogen applications. Remove thatch mechanically if more than 0.5 inch accumulates.

WHEN TO TREAT:

Complete control with fungicides has not been attained in California. When fungicides are necessary, make an application in spring before initial symptoms appear, or at the earliest appearance of the disease.

TREATMENT:

Fungicides	Amount / 1000 sq. ft.
A. *IPRODIONE (Chipco 26019)*	8.0 fl. oz.
B *MANCOZEB (Fore)*	6.0 – 8.0 fl. oz.
C. PCNB (Penstar)	4.5 – 6.0 fl. oz.
D. *TRIADIMEFON (Bayleton)*	2.0 – 4.0 fl. oz.
E. *THIOPHANATE-METHYL (Clearys 3336)*	4.0 – 6.0 fl. oz.

Fusarium patch

SYMPTOMS:

Fusarium patch causes roughly circular patches of 1 to 2 inches to develop that may enlarge to 12 inches. The leaves first appear water-soakedand then turn reddish brown. Finally, the leaves appear bleached. Minute white or pinkish, gelatinous spore masses are occasionally seen on the dead leaves. Fungal threads, which are also white or pinkish, may be seen in the early morning.

COMMENTS ON THE DISEASE:

Annual bluegrass and Creeping bentgrass are susceptible to Fusarium patch.

Fusarium patch is also known as pink snow mold. It is commonly observed on the central and northern California regions.

Cool (40° to 60°F), moist conditions, such as prolonged rainy periods in winter, favor Fusarium patch. High nitrogen applied in fall also favors the disease. Fusarium patch is more severe when the soil pH is neutral or alkaline. The pathogen survives in grass residues.

CULTURAL CONTROLS:

Reduce shade and improve soil aeration and water drainage. Avoid excess nitrogen fertilization, especially in fall. Adjust soil pH to 6.5 to 6.7. High levels of potassium tend to suppress the disease. Reduce mowing height to reduce pockets of high humidity.

WHEN TO TREAT:

If Fusarium patch has been a problem in previous years, apply a fungicide in fall before symptoms develop.

TREATMENT:

Fungicide	Amount / 1000 sq. ft.
A. **Azoxystrobin (Heritage)**	0.2 – 04. fl. oz.
B. *IPRODIONE (Chipco 26019)*	4.0 – 8.0 fl. oz.
C. *MANCOZEB (Fore)*	6.0 – 8.0 fl. oz.
D. PCNB (Penstar)	4.5 – 6.0 fl. oz.
E. *THIOPHANATE-METHYL (Clearys 3336)*	4.0 – 6.0 fl. oz.
F. *TRIADIMEFON* (Bayleton)	2.0 – 4.0 fl. oz.
G. **TRIFLOXYSTROBIN (Compass)**	0.2 – 0.25 fl. oz.
H. *VINCLOZOLIN (Curalan)*	1.0 – 2.0 fl. oz.

Pythium blight

SYMPTOMS:

Pythium blight kills turf in small, roughly circular spots (2 to 6 inches) that tend to run together. Blackened leaf blades rapidly wither and turn reddish brown. Leaf blades tend to lie flat, stick together, and appear greasy. Roots may be brown.

COMMENTS ON THE DISEASE:

All grasses are susceptible to Pythium blight. This disease is also known as grease spot. The fungus forms thick-walled sexual spores, which enable it to survive in the soil for long periods. Pythium blight usually appears in low spots that remain wet; the disease depends on excessive moisture and may be very destructive at high temperatures (80° to 95°F). Under humid conditions, masses of fungal mycelium may appear.

CULTURAL CONTROL:

Reduce shading and improve soil aeration and water drainage. Avoid overwatering; irrigate only when needed to a depth of 4 to 6 inches. Avoid mowing wet grass. Keep nitrogen levels low during hot, humid weather.

WHEN TO TREAT:

In California's semiarid climate this disease is usually kept under control with proper water management. Fungicides may be required, however, on some golf greens. Treat when symptoms first appear.

TREATMENT:

Fungicide	Amount / 1000 sq. ft.
A. **AZOXYSTROBIN (Heritage)**	0.2 – 0.4 fl. oz.
B. FOSETYL-AL (Chipco Aliette)	4.0 – 8.0 fl. oz.
C. *MANCOZEB (Fore)*	8.0 fl. oz.
D. *METALXYL (Subdue)*	1.0 fl. oz.

Pythium root rot

SYMPTOMS:

Pythium root rot causes poor growth as a result of rotten roots. Small, bleached patches develop in the turf that may progress to large dead areas.

COMMENTS ON THE DISEASE:

All grasses are susceptible to Pythium root rot Hot weather, poor drainage and excessive soil moisture favor the disease.

CULTURAL CONTROL:

Improve drainage and do not over water. Increase mowing height to reduce plant stress.

WHEN TO TREAT:

Fungicides may be considered for use on turf when cultural control has not resulted in satisfactory control.

TREATMENT:

Fungicide	Amount / 1000 sq. ft.
A. **AZOXYSTROBIN (Heritage)**	0.2 – 0.4 fl. oz.
B. FOSETYL-AL (Aliette)	4.0 – 8.0 fl. oz.
C. *METALAXYL (Subdue)*	1.0 fl. oz.

Rhizoctonia blight

SYMPTOMS:

Rhizoctonia blight first appears as small, irregular brown patches or rings that may enlarge to many feet in diameter. The centers of the areas may recover, resulting in rings of diseased grass. Leaves and leaf sheaths become water-soaked, wilt, turn light brown, and die. Stems, crowns and roots may also be infected. In light infestations, roots are usually not involved and plants recover.

COMMENTS ON THE DISEASE:

This disease is also called brown patch. Bentgrasses, bermudagrasses, bluegrasses, fescues, , and annual bluegrass are susceptible to Rhizoctonia blight.

Excess thatch and mat along with high temperatures (75° to 95°F), high humidity, and soft, lush growth due to excess nitrogen favor the development of Rhizoctonia blight. This disease is common during the grow-in period due to the extre nitrogen applied in order to allow greens to mend together.

CULTURAL CONTROL:

Reduce shading and improve soil aeration and water drainage. Irrigate only when needed to a depth of 4 to 6 inches, if possible. Avoid nitrogen fertilization that results in a soft foliage growth. Maintain thatch at less than 0.5 inch.

WHEN TO TREAT:

Fungicides may be useful in treating Rhizoctonia blight on golf greens when there has been a history of infestations. They may also be necessary on young turf when seedling is being infected. Other infestations may be managed best by improving water and fertility management.

TREATMENT:

Fungicide	Amount / 1000 sq. ft.
A. **AZOXYSTROBIN (Heritage)**	0.2 – 0.4 fl. oz.
B. CHLOROTHALONIL (Daconil 2787)	3.0 – 6.0 fl. oz.
C *IPRODIONE (Chipco 26019)*	3.0 – 4.0 fl. oz.
D. FLUTOLANYL (Prostar)	2.0 – 3.0 fl. oz.
E. *MANCOZEB (Fore)*	4.0 fl. oz.
F. MYCLOBUTANIL (Eagle WSP)	1.0 fl. oz.
G. PCNB (Penstar)	4.5 – 6.0 fl.oz.
H. *THIOPHANATE-METHYL (Clearys 3336)*	2.0 fl. oz.
I. THIRAM (Spotrete)	2.0 – 4.0 fl. oz.
J. *TRIADIMEFON (Bayleton)*	1.0 – 2.0 fl. oz.

K.	**TRIFLOXYSTROBIN (Compass)**	0.15 – 0.25 fl. oz.

Summer patch

SYMPTOMS:

Summer patch appears as circular yellow or tan areas up to one foot in diameter, consisting of dead and dying plants. Roots, crowns and stolons are affected by a dark, brown rot. The youngest roots may appear healthy, but dark brown hyphae may be present on these tissues. Vascular discoloration and cortical rot occur in later stages of the disease. On occasion, patches may retain centers of green, apparently unaffected grass.

COMMENTS ON THE DISEASE:

Most bluegrasses are susceptible to summer patch.. Infections generally first appear in late spring. The disease is favored by high temperatures (83° to 95°F) and is most severe when turf is mowed too low or when soil moisture levels are too high.

CULTURAL CONTROL:

Promote root growth by soil aeration and slow release nitrogen. Improve drainage, reduce compaction, and avoid drought stress. Do not mow too low or water too frequently. Maintain thatch at about 0.5 inch in thickness and lower the soil pH by adding an acidifying nitrogen fertilizer.

WHEN TO TREAT:

Fungicides may be required for control if summer patch has been a problem in previous years. Apply treatment 3 to 4 weeks before symptoms are likely to occur in late spring when temperatures are in the 65° to 68°F range. Irrigate after application.

TREATMENT:

Fungicide	Amount / 1000 sq. ft.
A. **AZOXYSTROBIN (Heritage)**	0.2 – 0.4 fl. oz.
B. MYCLOBUTANIL (Eagle WSP)	1.0 fl. oz.
C. *PROCOPICONAZOLE (Banner)*	2.0 – 4.0 fl. oz.
D. *THIOPHANATE-METHYL (Clearys 3336)*	2.0 – 4.0 fl. oz.

E. *TRIADIMEFON* *(Bayleton)*	2.0 – 4.0 fl. oz.

Take-all patch

SYMPTOMS:

Take-all patch appears as circular or ring-shaped dead areas which range from a few inches up to 3 feet or more in diameter. Dying bentgrass at the advancing margins of these areas has a purplish tinge. The roots of the diseased plants are rotted and have dark strands of mycelium visible on the surface of the roots. Large black perithecia, which are globular or flask-shaped fungal fruiting bodies, may be visible with the use of a hand lens.

COMMENTS ON THE DISEASE:

Bentgrasses and fescues are susceptible to take-all patch. This disease was formerly called Ophiobolus patch.

The pathogen survives in grass debris and living grass plants. In California, take-all patch principally occurs in late fall and winter. Soil conditions that favor the disease includes light texture, low organic matter, low or unbalanced fertility, high pH, and high moisture conditions.

CULTURAL CONTROL:

Improve growing conditions, such as soil drainage and fertility. Lower soil pH using elemental sulfur (ammonium sulfate) if it is above 7.

WHEN TO TREAT:

Fungicides may be necessary on golf greens that have experienced the disease in the past. Apply a fungicide on a preventative basis in fall.

TREATMENT:

Fungicide	Amount / 1000 sq. ft.
A. **AZOXYSTROBIN (Heritage)**	0.2 – 0.4 fl. oz.
B. *IPRODIONE (Chipco 26GT)*	3.0 – 4.0 fl. oz.
C. *TRIADIMEFON (Bayleton)*	2.0 – 4.0 fl. oz.

Growth Regulators

Growth regulators have become an important tool in turf management over the past few years as a means to reduce the frequency of mowing and the amount of grass clippings produced by both warm and cool season grasses. Other benefits, such as increased turf density, enhanced color, and finer turf quality are frequently observed when utilizing growth regulators. Growth regulators are used in the spring, summer and fall when temperatures are warm and grasses tend to grow at their maximum potential which in turn increases clippings generated for removal to the composting area, which takes up time, money and resources. Another benefit of growth regulators is the ability to suppress seedhead production during the spring months on Annual bluegrass greens where the seedheads become oppressive while making the greens bumpy, slow and unsightly. These materials are extremely safe to the environment and have low leaching and residual potential.

TREATMENT:

Growth Regulators	Amount / 1000 ft. sq.
A. **ETHEPHON** (Proxy)	0.10 – 0.50 fl. oz.
B. **TRINEXAPAC-ETHYL** (Primo)	0.10 – 0.50 fl. oz.

Preemergent Weed Control

Preemergent herbicides provide several months of residual control in the thatch layer (decomposed grass clippings) and in the upper 0.25 inch of soil and will kill seedling weeds as they emerge. Most weed seeds germinate over a period of six to fifteen weeks; therefore repeat applications are generally needed for season-long control. Approximate timing of applications for preemergent crabgrass control is February 1 in California, or as soil temperatures approach 55 degrees F. Goosegrass germinates approximately 3 to 4 weeks later than crabgrass; therefore, those areas dominated with goosegrass should have preemergence herbicide application delayed accordingly. Yearly weather variations may require minor adjustments to the February 1 date. Adequate soil moisture, both prior and following application, is necessary to ensure success.

Although it is impossible to list all potential weeds and recommend treatment without the specific environmental and agronomic factors present at the time of infestation, the following potential weed treatment information relates to those most likely to occur. It is important to note that this information is taken directly from the University of California IPM Program information.

TREATMENT:

	Herbicide:	Amount /Active Ingredient (a. i.)
A.	DITHIOPYR (Dimension)	0.25-0.5 lb a.i.

COMMENTS: Apply to established turf before annual weeds germinate. Apply in spring for crabgrass, spurge and oxalis, or in fall for annual bluegrass. May be applied as a single application in spring or fall, or as a split application with half being applied in spring and half in fall. Do not apply more than 1.5 lb a.i. per year. Do not apply within 3 months of seeding, overseeding, or sprigging. May injure fine fescue or bentgrass in golf course greens.

B.	ISOXABEN (Gallery)	0.5-1.0 lb a.i.

COMMENTS: Apply to established turf in late summer or early fall before winter annual weeds germinate. Provides 6-8 month control of many broadleaf weeds including: henbit, speedwells, oxalis, brass buttons and knotweed. A spring application helps control spurge and other summer broadleaf annuals. Follow application with at least 0. 5-inch water. Will not control established weed plants. Not for use on putting greens or grass grown for seed.

C.	NAPROPAMIDE (Devrinol)	2.0 –3.0 lb a.i.

COMMENTS: Can also be used on bermudagrass and fescue. Principally for grass control, but will control some broadleaf weeds. A split application of 2 lb can be applied for crabgrass and 2 lb for goosegrass; apply 8-10 weeks apart. Follow treatment with a minimum of 1 inch of water to wash material from the leaves and into the soil. Do not reseed or overseed within six months after application.

D.	ORYZALIN (Surflan)	1.5-2.0 lb a.i.

COMMENTS: For use on warm season grasses only. Apply on established turf before annual weeds germinate. Use low rate of application for annual bluegrass control in late summer or early fall. Use high rate in late winter or early spring before germination of summer annual weeds. . Do not use on bluegrass, ryegrass or tall fescue turf.

E.	OXADIAZON (Ronstar)	2.0 –4.0 lb a.i.

COMMENTS: The granule formulation can be used safely on most grass species except bentgrass. Some foliar injury may be observed if the granules are applied to wet foliage or the herbicide is not washed from the leaves after application. Only use the wettable powder formulation on dormant established bermudagrass turf. Apply the wettable powder formulation at least 2 weeks before turf greens in spring. . Has not been effective for control of prostrate spurge or creeping woodsorrel (Oxalis) in California.

F. PENDIMETHALIN (Pre-M) 1.5-3.0 lb a.i.

COMMENTS: Apply to established turf before annual weeds germinate. Useful in the control of many weeds including crabgrass, foxtail, oxalis and spurge. Use lower rate for control of annual bluegrass in fall or as a split application for control of crabgrass or spurge in late winter and early summer. Do not aerate or verticut after application. Do not overseed with grasses for 8-12 weeks after application. Do not apply on bentgrass.

G. **PRODIAMINE** 0.50 – 1.0 lb. a.i.

COMMENTS: Used for control of broadleaf weeds in bermudagrass; may be applied to newly sprigged bermudagrass for control of weeds. Can be applied year around, but best applied prior to when weeds are to grow at most active stage. Chemical must be watered in after application with at least 0.5 inch of water.

H. PRONAMIDE* (Kerb) 50 WSP 0.5-1.0 lb a.i.

COMMENTS: Used for control of annual bluegrass in bermudagrass ; the higher rate gives longer residual control. Most effective in late fall at, or just before, emergence; 14-21 days are required before results are observed. Do not use on seedling, newly sprigged, or newly sodded turf.

Postemergent Weed Control

Postemergent herbicides are effective in eradicating existing, emerged, visible weeds. Best results occur when weeds are young. Temperatures above 85-90 Degrees may result in toxicity to the turf. Repeat applications may be required for acceptable control. These are timed 10 to 14 days apart. No mowing of turf should be done within 24 hours after an application of most chemicals. Most postemergent herbicides require the use of a spreader-sticker, adjuvant or wetting agent.

In both preemergent and postemergent programs, a covered spray boom will be used to reduce overspray and drift.

Although it is impossible to list all potential weeds and recommend treatment, without the specific environmental and agronomic factors present in the environment at the

time of infestation, the following potential weed treatment information,relates to those most likely to occur. It is important to note that this information is taken directly from the UC IPM Program information.

TREATMENT:

	Herbicide	Amount/Active Ingredient (a.i.)
A.	BENTAZON (Basagran) 4 EC	1.0 – 2.0 lb a.i.

COMMENTS: Apply in 40 gal water/acre for yellow nutsedge in established turfgrass; thorough coverage is important. The nutsedge should be growing vigorously with good soil moisture. If control is not as desired, apply a second treatment after 10-14 days. Do not apply more than 3 lb a.i. per season. For optimum control, do not mow 3-5 days before or after application. Do not use on newly seeded or sprigged turf or golf course greens.

B.	BENTAZON (Basagran) 4 EC ...PLUS... 2,4-D*	1.0 lb a.i.

COMMENTS: For nutsedge and other broadleaf control. Do not use on newly seeded or sprigged turf.

C.	DICAMBA* (Banvel 4-S)	0.25-0.5 lb a.i.

COMMENTS: Apply in 40 gal water/acre for control of chickweeds, clovers, English daisy, prostrate knotweed, pearlwort, red sorrel and curly dock. Do not apply more than two times per year. The 4 lb acid equivalent/gal formulation can also be used for spot spraying; do not exceed 0.5 lb acid equivalent/acre/season. Active through the soil; do not use where roots of ornamental plants may extend into treated area or spray on tree basins. Spray on calm days to avoid spray drift onto susceptible crops or ornamentals. Do not use on dichondra or spray in tree basins.

D.	DITHIOPYR (Dimension)	0.25-0.5 lb a.i.

COMMENTS: Apply to crabgrass before tillering stage. May be used with MSMA to control existing crabgrass. Equally effective on smooth or large crabgrass.

E.	DICAMBA* ...AND... 2,4-D* (Trimec)	1.0 – 3.0 lb. a.i.

COMMENTS: For English daisy or other difficult to control broadleaf weeds such as dandelion or plantain. Do not exceed 0.25 acid equivalent/acre of dicamba on bentgrass turf. Active through the soil; do not use where roots of ornamentals may extend into treated area. Spray on calm days to avoid spray drift onto susceptible crops or ornamentals. Do not use on dichondra.

F. DSMA (Methar) 3.0 – 4.0 lb. a.i.

COMMENTS: Apply in 175-200 gal water/acre. Effective for crabgrass, dallisgrass and nutsedge control. Temperature, soil moisture and turf type determine degree of turf selectivity. Avoid spraying under hot, droughty conditions. Bentgrasses and fine-leafed fescues are most sensitive; bermudagrass is most tolerant. . Use lower rate on bentgrasses and fine-leafed fescues and if daily temperatures exceed 80°F. Lower rate is sufficient to control young crabgrass; use higher rate for mature crabgrass; requires 2-3 resprays at 5-7 day intervals. Use repeated monthly sprays for established dallisgrass and nutsedge.

G. FLUAZIFOP (Fusilade) 0.5 – 1.50 lb. a.i.

COMMENTS: . Will not control annual bluegrass. Apply when the grass is young and vigorous and has good soil moisture. Retreatments may be required for hard-to-kill weeds such as bermudagrass, dallisgrass and kikuyugrass. Will not control nutsedge.

H. GLYPHOSATE (Roundup) 1.0 –2.0 lb a.i.

COMMENTS: Apply to rapidly growing weeds in 20-40 gal water/acre or as a spot treatment. For control of annual weeds shorter than 6 inches, apply 1 lb a.i./acre; if 6 inches or taller, apply 1.5 lb a.i./acre. Allow minimum of 3 days between application and renovation or cultivation. For control of perennial weeds, apply 4-5 lb a.i./acre to vigorous but nearly mature weeds (bermudagrass in summer-fall; field bindweed at full bloom). . Delay verticutting, removing sod or tillage for at least 7 days after treatment. . When turf or ornamentals are to be planted, a follow-up preemergence program is required to control the seeds of perennials.

I. MECOPROP (MCPP) 1.0 -1.5 lb a.i.

COMMENTS: For control of clover, prostrate knotweed, and pearlwort. Spray on calm days to avoid spray drift onto susceptible crops or ornamentals. Safer to use on bentgrass than 2,4-D; do not use on dichondra. Use 1 qt surfactant/100 gal spray. For spot spraying use the same concentration/100 gal spray or 3-4 tsp. mecoprop plus 2 tsp.

surfactant/gal water. (Rate for spot spraying applies only to formulations containing 2 or 2.5 lb acid equivalent/gal.)

J. MSMA 2.0 –4.0 lb a.i.

COMMENTS: Temperature and turf type determine degree of selectivity. Use lower rate for nutsedge control, on bentgrass, and on other turf types when daily temperature exceeds 85 F. . Make no more than two applications/season at a 30-day interval. Apply uniformly over area regardless of distribution of the weed. Hesitating with sprayer over weedier spots may cause excessive rate and injure or kill the turf. Repeated applications of high rates reduces kikuyugrass. Turf may be temporarily discolored.

K. PRONAMIDE* 0.75-1.5 lb a.i.
(Kerb) 50 WSP

COMMENTS: For control of annual bluegrass in bermudagrass turf only. Use 0.75-1 lb a.i. to control seedling to young tillering stages of annual bluegrass; a higher rate of 1-1.5 lb a.i. is needed for seed-forming stages. Do not apply where the herbicide can move into sensitive cool season grasses. Do not overseed cool season grasses within 90 days after treatment.

L. TRICLOPYR 0.25-0.5 lb a.i.
(Turflon)

COMMENTS: For use on cool season turf species only. Especially useful for creeping woodsorrel control. Apply in 50-100 gal water/acre to vigorously growing broadleaf weeds, preferably in spring or fall. May be retreated 4 weeks following the first application for hard-to-kill weeds. To broaden weed spectrum and control dandelion, use a tank mix of amine or low volatile ester of 2,4-D with triclopyr. Do not apply around trees or shrubs, since injury may result. Do not follow application with an irrigation within 4 hrs.

M. 2,4-D WATER-SOLUBLE AMINES* 1.0-1.5 lb a.i.
(Weedar 64)

COMMENTS: For control of dandelion, plantain and young pigweed use 1 lb acid equivalent plus 1 qt surfactant in 100 gal water/acre. For spot treatment use 2 tsp. formulation plus 2 tsp. surfactant to 1 gal water. For control of young knotweed (2- to 4-leaf stage), field bindweed, wild lettuce and filaree use 2 lb acid equivalent plus 1 qt surfactant in 100 gal water/acre. For spot treatment, use 4 tsp. formulation plus 2 tsp. surfactant to 1 gal water. On bentgrasses use water-soluble amine only and do not exceed 0.75 lb acid equivalent/acre.

N. 2,4-D* 0.5-1.0 lb a.i.
...PLUS...
MCPP

COMMENTS: A tank mix. Do not apply in windy conditions where drift can occur. Do not mow grass 2-3 days before or after treatment. Do not use on bentgrass greens. Do not irrigate for 4 hrs after application.

O. 2,4-D* 1.0 – 5.0 lb. a.i.
...AND...
MCPP
...AND...
DICAMBA*
(Trimec, etc.)

COMMENTS: For broad spectrum control of broadleaf weeds. Use lower rates for bentgrass, hybrid bermudagrass and other sensitive turfgrasses. Nonselective on dichondra. Avoid applying to drought- and heat-stressed turf. Do not irrigate within 24 hrs of application. Newly seeded turf should not be treated until after the second or third mowing. Bentgrass is the most sensitive of the turfgrasses. Read label for further application directions. Do not allow spray drift to contact broadleaf ornamentals or injury may occur.

P. 2,4-D* 1.0 – 3.0 lb. a.i.
...PLUS...
TRICLOPYR
(Turflon)

COMMENTS: A tank mix used for control of a broad spectrum of broadleaf weeds. Particularly effective for oxalis when other broadleaf weeds are present. Do not use on dichondra, bentgrass or warm season turfgrasses. Avoid applying to drought or heat stressed turf. Do not irrigate within 24 hour of application. Do not allow drift to contact broadleaf ornamentals or injury may occur.

- Permit required from county agricultural commissioner for purchase or use.

AQUATIC WEED CONTROL

Water features on golf courses are prime targets for noxious aquatic plant growth. Drainage and run-off supplying these areas carry measurable levels of nutrients. Unsightly, overgrown ponds detract from the beauty of a course and may interfere with operation of the irrigation system. Mechanical removal, biological control, habitat manipulation and chemical control are all methods for aquatic weed control. Mechanical and biological control are preferred strategies.

The aquatic environment is not static in nature. Evaluation and recommendation for treatment by the superintendent should be done on a daily basis.

Aquatic weed control of the Golf Links' irrigation system's holding lake, from which irrigation of the course takes place, will follow a non-chemical strategy exclusively. Recommendation for lake management in this case shall incorporate the following (in order of preference):

1. Circulation system to increase water movement.
2. Aeration system to increase the oxygen level.
3. Microbial introduction which limits the nutrient levels present in the lake thus reducing the food supply for algae and aquatic weeds.

To reduce the likelihood of chemical migration into this lake by application of chemicals to turf areas directly adjacent to the lake, a self-imposed buffer zone will restrict indiscriminant spraying on turf within 10 feet of the pump lake edge. Only spot spraying will take place in this area.

RODENT CONTROL

Rodent damage can occur any time of the year. However, the extent and nature of damage is dependent upon plant growth stages, rodent breeding and activity cycles. California ground squirrels undergo periodic winter and summer dormancy, but a percentage of the ground squirrel population is active year around. Pocket gophers and moles are active all months of the year. Turf areas are frequently inspected for early signs of rodent activity.

The primary goal of rodent control activity is to limit rodent infestation within turf areas. Rodent control will not occur in natural or native areas. The first line of defense in controlling vertebrate pests is the deployment of box and wire traps in infested turf areas. Traps are buried below ground in the rodent burrow and checked daily. Also included in the first line of defense is the enhancement of on-site habitat that attracts vertebrate predators such as Barn Owls. The enhancement of habitat for the species listed will increase the predator population on-site. Enhancement of these habits will be accomplished through the implementation of recommendations provided through the ACSP as described previously and set forth in Appendix "C".

SOIL AND PLANT FERTILIZATION PROGRAM

Potential Annual Fertilizer Quantities

	N	P	K	Ca	Mg.	O.M.
GREENS	6-10	3-6	12-15	20-25	3-5	10-15
TEES	8-10	4-5	4-5	15-20	2-4	10-15
FAIRWAYS	4-5	4-5	4-5	30-40	5-7	20-30
ROUGHS	2-4	2-4	2-4	30-4-	5-7	20-30

Notes:
Amounts expressed in pounds per thousand square feet.
Micronutrients will be applied based on soil/tissue analysis.

First year grow-in numbers may be higher due to establishment of young turf and stolons.

Nitrogen Sources **(N)**
Ammonium Sulfate
Calcium nitrate
Potassium nitrate
Urea
Natural organic

Phosphorous Sources **(P)**
Manammonium phosphate
Diammonium phosphate
Super phosphate
Rock phosphate

Potassium Sources **(K)**
Sulfate of Potash
Muriate of postash

Calcium Sources **(Ca)**
Dolomitic Lime
High Calcium Lime
Gypsum

Magnesium Sources **(Mg)**
Dolomitic Lime
Magnesium sulfate
Sul-Po-Mag

Organic Matter **(O.M)**
Human waste byproducts
Animal waste byproducts

In addition to broadcast fertilization programs incorporating the items on the this page, the Golf Links will institute a micro-fertilization program through fertigation as part of the irrigation system. The major benefit to fertigation is low rate application which reduces leaching and eliminates fertilizer application to non targeted areas.

PLAN UPDATES

It is important to note that the information and programs outlined in this Plan are not of a static nature. Effective programs are ever changing and flexible depending on agronomic conditions. Therefore, this plan should be adaptable on a daily basis. This plan is required to be updated annually and shall be updated annually. All amendments and updates shall be submitted for County, Coastal Commission, RWQCB and Service review and approval prior to implementation of changes. The

Golf Links will submit a written request for County and Service review and approval of any changes in the this Plan throughout the life of the project.

The most current guidelines and changes to the IPM system is supplied by the University of California and can be obtained from the department listed below as well as at the IPM website at www.ipm.ucdavis.edu,

Pest Management Guidelines Coordinator
IPM Education and Publications, University of California
One Shields Avenue
Davis, CA 95616-8620

(530) 752-7691

APPENDIX A

Section 3 of the

HABITAT CONSERVATION PLAN
DOS PUEBLOS GOLF LINKS
COUNTY OF SANTA BARBARA

JANUARY 2002

SECTION 3.0
PROPOSED CHEMICAL USES ONSITE

The permit is not providing coverage for take due to chemical (*i.e.*, fertilizers, herbicide and pesticide) use. The only way to ensure "zero take" from chemical use is to ensure that no detectable amounts of such chemicals reach those areas onsite that are known to be used by the tidewater goby and California red-legged frog or are believed to have a high potential for use by the California red-legged frog. Eagle Canyon is known habitat for both species. In conjunction with the Service, CPH has identified two additional drainages onsite that are considered to have a high potential for use by the California red-legged frog. The drainages identified are Drainage 4 North and Tomate Canyon. Based on topography, buffers have been established for each of the three drainages and are identified on the attached site plan. Use of certain chemicals within these buffers shall trigger testing to ensure that these chemicals are not reaching the drainages in these areas.

The draft ATMIPM program shall govern the application of fertilizers, herbicides and pesticides onsite. The final ATMIPM program shall be submitted to the Service, and the County of Santa Barbara for review and written approval 90 days prior to commencement of turf maintenance activities.

3.1 Chemical Use Plan

The draft ATMIPM will be revised to include provisions that will identify the buffer areas for Eagle Canyon, Tomate Canyon and Drainage 4 North as identified on the attached site plan. The final ATMIPM shall provide three groupings of chemicals that could possibly be used on Dos Pueblos. The first group will consist of those chemicals currently included in the draft ATMIPM that would be prohibited from usage upon the entire project site. The second group will consist of "preferred use" chemicals that have been identified as being less toxic to fish and amphibians. CPH will use these chemicals first over more toxic chemicals when addressing a specific problem. The third group shall consist of those chemicals, known to be more toxic to fish and amphibians than the second group, that can be used onsite only after a "preferred use" chemical has been used and proven ineffective. The use of both "preferred use" and the more toxic chemicals within the buffer areas identified on the attached Site Plan will trigger the chemical sampling outlined below in *Section 3.1.1*. Use of any of the more toxic chemicals will require a demonstration of need that a less toxic chemical (from the preferred use list) will not produce the required affect. Chemicals not included in the second and third groups may be proposed in the final ATMIPM without amending the HCP itself.

CPH, in coordination with the Service, shall assign each new chemical to the appropriate category at that time.

Chemicals that will not be included in the final ATMIPM:
Methyl bromide
Atrazine
Chlorpyrifos

"Preferred use" chemicals:
Mancozeb
Procopiconazole
Triadimefon
Thiophanate-Methomyl
Thiophanate-Methyl
Iprodione (Rovral)
Vinclozolin
Metalaxyl
Napropamide (Devrinol)
Bentazon (Basagran) 4 EC
Bentazon plus 2,4 D
Dicamba (Banavel 4-S)
Dicamba and 2,4 D (Trimec)
Glyophosate (Roundup)
Mecoprop (MCCP)
MSMA
2,4-D Water soluble Amines (Weedar 64)
2,4-D plus MCCP (MCPP)
2,4-D plus MCCP (MCPP) plus Dicamba
2,4-D plusTriclopyr

More toxic chemicals:
PCNB
Pendimethalin (Pre-M)
Captan
Benefin and Trifluralin (Team 2G)
Dithiopyr (Dimension)
Pronamide (Kerb) 50 WSP)

Acephate
Carbaryl (Chipco Sevin)
Cyfluthrin (Tempo)
Fluvalinate (Mavrik Auqaflow)
Trichlorfon (Dylox)
Myclobutanil
2,4-D low-volatile esters (Weedone LV4)
Chlorothalonil
Fenarimol
Nclozolin
Thiram
Fosetyl-al: (Fosetyl-aluminum)
Benefin (Balan)
Bensulide (Presan)
DCPA (Dacthal)
Isoxaben (Gallery)
Oryzalin (Surflan)
Oxadiazon (Ronstar)
DSMA (Methar)
Fluazifop (Fusalide)

3.1.1 Chemical Sampling

A water quality and sediment testing program will be implemented to ensure that no adverse water quality impacts within the golf course or downstream offsite result from irrigation and chemical use. Surface water and sediment testing will be implemented in accordance with the County- and Service-approved draft ATMIPM program, as specified in *Table 3*; additional sampling will be implemented when certain chemicals are used within specified buffer areas on site. Surface water and sediment testing will be conducted prior to use of any chemicals on the golf course and will be used as baseline data. These data will be supplied to the Service before golf course construction begins. Surface water and sediment sampling and testing will be conducted by a third-party designee. Surface water and sediment testing will be implemented by an EPA-approved laboratory and the samples will be collected and analyzed in accordance with approved EPA methodologies. Samples will be taken from locations designated by the Service and County of Santa Barbara Department of Planning and Development (P&D) (see Site Plan). Sampling locations include the vernal pool; water

storage lake; Eagle Canyon at the northern property line, north of the railroad and in the lagoon at the mouth of Eagle Canyon; Tomate Canyon at the northern property line, north of the railroad and at the mouth of the creek; and Drainage 4 North at the northern property line and north of the railroad.

TABLE 3. SURFACE WATER AND SEDIMENT SAMPLING SCHEDULE

Location	*Parameter*	*Species*	*Frequency*
Creeks of seasonal water flow (Tomate Canyon, Drainage 4 North)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Monthly (water quality) with most sensitive species until flow ceases. Sediment samples conducted quarterly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Twice annually at first creek flush and again approx. 90 days after first test.
	Nutrient (N, P), Dissolved Oxygen, pH		Monthly at first creek flush and until flow ceases.
Creeks of perennial water flow (Eagle Canyon)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
	Nutrient (N, P), Dissolved Oxygen, pH		Monthly.
On-site bodies of water (vernal pool and reclaimed water storage lake)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Quarterly.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity Nutrient (N, P) Dissolved Oxygen, pH	Algae, Vertebrate, Invertebrate	Quarterly Monthly

The parameters and frequency of water quality and sediment testing are depicted above in *Table* 3. Sediment sampling will be conducted quarterly and surface water quality monitoring will be conducted monthly for the first two years of golf course operation. For Tomate Canyon, Drainage 4 North and Eagle Canyon, if tests reveal that levels of nitrites, nitrates and phosphates are greater than the EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts per million (ppm), or if pH levels are less than 6.0 or greater than 9.0 (when water entering the property from the north is within acceptable liits for these parameters), operation of the golf course shall be modified in accordance with the final ATMIPM until testing shows no adverse impacts. For the vernal pool and the water storage lake, if tests reveal that levels of nitrites, nitrates and phosphates are greater than the EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts per million (ppm), or if pH levels are less than 6.0 or greater than 9.0, operation of the golf course shall be modified in accordance with the final ATMIPM until testing shows no adverse impacts. Surface water testing will be conducted monthly at first creek flush and until flow ceases (or for Eagle Canyon Creek, monthly whenever standing water is present); sediment testing will be conducted quarterly. Surface water quality sampling frequency may be reduced to a bi-monthly basis (once every two months) if after two years it is determined by CPH that no adverse impacts (*i.e.*, no evidence of background levels being exceeded) are occurring, and if approved in writing by the Service and P&D. Testing may be further reduced (less frequent than bi-monthly) if approved in writing by the Service and P&D. Sediment sampling frequency may be reduced to a semi-annual basis (twice every year) if after two years it is determined by CPH that no adverse impacts (*i.e.*, no evidence of background levels being exceeded) are occurring, and if approved in writing by the Service. Sampling may be further reduced if approved in writing by the Service. Sampling frequency may only be reduced if there are no changes in chemical application methods and amounts.

In addition to those parameters identified in *Table* 3, surface water and sediments in Eagle Canyon, Tomate Canyon and Drainage 4 North will also be tested for all chemicals used within the buffer areas and any additives (*e.g.*, surfactants, carrier oils, spreading agents) to be used within buffer areas. Testing will be conducted within 48 hours of checmical use in buffer areas. Standard EPA panels will be run for the chemicals. The water and sediment sampling results shall be provided to the Service, as described in Section 8.2.

3.1.2 Chemical Use Onsite

3.1.2.1 Fertilizers

Landscape Buffer and Revegetation Areas

Within the revegetation areas Gro-Power-Plus fertilizer will be mixed with the seed for germination, and Gro-Power fertilizer tablets will be planted with oak seedlings and trees. No additional applications of fertilizer are anticipated for the revegetation areas.

Golf Course Areas

Fertilizers will be applied to the golf course on an as-needed basis according to weather and turf conditions as approved by the Service and County in the final ATMIPM program. Fertilizers may be applied to the tees, fairways, and roughs via the irrigation system (*i.e.*, the fertilizer will be diluted prior to application). Diluted in this manner, only low concentrations of fertilizers will be present on the surface of the grass. The irrigation system is designed to provide just enough water for proper turf growth with no runoff. Granular fertilizers may also be applied using rotary-type spreaders. When granular fertilizers are used, they will be applied after the morning dew has evaporated and before the evening dew sets. Regular watering of the golf course would cause these fertilizers to soak into the soil and allow their use by plants. Neither liquid nor dry fertilizers will be applied within three (3) days of (before or after) forecast rainfall events.

Greens will be foliar-fed (*e.g.*, in crystal form) every two weeks and immediately watered in after the morning dew has evaporated and before the evening dew sets. Drains under the greens will not daylight but will terminate under the adjacent fairway surface. Thus, no runoff of fertilizers is anticipated.

3.1.2.2 Pest Management

Pests will be controlled to a large extent through the proper selection of pest-resistant or pest-tolerant plants. During the grow-in period, careful consideration will be given to the types of turf and plant material selected in order to create an environment ill-suited for common pest proliferation.

3.0 Proposed Chemical Uses Onsite

Application of herbicides and pesticides will be conducted in accordance with the Service- and County- and Service-approved final ATMIPM program at the minimum application rate necessary. Only those herbicides and pesticides approved by the Service will be used onsite. These chemicals would be applied only to specific locations, as needed, in accordance with label instructions, and during daylight hours, thereby reducing the possibility that California red-legged frogs could come in contact with these chemicals in concentrations that could have adverse effects on the species. Within the sensitive natural habitats, mitigation areas, and landscaped buffer areas, herbicides would be hand-applied to individual plants. Within the golf course areas (par-three course, 18-hole course, putting green, driving range, and turf farm), herbicides would be applied from a boom-sprayer (15 to 18 feet in width) attached to a 250-gallon tank on the back of a golf course utility truck.

The use of chemicals will be conducted in accordance with label instructions. It is important to note that on-site areas considered to be highly sensitive such as buffer zones, native areas, revegetation areas, and natural drainage areas will be minimally treated with chemicals as described above (*i.e.*, chemicals will be applied by hand during favorable conditions) and in the BELP. Those areas in which maintained turf and sensitive areas merge (a width of 25 feet) will be spot sprayed only when necessary in order to minimize the chemical effects to the area, if any. In all cases, spot treatment in these areas, if applicable, shall always be in compliance with the requirements of the BELP.

In order to reduce the possibility of exposing California red-legged frogs to pesticides and herbicides, the following restrictions will govern the application of these chemicals onsite and be incorporated into the final ATMIPM program:

- During the rainy season (November through April), no herbicides or pesticides will be applied within 24 hours prior to forecasted rain or within 24 hours after rainfall.

- Application of herbicides and pesticides will be administered after the morning dew has evaporated and before the evening dew has set.

- In no case shall any spraying of chemicals take place anywhere onsite when wind conditions exceed five (5) miles per hour (mph).

- Within the landscape buffer and revegetation areas, the herbicide will be hand-applied directly to individual plants, and only when winds do not exceed five (5) mph, no rain is expected for at least 24 hours, and standing water is not present. Only Karmex, Roundup, or Rodeo will be applied in these areas unless replaced by new materials.

Insects

A variety of insect pests may need to be controlled on the golf course. Because turf grasses have not yet been selected, it is impossible to identify potential treatments without knowledge of the specific environmental and agronomic factors present at the time of infestation. Once the turf grasses are selected the final ATMIPM program will be customized to be specific to the project and will be submitted to the Service and P&D for review and written approval at least 90 days prior to commencement of turf management activities.

Rodents

Prior to the use of rodenticides, traps will be placed to eradicate rodents on site. If the trapping efforts fail, rodenticides included in the Final ATMIPM will be applied to the golf course on an as-needed basis. Rodenticide materials will include zinc phosphide and aluminum phosphide. The golf course will be inspected daily for five days after rodenticides are used. Any rodent carcasses found will be removed immediately to sealed trash containers.

3.2 Modification of Operations

If, at any time, the levels of any chemical(s) in the surface water and sediment samples exceed background levels due to golf course operations, chemical application will cease and application rates and methods will be changed in accordance with adaptive management measures described below in *Section 8.1.3* to prevent future exceedence of background levels.

APPENDIX B

SITE PLAN

FROM

HABITAT CONSERVATION PLAN
DOS PUEBLOS GOLF LINKS
COUNTY OF SANTA BARBARA

JANUARY 2002

APPENDIX C

SURFACE WATER, SEDIMENT AND SOIL SAMPLING LOCATION MAP

ıeblos Golf Links

& Soil Monitoring

1994 Approval

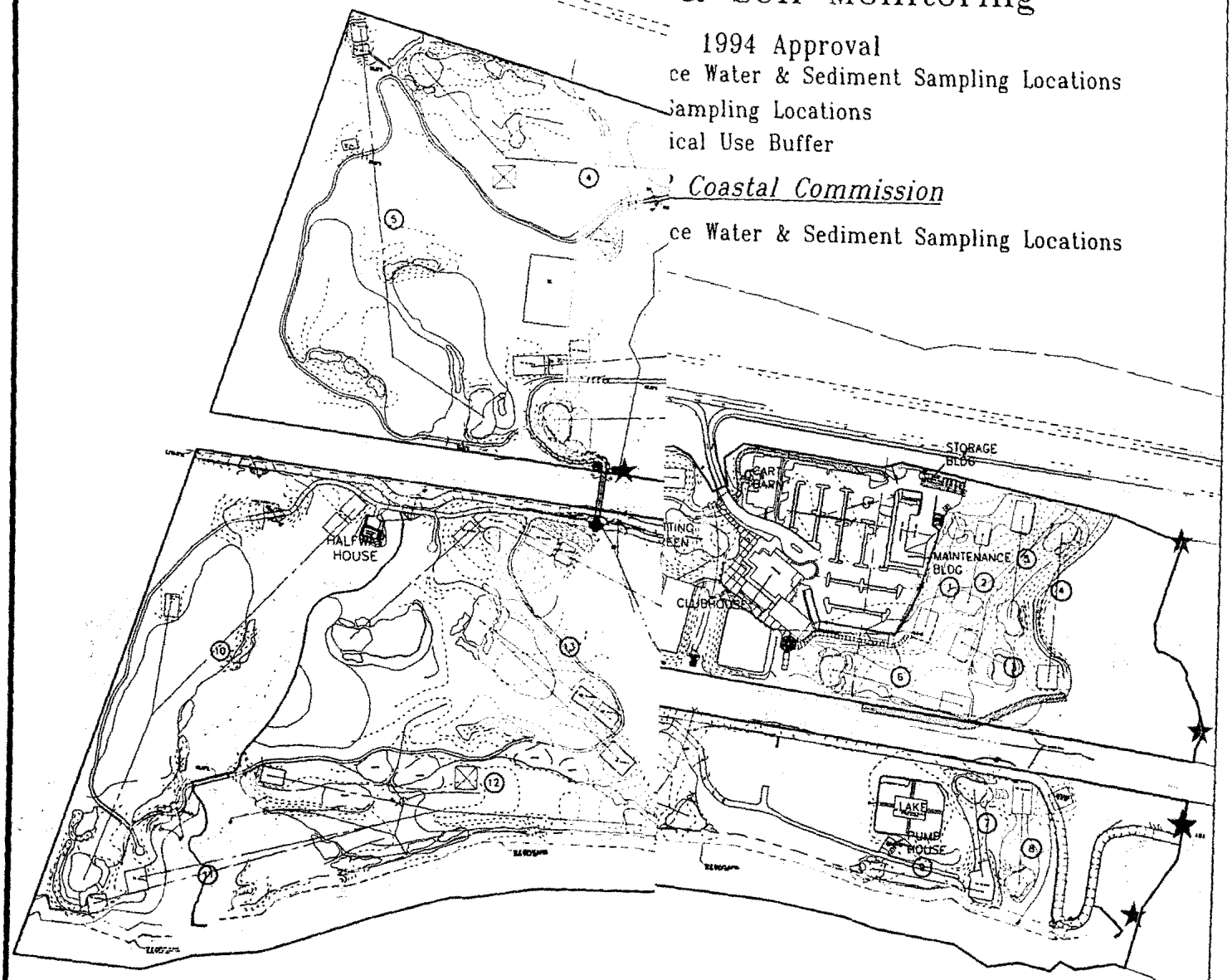
ce Water & Sediment Sampling Locations

Sampling Locations

ical Use Buffer

Coastal Commission

ce Water & Sediment Sampling Locations



Baseline Samp

To be conducted by a 3rd Pa

Reclaimed Water:	
Soils (6 locations-refer to map):	
Surface Water & Sediment:	

Habitat Conservati

Threshold Stan

For Eagle Canyon, Drainage 4 North

Nitrates:	
Nitrites:	
Phosphates:	
Dissolved Oxygen Level:	
PH:	
Chemicals and additives used w/n	

* When water entering the property from t
limits for these parar

pplication Restrictions:

Herbicides and Rodenticides

- Prior chemical not approved for use in ATMIPM.
- Prior nticides unless trapping efforts fail.

hours prior to forecasted rain (Nov. thru April).
hours after rainfall (Nov. thru April).
orning dew has evaporated.
vening dew has set.
ind conditions exceed 5 miles per hour.
10' of Storage Pond.
thin 10' to 25' of Storage Pond.
icted to daylight hours.
ordance with label instructions.
nited to Karmex, Roundup, or Redco) within
r and revegation areas only when necessary.

TION PLAN, BIOLOGICAL ENHANCEMENT PLAN AND ACCEPTABLE TURF
D INTEGRATED PEST MANAGEMENT PLAN

APPENDIX C

SURFACE WATER, SEDIMENT AND SOIL SAMPLING LOCATION MAP

APPENDIX D

PROPOSED CHEMICALS PRODUCT INFORMATION

ZENECA Professional Products

Heritage® FUNGICIDE

For Use to Control Certain Diseases on Turf and Ornamentals.

ACTIVE INGREDIENT	
Azoxystrobin: methyl (*E*)-2-{2-[6-(2-cyanophenoxy) pyrimidin-4-yloxy]phenyl}-3-methoxyacrylate*	50%
INERT INGREDIENTS:	50%
TOTAL	100.0%

*IUPAC

Contains 0.5 pound active ingredient per pound product.

EPA Reg. No. 10182-408

Reformulation is prohibited.
See individual container labels for repackaging limitations.

KEEP OUT OF REACH OF CHILDREN
CAUTION

STATEMENT OF PRACTICAL TREATMENT

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF IN EYES: Flush eyes with plenty of water. Call a physician if irritation persists.

FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE, CALL 1-800-F-A-S-T-M-E-D (327-8633).

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident, call CHEMTREC, 1-800-424-9300 or 703-527-3887 if outside of the Continental United States.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

HARMFUL IF ABSORBED THROUGH SKIN. CAUSES MODERATE EYE IRRITATION. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling.

Personal Protective Equipment (PPE)

Some materials that are chemically resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

The active ingredient, Azoxystrobin, in this product can be persistent for several months or longer. Azoxystrobin has degradation products which have properties similar to chemicals which are known to leach through soil to groundwater under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

This pesticide is toxic to freshwater and estuarine/marine fish and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash water or rinsate.

Notify State and/or Federal authorities and ZENECA immediately if you observe any adverse environmental effects due to use of this product.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of ZENECA or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold ZENECA and Seller harmless for any claims relating to such factors.

ZENECA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or ZENECA, and Buyer and User assume the risk of any such use. ZENECA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

In no event shall ZENECA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF ZENECA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF ZENECA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

ZENECA and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by a duly authorized representative of ZENECA.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

FAILURE TO FOLLOW THE USE DIRECTIONS AND PRECAUTIONS ON THIS LABEL MAY RESULT IN PLANT INJURY OR POOR DISEASE CONTROL.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry interval (REI). The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry into treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

NONAGRICULTURAL USES

For use to control diseases on turf and ornamentals on golf courses, lawns, and landscape areas around residential, institutional, public, commercial and industrial buildings, parks, recreational areas, and athletic fields.

NONAGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. The area being treated must be vacated by unprotected persons.

Do not treat areas while unprotected humans or domestic animals are present in the treatment areas. Because certain states may require more restrictive reentry intervals, consult your State Department of Agriculture for further information.

Do not allow entry into treatment area until area that was treated with HERITAGE® Fungicide is dry.

STORAGE AND DISPOSAL

PROHIBITIONS: Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

STORAGE: Store in original containers only. Keep container closed when not in use. Do not store near food or feed. In case of spill on floor or paved surfaces, sweep and remove to chemical waste storage area until proper disposal can be made if product cannot be used according to the label.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative of the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Triple rinse (or equivalent); then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or alternatives allowed by State and local authorities.

GENERAL INFORMATION

HERITAGE Fungicide is a broad spectrum, preventative fungicide with systemic and curative properties recommended for the control of many important plant diseases on turf, ornamentals, and other home and garden landscapes. HERITAGE Fungicide may be applied as a foliar spray in alternating spray programs or in tankmixes with other registered, turf and ornamental protection products. All applications should be made according to the use directions that follow. See directions regarding "TANK MIXES/COMPATIBILITY."

GENERAL USE PRECAUTIONS

Do not graze or feed clippings from treated turf areas to animals. Crops in this label may be planted immediately after last treatment. Do not plant food crops within 45 days after last application.

ATTENTION

HERITAGE Fungicide is extremely phytotoxic to certain apple varieties.

AVOID SPRAY DRIFT. Extreme care must be used to prevent injury to apple trees (and apple fruit).

DO NOT spray **HERITAGE Fungicide** where spray drift may reach apple trees.

DO NOT spray when conditions favor drift beyond area intended for application. Conditions which may contribute to drift include thermal inversion, wind speed and direction, sprayer nozzle/pressure combinations, spray droplet size, etc. Contact your State extension agent for spray drift prevention guidelines in your area.

DO NOT use spray equipment which has been previously used to apply HERITAGE Fungicide to spray apple trees. Even trace amounts can cause unacceptable phytotoxicity to certain apple and crabapple varieties. Please see "TABLE 5" for list of Intolerant Plants.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

INTEGRATED PEST (DISEASE) MANAGEMENT (IPM)

HERITAGE Fungicide should be integrated into an overall disease and pest management strategy whenever the use of a fungicide is required. Cultural practices known to reduce disease development should be followed. The "SPECIFIC USE DIRECTIONS" section in this label identifies specific IPM recommendations to reduce disease development. Consult your local turf, ornamental, or agricultural authority for additional IPM strategies established for your area. HERITAGE Fungicide may be used in State Agricultural Extension advisory (disease forecasting) programs which recommend application timing based on environmental factors favorable for disease development.

RESISTANCE MANAGEMENT

A disease management program that includes alternation or tankmixes between HERITAGE Fungicide and other labeled fungicides that have a different mode of action is essential to prevent pathogen populations from developing resistance to HERITAGE Fungicide. HERITAGE Fungicide should not be alternated or tankmixed with fungicides to which resistance has already developed.

Continual use of HERITAGE Fungicide may allow less sensitive strains of pathogens to increase in the population and reduce the efficacy of HERITAGE Fungicide. Since HERITAGE Fungicide is a strobilurin fungicide, avoid alternation with other strobilurins, such as kresoxim-methyl and trifloxystrobin.

Since pathogens differ in their potential to develop resistance to fungicides, the "SPECIFIC USE DIRECTIONS" section in this label provides resistance management strategies specific for each crop and disease. Consult your local or state turf, ornamental, or agricultural authority for resistance management strategies that are complementary to those in this label. HERITAGE Fungicide is not cross resistant with other classes of fungicides which have different modes of action.

SPRAYING/MIXING

HERITAGE Fungicide may be applied with all types of spray equipment commonly used for making ground applications. Do not apply HERITAGE Fungicide through any type of ultra-low volume (ULV) spray system (less than 3 gallons per acre). Proper adjustments and calibration of spraying equipment, to give good canopy penetration and coverage, is essential for good disease control. The higher rates, in the rate range and/or shorter spray intervals, may be required under conditions of heavy infection pressure, highly susceptible varieties, or when disease conducive environmental conditions exist.

For ground applications, apply HERITAGE Fungicide in sufficient water volume for adequate coverage and canopy penetration.

To prepare spray solution, partially fill the spray tank with clean water and begin agitation. Add the specified amount of HERITAGE Fungicide to the tank, allowing time for good dispersion, then add an adjuvant, if recommended. If tankmixes are required, product should be added to the spray tank in the following order: HERITAGE Fungicide, other WG or dry flowable formulations, wettable powders, and flowable (aqueous suspensions) products. Finish filling the tank to the desired volume to obtain the proper spray concentration. Maintain agitation throughout the spraying operation. Do not allow spray mixture to stand overnight or for prolonged periods. Make up only the amount of spray required for immediate use. Sprayers should be thoroughly cleaned immediately after application. Do not use silicone based products with HERITAGE Fungicide due to possible phytotoxicity.

SPRAY DRIFT MANAGEMENT

Do not apply when weather conditions favor drift from treated areas to nontarget aquatic habitat.

The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions.

DIRECTIONS FOR USE THROUGH SPRINKLER AND DRIP IRRIGATION SYSTEMS

Spray Preparation: Chemical tank and injector system should be thoroughly cleaned. Flush system with clean water.

Application Instructions: Apply HERITAGE Fungicide at rates and timings as described in this label.

Use Precautions for Sprinkler and Drip Irrigation Applications

Drip Irrigation: HERITAGE Fungicide may be applied through drip irrigation systems to potted ornamentals or to bedded, field grown ornamentals for soil-borne disease control. Apply 2 to 16 ounces HERITAGE Fungicide per acre as a preventative disease application. The soil or potting media should have adequate moisture capacity prior to drip application.

Terminate drip irrigation at fungicide depletion from the main feed supply tank or after 6 hours from start, whichever is shorter. For maximum efficacy, subsequent irrigation (water only) should be delayed for at least 24 hours following drip application.

Sprinkler Irrigation: Apply this product through sprinkler irrigation systems including center pivot, lateral move, end tow, side [wheel] roll, traveler, big gun, solid set, or hand move irrigation systems. Do not apply this product through any other type of irrigation system except as specified on this label.

Apply with center pivot or continuous-move equipment distributing ½ acre-inch or less during treatment. In general, use the least amount of water required for proper distribution and coverage. If stationary systems (solid set, handlines, or wheel lines other than continuous-move) are used, this product should be injected into no more than the last 20 to 30 minutes of the set. Do not apply when winds are greater than 10 to 15 mph to avoid drift or wind skips. Do not apply when wind speed favors drift beyond the area intended for treatment. Plant injury, lack of effectiveness, or illegal pesticide residues in turf and ornamentals can result from nonuniform treated water. Thorough coverage of foliage is required for good control. Good agitation should be maintained during the entire application period.

If you have questions about calibration, you should contact State Extension Service specialist, equipment manufacturers, or other experts.

The system must contain a functional check valve, vacuum-relief valve, and low-pressure drain appropriately located on the irrigation pipeline to prevent water-source contamination from backflow.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

Specific Instructions for Public Water Systems:

1. Public water system means a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily, at least 60 days per year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back-flow preventer (RPZ), or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap), between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank, of at least twice the inside diameter of the fill pipe.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

TANK MIXES/COMPATIBILITY

HERITAGE Fungicide is compatible with many commonly used fungicides, liquid fertilizers, herbicides, insecticides, and biological control products. If tank mixes are desired, observe all directions, precautions, and limitations on labeling of all products used. Consult compatibility charts or your local or State turf, ornamental, or agricultural authority for compatibility information. Do not combine HERITAGE Fungicide in the spray tank with pesticides, surfactants, or fertilizers, unless compatibility charts or your own prior use has shown that the combination is physically compatible, effective, and non-injurious under your conditions of use. If physical compatibility is unknown, the following procedure should be followed: Pour the recommended proportions of the products into a suitable container of water, mix thoroughly and allow to stand at least twenty (20) minutes. If the combination remains mixed or can be remixed readily, the mixture is considered physically compatible. If tankmixes are required, product should be added to the spray tank in the following order: HERITAGE Fungicide, other WG or dry flowable formulations, wettable powders, and flowable (aqueous suspensions) products.

SPECIFIC USE DIRECTIONS

TURF

HERITAGE Fungicide is recommended for control of certain pathogens causing foliar, stem, and root diseases, including leaf and stem blights, leaf spots, patch diseases, mildews, anthracnose, fairy rings, molds, and rusts of turfgrass plants. HERITAGE Fungicide may be used to control certain diseases on golf courses, lawns, and landscape areas around residential, institutional, public, commercial and industrial buildings, parks, recreational areas, and athletic fields.

Integrated Pest (Disease) Management (IPM): Sound turf management resulting in healthy, vigorous turf is the foundation of a good IPM program. Cultural practices such as proper choice of turf variety, nutrient management, proper cutting height, thatch management, and proper watering, drainage, and moisture stress management should be integrated with the use of fungicides to increase turf vigor and reduce the susceptibility to disease. Immunoassay detection kits and extension service diagnostic services can assist in the early and accurate identification of causal organisms and corresponding selection of the proper fungicide when required.

Resistance Management: Some turf disease pathogens are known to have developed resistance to products used repeatedly for their control. HERITAGE Fungicide should be applied at full use rates in a tankmix or alternation program with other registered fungicides that have a different mode of action and to which pathogen resistance has not developed. Since HERITAGE Fungicide is a strobilurin fungicide, avoid alternation with other strobilurins, such as kresoxim-methyl and trifloxystrobin. Do not apply more than 2 sequential HERITAGE Fungicide applications for Gray Leaf Spot and *Pythium* spp. control. For all other diseases when Gray Leaf Spot and *Pythium* spp. are not present, do not apply more than 3 sequential applications of HERITAGE Fungicide.

Application Directions: *HERITAGE Fungicide should be applied prior to, or in the early stages of, disease development.* Mix HERITAGE Fungicide with the required amount of water and apply as a dilute spray application in 2 to 4 gallons of water per 1,000 square feet (87 to 174 gallons per acre). Repeat applications at specified intervals for as long as required. For spot treatments, use 0.2 ounce HERITAGE Fungicide per 1 to 2 gallons of water. Do not apply more than 10 pounds product per acre per year (3.7 ounces product per 1,000 square feet per year). Applications may be made by ground only.

For use with soil injection applications:

HERITAGE Fungicide may be applied through a liquid fungicide injector for the control of ectrotrophic root diseases such as summer patch and take-all patch. Use HERITAGE Fungicide **only** in liquid injection equipment specifically designated for pesticide use.

Apply HERITAGE Fungicide at 0.2 to 0.4 ounce per 1,000 square feet. Spray carrier volume should fall within 30 to 150 gallons of water per 1,000 square feet. Injection hole spacing of 1 inch by 1 inch is recommended for optimum control. Injection depth should be no greater than 2 inches. One inch depth is recommended for optimum results. Application timing should follow disease control strategies used for normal broadcast spray programs.

For use in the establishment of turfgrass from seed or in overseeding of dormant turfgrass:

HERITAGE Fungicide may be used for control of certain turfgrass diseases associated with turfgrass establishment from seed. HERITAGE Fungicide may also be used during overseeding of dormant turfgrass.

HERITAGE Fungicide may be safely applied before or after seeding or at seedling germination and emergence to ryegrass, bentgrass, bluegrass, and fescue turfgrass types. Optimum application timing is during seeding. See "APPLICATION DIRECTIONS" section.

Rate Ranges: Use the shorter specified application interval and/or use the higher specified rate when prolonged favorable disease conditions exist.

Dollar Spot: HERITAGE Fungicide does not control dollar spot. During periods of dollar spot pressure, always mix HERITAGE Fungicide with DACONIL® or another dollar spot control fungicide. HERITAGE Fungicide is compatible in tank mixes with many other fungicides that control dollar spot. Follow directions under "TANK MIXES/COMPATIBILITY."

DIRECTIONS FOR APPLICATION FOR TURF DISEASES

Target Diseases	Use Rate (Oz. Product per 1,000 Sq. Ft.)	Application Interval (Days)	Remarks*
Anthracnose *(Colletotrichum graminicola)*	0.2 to 0.4	14 to 28	Use preventatively. Begin applications when conditions are favorable for disease infection, prior to disease symptom development.
Brown Patch *(Rhizoctonia solani)*	0.2 to 0.4	14 to 28	Apply when conditions are favorable for disease development.
Cool Weather Brown Patch Yellow Patch *(Rhizoctonia cerealis)*	0.4	28	Make 1 or 2 applications in fall or when conditions are favorable for disease development.
Fairy Ring (*Lycoperdon* spp., *Agrocybe pediades,* and *Bovistra plumbea*)	0.4	28	Apply as soon as possible after fairy ring symptoms develop. Apply only in 4 gallons water per 1,000 square feet (174 gallons per acre). Add the recommended rate of a wetting agent to the final spray. Severely damaged or thin turf may require reseeding. Fairy ring symptoms may take 2 to 3 weeks to disappear following application. Reapplication after 28 days may be required in some cases.
Fusarium Patch *(Microdochium nivale)*	0.2 to 0.4	14 to 28	Use preventatively. Begin applications when conditions are favorable for disease infection, prior to disease symptom development.
Gray Leaf Spot *(Pyricularia grisea)*	0.2 to 0.4	14 to 28	Begin applications before disease is present and continue applications while conditions are favorable for disease development.
Gray Snow Mold Typhula Blight *(Typhula incarnata)*	0.7 0.4	Single Application 10 to 28	Make a single application of 0.7 ounce or 2 applications of 0.4 ounce spaced 10 to 28 days apart in late fall just before snow cover. Tank mixing with another snow mold fungicide, such as DACONIL, may enhance control under severe disease pressure.
Leaf Rust Stem Rust Stripe Rust (*Puccinia* spp.)	0.2 to 0.4	14 to 28	Begin applications when conditions are favorable for disease infection, prior to disease symptom development.
Leaf Spot *(Bipolaris sorokiniana)*	0.2 to 0.4	14 to 21	Apply when conditions are favorable for disease development.
Melting Out *(Drechslera poae)*	0.2 to 0.4	14 to 21	Apply when conditions are favorable for disease development.
Necrotic Ring Spot *(Leptosphaeria korrae)*	0.4	14 to 28	Apply when conditions are favorable for disease development.
Pink Patch *(Limonomyses roseipellis)*	0.2 to 0.4	14 to 28	Apply when conditions are favorable for disease development.

DIRECTIONS FOR APPLICATION FOR TURF DISEASES

Target Diseases	Use Rate (Oz. Product per 1,000 Sq. Ft.)	Application Interval (Days)	Remarks*
Pink Snow Mold *(Microdochium nivale)*	0.7 0.4	Single Application 10 to 28	Make a single application of 0.7 ounce or 2 applications of 0.4 ounce spaced 10 to 28 days apart in late fall just before snow cover. Tank mixing with another snow mold fungicide, such as DACONIL, may enhance control under severe disease pressure.
Powdery Mildew *(Erysiphe graminis)*	0.2 to 0.4	14 to 28	Begin applications when conditions are favorable for disease infection, prior to disease symptom development.
Pythium Blight Pythium Root Rot *(Pythium aphanidermatum, Pythium* spp.)	0.4	10 to 14	Use preventatively. Begin applications when conditions are favorable for disease infection, prior to disease symptom development. During periods of prolonged favorable conditions, treat on the 10-day application interval. For use on newly seeded as well as established turf.
Red Thread *(Laetisaria fuciformis)*	0.2 to 0.4	14 to 28	Apply when conditions are favorable for disease development.
Rhizoctonia Large Patch *(Rhizoctonia solani)*	0.4	14 to 28	Make 1 or 2 applications in fall or when conditions are favorable for disease development.
Rhizoctonia Leaf Spot *(Rhizoctonia zeae)*	0.4	14 to 28	Apply when conditions are favorable for disease development.
Southern Blight *(Sclerotium rolfsii)*	0.2 to 0.4	14 to 28	Apply when conditions are favorable for disease development.
Spring Dead Spot *(Leptosphaeria korrae)* or *(Gaeumannomyces graminis var. graminis)* or *(Ophiosphaerella herpotricha)*	0.4	14 to 28	Apply 1 or 2 applications approximately 1 month prior to bermudagrass dormancy. ¼" to ½" of irrigation directly after application recommeneded. Reapply 14 to 28 days later.
Summer Patch *(Magnaporthe poae)*	0.2 to 0.4	14 to 28	Apply when conditions are favorable for disease development.
Take-all Patch *(Gaeumannomyces graminis var. avenae)*	0.4	28	Begin applications when conditions are favorable for disease infection, prior to disease symptom development. Make 2 applications, 28 days apart, in the spring and 2 applications, 28 days apart, in the fall.
Zoysia Patch *(Rhizoctonia solani* and/or *Gaeumannomyces incrustana)*	0.4	14 to 28	Apply 1 or 2 applications approximately 1 month prior to zoyiagrass dormancy. Reapply 14 to 28 days later.

*Do not apply more than 2 sequential applications of HERITAGE Fungicide for control of Gray Leaf Spot and *Pythium* spp. For all other diseases, when Gray Leaf Spot and *Pythium* spp. are not present, do not apply more than 3 sequential applications of HERITAGE Fungicide.

HERITAGE Fungicide Rate Conversion Chart for Turf

Ounces Product per 1,000 Sq. Ft.	Ounces a.i. per 1,000 Sq. Ft.	Ounces Product per Acre	Pounds Product per Acre
0.20	0.10	8.7	0.5
0.30	0.15	13.1	0.8
0.40	0.20	17.4	1.1
0.70	0.35	30.5	1.9

Amount of HERITAGE Fungicide to Mix 100 Gallons for Turf Applications

HERITAGE Fungicide Use Rate	Spray Volume (Gallons per 1,000 Square Feet)		
	2.0 Gallons	3.0 Gallons	4.0 Gallons
0.2 ounce	10 ounces	6.7 ounces	5 ounces
0.4 ounce	20 ounces	13.3 ounces	10 ounces
0.7 ounce	35 ounces	23.3 ounces	17.5 ounces

ORNAMENTALS

HERITAGE Fungicide is recommended for control of certain pathogens causing foliar, aerial, and root diseases, including leaf, tip, and flower blights, leaf spots, mildews, anthracnose, and rusts of ornamental plants. HERITAGE Fungicide may be used to control certain diseases of container, bench, flat, plug, bed, or field-grown ornamentals in greenhouses, shade-houses, outdoor nurseries, retail nurseries, and other residential and commercial landscape areas.

Integrated Pest (Disease) Management (IPM): HERITAGE Fungicide should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, optimum plant populations, proper fertilization, winter and/or spring pruning, plant residue management, and proper timing and placement of irrigation. Immunoassay detection kits and diagnostic services can assist in the early and accurate identification of causal organisms and corresponding selection of the proper fungicide when required.

Resistance Management: Some ornamental disease pathogens are known to have developed resistance to fungicides used repeatedly for their control. HERITAGE Fungicide should be applied in an alternation or tankmix program with other registered fungicides that have a different mode of action and to which pathogen resistance has not developed. Do not make more than 3 sequential applications of HERITAGE Fungicide before alternating with a fungicide of a different mode of action. A sound resistance management program would include blocks of 3 HERITAGE Fungicide applications separated by blocks of 2 alternate fungicide applications. Do not alternate HERITAGE Fungicide with other strobilurin fungicides.

Application Directions: Apply HERITAGE Fungicide as a broadcast or banded spray targeted at the foliage or crown of the plant. Apply to runoff in sufficient water to ensure complete coverage of the target plant. Good coverage and wetting of foliage is necessary for best control. Refer to the label for specific use directions for control of certain diseases. Repeat applications at specified intervals (plus alternations for resistance management) for as long as required. Applications may be made by ground only.

HERITAGE Fungicide applications should begin prior to or in the early stages of disease development and continue throughout the season at specified intervals following resistance management guidelines. HERITAGE Fungicide works best when used as part of a preventative disease management program.

Use only surfactants approved for ornamental plants in combination with HERITAGE Fungicide. Do not use silicone-based products with HERITAGE Fungicide due to possible phytotoxicity. Always test tankmixes on a small group of representative plants prior to broadscale use.

Apply HERITAGE Fungicide at use rates of 1 to 4 ounces per 100 gallons and every 7 to 28 days (or as otherwise specified for a specific plant or disease). The addition of a non-silicone based wetter-sticker at the recommended use rate may enhance coverage on hard-to-wet plant foliage.

Under most conditions and for most diseases, apply 2 to 4 ounces per 100 gallons on a 7- to 14-day interval.

Under light to moderate disease pressure, use the lower rates (1 to 2 ounces per 100 gallons) on a 7- to 14-day interval or the higher rates (3 to 4 ounces per 100 gallons) on a 14- to 28-day interval.

Under environmental conditions which promote severe disease development, use the higher rates (3 to 4 ounces per 100 gallons) on a 7- to 14-day interval.

Use of HERITAGE Fungicide as a "rescue" (late-curative or eradicant) treatment may not always result in satisfactory disease control.

Do not exceed 10 pounds product per crop acre per year or 8 applications per crop per year.

Do not exceed 600 gallons spray volume per acre for foliar applications. For drench and crown applications, do not exceed 2 pints volume per square foot.

In addition, do not tankmix HERITAGE Fungicide with other fungicides, insecticides, herbicides, fertilizers, adjuvants, etc., unless local experience indicates that the tankmix is safe to ornamental plants.

Drench Application: HERITAGE Fungicide may be applied to control soil-borne, seedling, and crown diseases of production ornamentals (greenhouse, shadehouse, and container grown) as a preventative, drench treatment prior to infection. Good coverage of the pre-infection area (root zone, root ball, crown, etc.) is necessary for satisfactory control. HERITAGE Fungicide may be drench applied to container grown ornamentals using 0.2 to 0.9 ounces per 100 gallons of water. Apply 1 to 2 pints of the solution per square foot surface area on a 7- to 28-day interval. Apply drench prior to infection as healthy roots are necessary to optimize product uptake, systemic translocation, and disease protection.

For resistance management, do not make more than 3 sequential drench applications of HERITAGE Fungicide before alternating with a fungicide of a different mode of action.

Caution should be taken before making application of HERITAGE Fungicide as a drench to small bedding plants in the seedling/plug stage due to possible phytotoxicity. A limited quantity of plants should be tested prior to full-scale application.

Drip Irrigation: HERITAGE Fungicide may be applied through drip irrigation systems to potted ornamentals or to bedded, field grown ornamentals for soil-borne disease control. Apply 2 to 16 ounces HERITAGE Fungicide per acre as a preventative disease application. The soil or potting media should have adequate moisture capacity prior to drip application.

Terminate drip irrigation at fungicide depletion from the main feed supply tank or after 6 hours from start, whichever is shorter. For maximum efficacy, subsequent irrigation (water only) should be delayed for at least for 24 hours following drip application.

General Ornamental Use Precautions

Do not apply HERITAGE Fungicide to apple or cherry trees (Flowering, Yoshina variety) due to possible phytotoxicity. Further, do not use spray equipment that has applied HERITAGE Fungicide for use in these sensitive crops due to possible phytotoxicity from residue remaining in the sprayer.

HERITAGE Fungicide may be applied to certain varieties of crabapple for control of apple scab. HERITAGE Fungicide has been shown to be safer when applied to the species and varieties listed in "TABLE 4." However, due to the large number of genera, species, and varieties of crabapple, it is impossible to test every one for tolerance to HERITAGE Fungicide. The professional user should conduct small scale testing to insure plant safety prior to broadscale commercial use on plant genera and species not listed on this label.

TABLE 1
Diseases Controlled

When used in accordance with the label directions, HERITAGE Fungicide will provide control of the following diseases of ornamental plants:

DISEASE (Pathogen)	SPECIAL USE COMMENTS
1. CONIFER BLIGHTS	
a. Phomopsis Blight (*Phomopsis juniperovora*)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
b. Tip Blight (*Sirococcus strobilinus*)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
2. LEAF BLIGHTS/LEAF SPOTS	
a. Alternaria Leaf Spot (*Alternaria* spp.)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
b. Anthracnose (*Colletotrichum* spp., *Elsinoe* spp.)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
c. Cercospora Leaf Spot (*Cercospora* spp.)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
d. Downy Mildew of Bedding Plants (*Peronospora* spp.)	Apply 1 to 2 ounces every 7 to 14 days prior to infection. Do not apply the 2 ounce rate on less than 14-day spray intervals.
e. Downy Mildew of Rose (*Peronospora sparsa*)	Apply 2 to 4 ounces per 100 gallons every 7 to 21 days during periods of active plant growth and prior to dormancy or severe infection.
f. Entomosporium Leaf Spot (*Entomosporium mespili*)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.

DISEASE (Pathogen)	SPECIAL USE COMMENTS
2. LEAF BLIGHTS/LEAF SPOTS (Cont.)	
g. Fern Anthracnose (*Colletotrichum acutatum*)	Apply 3 to 8 ounces per acre every 7 to 14 days. Use higher rates and/or shorter spray intervals under conditions conducive to high disease pressure. Do not apply in less than 100 gallons of water per acre.
h. Iris Leaf Spot (*Mycosphaerella macrospora*)	Apply 2 to 4 ounces per 100 gallons every 7 to 21 days.
i. Leaf Spot (*Cladosporium echinulatum*)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
j. Marrsonina Leaf Spot (*Marrsonina* spp.)	Apply 1 to 4 ounces per 100 gallons every 14 to 28 days.
k. Myrothecium Leaf Spot (*Myrothecium rordum*)	Apply 1 to 4 ounces per 100 gallons every 7 to 21 days.
l. Scab (*Venturia inaequalis*)	Apply 1 to 4 ounces per 100 gallons every 10 to 28 days. Do not apply to apple trees. For crab apples only, see "TABLE 4" for tolerant species.
m. Septoria Leaf Spot (*Septoria rosea*)	Apply 2 to 4 ounces per 100 gallons every 7 to 28 days.
3. POWDERY MILDEW	Preventative applications only. Do not make more than 2 sequential applications before rotating to another class of fungicide.
a. *Erysiphe pannosa*, *Erysiphe* spp.	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
b. *Microsphaera azaleae*	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
c. *Sphaerotheca pannosa*	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
4. RUSTS	
a. Needle Rust (*Melampsora occidentalis*)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
b. *Phragmidium* spp.	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
c. *Puccinia* spp.	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
d. *Gymnosporangium* spp.	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
5. FLOWER BLIGHTS	
a. Anthracnose (*Collectotrichum* spp., *Elsinoe* spp.)	Apply 1 to 4 ounces per 100 gallons every 7 to 28 days.
b. Botrytis Blight (*Botrytis cinerea*)	Apply 2 to 4 ounces per 100 gallons every 7 to 21 days prior to infection.
6. SHOOT/STEM DISEASES	
a. Aerial/Shoot Blight (*Phytophthora* spp.)	Apply 1 to 2 ounces per 100 gallons every 7 to 28 days.
7. SOILBORNE DISEASES (Directed Spray)	For directed spray applications, utilize the following rates below.
a. *Rhizoctonia solani*	Apply 1 to 4 ounces per 100 gallons every 7 to 21 days.
b. *Sclerotium rolfsii*	Apply 1 to 4 ounces per 100 gallons every 7 to 21 days.
c. *Fusarium* spp.	Apply 1 to 4 ounces per 100 gallons every 7 to 21 days.
8. SOILBORNE DISEASES (Drench)	See application directions and rates under Ornamentals Section for drench directions.

PLANT SAFETY: HERITAGE Fungicide has been shown to be safe when applied to the ornamental plants listed in "TABLES 2, 3, and 4". However, due to the large number of genera, species, and varieties of ornamental and nursery plants, it is impossible to test every one for tolerance to HERITAGE Fungicide. Neither the manufacturer nor the seller has determined whether or not HERITAGE Fungicide can be used safely on genera, species, or varieties of ornamental and nursery plants not specified on this label. The professional user should conduct small scale testing to ensure plant safety prior to broad-scale commercial use on plant genera and species not listed in this label.

In addition, do not tankmix HERITAGE Fungicide with other fungicides, insecticides, herbicides, fertilizers, adjuvants, etc., unless local experience indicates that the tankmix is safe to ornamental plants.

Do not apply HERITAGE Fungicide to certain apple, crabapple, or cherry trees due to possible phytotoxicity. Further, do not use spray equipment that has applied HERITAGE Fungicide for use in these sensitive crops due to possible phytotoxicity from residue remaining in the sprayer.

Tolerant Ornamental Plants: HERITAGE Fungicide has been found to be safe when applied to the plants listed in "TABLES 2, 3, and 4" when applied according to recommended application methods, rates, and timings.

TABLE 2
Tolerant Plants Listed by Botanical Name

BOTANICAL NAME	COMMON NAME	DISEASES
Abelia spp.	Abelia	2
Abies fraseri	Fraser Fir	1, 4
Acer palmatum	Japanese Maple	2
Acer saccharu	Sugar Maple	2
Ageratum spp.	Floss-flower	3, 4
Ageratum spp.	Pussy's-foot	3, 4
Aglaonema spp.	Chinese Evergreen	2, 4
Ajuga reptans	Bugle, Bugleweed	3
Antirrhinum spp.	Snapdragon	2d, 3, 4
Aphelandra spp.	Zebra-plant	2
Artemisia spp.	Mugwort, Sagebrush	2
Artemisia spp.	Wormwood	2
Aster spp.	Aster, Starwort	4
Aucuba japonica	Japanese Aucuba, Japanese Laurel	7
Begonia spp.	Begonia	2, 3
Berberis thunbergii	Barberry	3, 4
Betula nigra	River Birch	3, 4
Bougainvillea spp.	Bougainvillea	2
Brassaia actinophylla	Rubber Tree, Umbrella Tree	2, 7
Buddleia davidii	Buddleia, Butterfly Bush	2
Buxus sempervirens	Boxwood	2, 7a
Caladium spp.	Caladium	7
Camellia japonica	Camellia	2
Caryota urens	Sago Palm	2, 7
Catharanthus roseus	Vinca	2
Ceanothus sanguineus	Wild Lilac	3
Ceanothus spp.	Ceanothus, California Lilac, Snowball	3
Cedrus atlantica	Atlas Cedar	2, 4
Cedrus spp.	White Cedar	2, 4
Cercis occidentalis	Western Redbud	2
Chamaecyparis spp.	Cypress, Leyland Cypress	1
Chamaecyparis pisifera	Sawara Cypress	1
Chamaedora elegans	Parlor Palm	7
Chrysanthemum spp.	Chrysanthemums	2, 7c
Clethra alnifolia	Clethra, White Alder	2
Cornus spp.	Dogwood, Pink Dogwood	2b, 3
Cornus florida	Flowering Dogwood	2b, 3
Cortaderia selloana	Pampas Grass	3
Cotoneaster adpressus	Creeping Cotoneaster	7
Cotoneaster horizontalis	Cotoneaster, Variegated Rockspray	7
Cyclamen spp.	Cyclamen	7c
Cyperus spp.	Cyperus	1
Delphinium spp.	Larkspur	2
Dianthus caryophyllus	Carnation	3, 4
Dianthus spp.	Pink	3, 4
Dieffenbachia spp.	Dumbcane	2

TABLE 2 (Cont.)
Tolerant Plants Listed by Botanical Name

BOTANICAL NAME	COMMON NAME	DISEASES
Dietes iridiodes	African Iris, Butterfly Iris	4c
Digitalis spp.	Foxglove	2, 3
Epipremnum spp.	Pothos	2
Erica dareyensis	Heather	2
Euonymus alata	Dwarf-winged Euonymus	2
Euonymus alatus	Burning Bush	2
Euonymus japonicus	Evergreen Euonymus	2
Euphorbia spp.	Poinsettia	2a
Fatsia japonica	Japanese Fatsia, Paper-plant	2
Ficus spp.	Fig	2
Forsythia viridissima	Forsythia	2
Gaillardia spp.	Blanket Flower	2
Gardenia jasminoides	Gardenia	3
Geranium spp.	Cranesbill	5b
Gerbera jamesonii	Gerber Daisy, Transvaal Daisy	3
Hedera algeriensis	Algerian Ivy	2
Hedera helix	English Ivy	2
Hibiscus moscheutos	Hibiscus	2, 3
Hibiscus rosa-sinensis	Hibiscus	2, 3
Hibiscus syriacus	Rose of Sharon	2, 3
Hosta spp.	Hosta	2
Hydrangea macrophylla	French Hydrangea	2c, 3
Hydrangea spp.	Hydrangea	2c, 3
Ilex spp.	Holly, Winterberry, Yaupon	3
Impatiens spp.[1]	Balsam, Impatiens[1]	2a, 7a
Itea virginica	Virginia Willow	3, 4
Juniperus procumbens	Juniper	1a, 4
Juniperus scopulorum	Juniper	1a, 4
Juniperus spp.	Juniper	1a, 4
Juniperus virginiana	Red Cedar	1a, 4
Lagerstroemia indica	Crepe Myrtle	2c, 3
Laurus nobilis	Laurel	3
Liriope muscari	Lily-turf	2
Lobularia maritima	Sweet Alyssum	7
Magnolia grandiflora	Southern Magnolia	2
Magnolia soulangiana	Saucer Magnolia	2
Magnolia spp.	Magnolia	2
Malus spp.	Crabapple (See "TABLE 4" for variety list)	2l
Nandina domestica	Nandina	2
Nerium oleander	Oleander, Rose-bay	2
Pelargonium spp.	Geranium	3, 4, 5b
Pennisetum alopecuroides	Grass	2
Peperomia spp.	Baby Rubber Plant	2, 7
Petunia spp.	Petunia	6a
Phalaris spp.	Dwarf Pampas Grass	3
Philodendron spp.	Philodendron	2
Phlox spp.	Phlox	3
Phoenix dactylifera	Date Palm	2, 7
Phoenix roebelenii	Roebelin's Palm	2, 7
Photinia glabra	Red-tip Photinia	2, 3, 4
Picea abies	Norway Spruce	1
Picea glauca	White Spruce	1
Picea pungens	Blue Spruce	1
Pieris japonica	Japanese Andromeda	2, 7
Pinus muhgo	Muhgo Pine	1b, 4

[1]Do not exceed 2 ounces per 100 gallons on these species.

TABLE 2 (Cont.)
Tolerant Plants Listed by Botanical Name

BOTANICAL NAME	COMMON NAME	DISEASES
Pinus nigra	Black Pine	1b, 4
Pinus sylvestris	Scotch Pine	1, 4
Pinus spp.	Pine	1b, 4
Pinus strobus	Eastern White Pine	1b, 4
Pittosporum spp.	Australian Laurel	3, 4
Pittosporum tobira	Mockorange	3, 4
Plectranthus spp.	Swedish Ivy, Coleus	2
Populus spp.	Aspen Trees	2j
Potentilla spp.	Cinquefoil	2
Primula spp.	Primrose	2
Prunus pumila	Cherry	2, 5
Prunus spp.	Flowering Plum, Purple-leaf Plum	2, 5
Pseudotsuga spp.	Douglas Fir	1, 4
Pyrus calleryana	Bradford Pear	3
Quercus falcata	Red Oak	2, 3
Quercus palustris	Pin Oak	2, 3
Rhaphiolepsis indica	Indian Hawthorn	2, 3, 4
Rhododendron spp.	Azaleas, Rhododendron	2b, 3, 6, 7
Rhododendron spp.	Glacier Azalea	2b, 3, 6, 7
Rosa spp.	Rose	2a, 2e, 2m, 3c, 4b
Rosmarinus spp.	Rosemary (prostrate)	2
Rudbeckia hirta	Black-eyed Susan	2
Rumohra adiantiformis	Leatherleaf Fern	2b
Salvia spp.	Sage	3, 4
Schlumbergera	Holiday Cactus	2, 7
Sedum spp.	Orpine, Stonecrop	2
Sempervivum spp.	Live-forever, House-leek	2
Setaria spp.	Ribbon-grass	2,3
Spathiphyllum floribundium	Peace Lily	2c, 2k, 7
Spirea budalda	Spirea	3
Spirea japonica	Spirea	3
Syagrus romanzoffianum	Queen Palm	2
Tagetes spp.	Marigold	2a
Taxus baccata	Spreading Yew	7
Thujopsis spp.	Arborvitae	2
Thymus serphyllum	Creeping Thyme	2
Tsuga spp.	Hemlock	4
Verbena spp.	Verbena, Vervain	3
Viburnum spp.	Viburnum	2, 3, 4
Vinca spp.	Periwinkle	2, 6a
Viola spp.[1]	Viola, Pansy[1]	2
Weigelia florida	Pink Weigelia	2
Yucca spp.	Yucca	7
Zinnia spp.	Zinnia	2a, 3

[1]Do not exceed 2 ounces per 100 gallons on these species.

TABLE 3
Tolerant Plants Listed by Common Name

COMMON NAME	BOTANICAL NAME
Abelia	*Abelia* spp.
Andromeda, Japanese	*Pieris japonica*
Arborvitae	*Thujopsis* spp.
Aspen Trees	*Populus* spp.
Aster	*Aster* spp.
Aucuba, Japanese	*Aucuba japonica*
Azalea, Glacier	*Rhododendron* spp.

TABLE 3 (Cont.)
Tolerant Plants Listed by Common Name

COMMON NAME	BOTANICAL NAME
Azaleas	*Rhododendron* spp.
Balsam	*Impatiens* spp.
Barberry	*Berberis thunbergii*
Begonia	*Begonia* spp.
Birch, River	*Betula nigra*
Black-eyed Susan	*Rudbeckia hirta*
Blanket Flower	*Gaillardia* spp.
Bougainvillea	*Bougainvillea* spp.
Boxwood	*Buxus sempervirens*
Buddleia	*Buddleia davidii*
Bugle	*Ajuga reptans*
Bugleweed	*Ajuga reptans*
Burning Bush	*Euonymus alatus*
Butterfly Bush	*Buddleia davidii*
Cactus, Holiday	*Schlumbergera*
Caladium	*Caladium* spp.
Camellia	*Camellia japonica*
Carnation	*Dianthus caryophyllus*
Ceanothus	*Ceanothus* spp.
Cedar, Atlas	*Cedrus atlantica*
Cedar, Red	*Juniperus virginiana*
Cedar, White	*Cedrus* spp.
Cherry	*Prunus pumila*
Christmas Trees	See Fraser Fir, Scotch Pine and Douglas Fir
Chrysanthemum	*Chrysanthemum* spp.
Cinquefoil	*Potentilla* spp.
Clethra	*Clethra alnifolia*
Coleus	*Plectranthus* spp.
Cotoneaster, Creeping	*Cotoneaster adpressus*
Cotoneaster, Variegated Rockspray	*Cotoneaster horizontalis*
Crabapple (See "TABLE 4" for variety list)	*Malus* spp.
Cranesbill	*Geranium* spp.
Crepe Myrtle	*Lagerstroemia indica*
Cyclamen	*Cyclamen* spp.
Cyperus	*Cyperus* spp.
Cypress, Sawara	*Chamaecyparis pisifera*
Cypress, Leyland	*Chamaecyparis* spp.
Daisy, Gerber	*Gerbera jamesonii*
Daisy, Transvaal	*Gerbera jamesonii*
Dogwood	*Cornus* spp.
Dogwood, Flowering	*Cornus florida*
Dogwood, Pink	*Cornus* spp.
Dumbcane	*Dieffenbachia* spp.
Euonymus, Dwarf-winged	*Euonymus alata*
Euonymus, Evergreen	*Euonymus japonicus*
Evergreen, Chinese	*Aglaonema* spp.
Fatsia, Japanese	*Fatsia japonica*
Fern, Leatherleaf	*Rumohra adiantiformis*
Fig	*Ficus* spp.
Fir, Douglas	*Pseudotsuga* spp.
Fir, Fraser	*Abies fraseri*
Floss-flower	*Ageratum* spp.
Forsythia	*Forsythia viridissima*
Foxglove	*Digitalis* spp.
Gardenia	*Gardenia jasminoides*

TABLE 3 (Cont.)
Tolerant Plants Listed by Common Name

COMMON NAME	BOTANICAL NAME
Geranium	*Pelargonium* spp.
Grass	*Pennisetum alopecuroides*
Grass, Dwarf Pampas	*Phalaris* spp.
Grass, Pampas	*Cortaderia selloana*
Hawthorn, Indian	*Rhaphiolepsis indica*
Heather	*Erica dareyensis*
Hemlock	*Tsuga* spp.
Hibiscus	*Hibiscus moscheutos*
Hibiscus	*Hibiscus rosa-sinensis*
Holly	*Ilex* spp.
Hosta	*Hosta* spp.
House-leek	*Sempervivum* spp.
Hydrangea	*Hydrangea* spp.
Hydrangea, French	*Hydrangea macrophylla*
Impatiens[1]	*Impatiens* spp.[1]
Iris, African	*Dietes iridiodes*
Iris, Butterfly	*Dietes iridiodes*
Ivy, Algerian	*Hedera algeriensis*
Ivy, English	*Hedera helix*
Ivy, Swedish	*Plectranthus* spp.
Juniper	*Juniperus procumbens*
Juniper	*Juniperus scopulorum*
Juniper	*Juniperus* spp.
Larkspur	*Delphinium* spp.
Laurel	*Laurus nobilis*
Laurel, Australian	*Pittosporum* spp.
Laurel, Japanese	*Aucuba japonica*
Lilac, California	*Ceanothus* spp.
Lilac, Wild	*Ceanothus sanguineus*
Lily, Peace	*Spathiphyllum floribundium*
Lily-turf	*Liriope muscari*
Live-forever	*Sempervivum* spp.
Magnolia	*Magnolia* spp.
Magnolia, Saucer	*Magnolia soulangiana*
Magnolia, Southern	*Magnolia grandiflora*
Maple, Japanese	*Acer palmatum*
Maple, Sugar	*Acer saccharum*
Marigold	*Tagetes* spp.
Mockorange	*Pittosporum tobira*
Mugwort	*Artemisia* spp.
Nandina	*Nandina domestica*
Oak, Pin	*Quercus palustris*
Oak, Red	*Quercus falcata*
Oleander	*Nerium oleander*
Orpine	*Sedum* spp.
Palm, Date	*Phoenix dactylifera*
Palm, Parlor	*Chamaedora elegans*
Palm, Queen	*Syagrus romanzoffianum*
Palm, Roebelin's	*Phoenix roebelenii*
Palm, Sago	*Caryota urens*
Pansy[1]	*Viola* spp.[1]
Paper-plant	*Fatsia japonica*
Pear, Bradford	*Pyrus calleryana*
Periwinkle	*Vinca* spp.
Petunia	*Petunia* spp.
Philodendron	*Philodendron* spp.

[1]Do not exceed 2 ounces per 100 gallons on these species.

TABLE 3 (Cont.)
Tolerant Plants Listed by Common Name

COMMON NAME	BOTANICAL NAME
Phlox	*Phlox* spp.
Photinia, Red-tip	*Photinia glabra*
Pine	*Pinus* spp.
Pine, Black	*Pinus nigra*
Pine, Eastern White	*Pinus strobus*
Pine, Muhgo	*Pinus muhgo*
Pine, Scotch	*Pinus sylvestris*
Pink	*Dianthus* spp.
Plum, Flowering	*Prunus* spp.
Plum, Purple-leaf	*Prunus* spp.
Poinsettia	*Euphorbia* spp.
Pothos	*Epipremnum* spp.
Primrose	*Primula* spp.
Pussy's-foot	*Ageratum* spp.
Redbud, Western	*Cercis occidentalis*
Rhododendron	*Rhododendron* spp.
Ribbon-grass	*Setaria* spp.
Rose of Sharon	*Hibiscus syriacus*
Rose	*Rosa* spp.
Rose-bay	*Nerium oleander*
Rosemary (prostrate)	*Rosmarinus* spp.
Rubber Plant, Baby	*Peperomia* spp.
Rubber Tree	*Brassaia actinophylla*
Sage	*Salvia* spp.
Sagebrush	*Artemisia* spp.
Snapdragon	*Antirrhinum* spp.
Snowball	*Ceanothus* spp.
Spirea	*Spirea budalda*
Spirea	*Spirea japonica*
Spruce, Blue	*Picea pungens*
Spruce, Norway	*Picea abies*
Spruce, White	*Picea glauca*
Starwort	*Aster* spp.
Stonecrop	*Sedum* spp.
Sweet Alyssum	*Lobularia maritima*
Thyme, Creeping	*Thymus serphyllum*
Umbrella Tree	*Brassaia actinophylla*
Verbena	*Verbena* spp.
Vervain	*Verbena* spp.
Viburnum	*Viburnum* spp.
Vinca	*Catharanthus roseus*
Viola	*Viola* spp.
White Alder	*Clethra* spp.
Weigelia, Pink	*Weigelia florida*
Willow, Virginia	*Itea virginica*
Winterberry	*Ilex* spp.
Wormwood	*Artemisia* spp.
Yaupon	*Ilex* spp.
Yew, Spreading	*Taxus baccata*
Yucca	*Yucca* spp.
Zebra-plant	*Aphelandra* spp.
Zinnia	*Zinnia* spp.

[1]Do not exceed 2 ounces per 100 gallons on these species.

TABLE 4
Tolerant Varieties of Crabapple Species (Genus Malus)

Tolerant Varieties of Malus	
Arkansas Black	Mary Potter
atrosanguinea	Molten Lava
baccata	New Centennial
baccata var. jackii	Ormiston Roy
baccata var. mandshurica	Pink Satin
Callaway	Prairie Maid
Candymint Sargent	Prairifire
Christmas Holly	Profusion
coronaria	*pumila*
David	Ralph Shay
Dolgo	Red Jade
Donald Wyman	Red Baron
Dorothea	Sargent
Doubloons	*sargentii*
Eleyi	*seiboldii*
Enterprise	Selkirk
Evereste	Sentinel
Eyelynn	Silver Moon
floribunda	Silverdrift
Gloriosa	Sinai Fire
Golden Delicious	*spectablis*
Golden Raindrops	Sugar Tyme
Hopa	Van Eseltine
Indian Magic	White Angel
Island	Williams Pride
Katherine	Winter Gold
Lancelot	Yellow Delicious
Louisa	*zumi* Calocarpa

TABLE 5
Intolerant Plants
(Do not apply HERITAGE Fungicide to these species or varieties)

BOTANICAL NAME	COMMON NAME
Apple	*Malus domestica*
Crabapple - Flame variety	*Malus* spp.
Crabapple - Brandywine variety	*Malus* spp.
Crabapple - Novamac variety	*Malus* spp.
Cherry, Flowering - Yoshina variety	*Prunus yedoensis*
Privet	*Ligustrum* spp.

CONIFERS INCLUDING CHRISTMAS TREES

HERITAGE Fungicide may be used to control certain diseases on conifers in production (indoor and outdoor) and landscape situations.

DIRECTIONS FOR APPLICATION

Crop	Target Diseases	Use Rate Oz. Product/Acre (Lbs. ai/Acre)	Remarks
Conifers Including Christmas Trees	Diplodia Tip Blight (*Diplodia pinea*) Lophodermium Needlecast (*Lophodermium pinastri*) Swiss Needlecast (*Phaeocrytopus gaumannii*)	3.2 to 8.0 (0.10 to 0.25)	**Integrated Pest (Disease) Management (IPM):** HERITAGE Fungicide should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance and removal of plant debris in which inoculum may overwinter. **Resistance Management:** Do not apply more than 4 sequential sprays of HERITAGE Fungicide before alternating with a fungicide that has a different mode of action. Do not make more than 8 applications of HERITAGE Fungicide per acre per year. **Application Directions:** HERITAGE Fungicide applications should begin prior to or in the early stages of disease development and continue throughout the season at 7- to 21-day intervals following the resistance management guidelines. Applications may be made by ground or chemigation. An adjuvant may be added at recommended rates to improve coverage. Do not apply more than 4.0 pounds product per acre per season (2.0 pounds active ingredient per acre).

FRUIT AND NUT TREES IN NURSERIES, GARDENS, AND LANDSCAPES

HERITAGE Fungicide may be applied to fruit and nut trees in production nurseries and landscapes to control certain diseases. Follow the preharvest interval following applications prior to consuming fruits and nuts from those treated areas.

Crop	Target Diseases	Use Rate Oz. Product/Acre (Lbs. ai/Acre)	Remarks
Almonds	Alternaria Leaf and Fruit Spot (*Alternaria alternata*) Anthracnose (*Colletotrichum acutatum*) Brown Rot Blossom Blight (*Monilinia laxa, M. fructicola*) Leaf Blight (*Seimatosporium lichenicola*) Leaf Rust (*Tranzschelia discolor*) Scab (*Cladosporium carpophilum*) Shothole (*Wilsonomyces carpophilus*)	3.2 to 8.0 (0.10 to 0.25)	**Integrated Pest (Disease) Management (IPM):** HERITAGE Fungicide should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters, and proper timing and placement of irrigation. **Resistance Management:** For blossom blight, do not apply more than 2 sequential sprays of HERITAGE Fungicide before alternating with a fungicide that has a different mode of action. For all other almond diseases, do not apply more than 4 sequential sprays of HERITAGE Fungicide before alternation with a fungicide that has a different mode of action. Do not make more than 6 applications of HERITAGE Fungicide per acre per year. **Application Directions:** HERITAGE Fungicide applications should begin prior to or in the early stages of disease development and continue throughout the season following the resistance management guidelines. Applications may be made by ground or chemigation. An adjuvant may be added at recommended rates to improve coverage. For blossom blight, begin applications at early bloom and continue through petal fall. For anthracnose, scab, and shothole, begin applications prior to disease development and continue at 10- to 14-day intervals throughout the season. Do not apply more than 3.0 pounds product per acre per season (1.5 pounds active ingredient per acre). Do not apply within 28 days of harvest.
Pecans	Anthracnose (*Glomerella cingulata*) Scab (*Cladosporium caryigenum*)	3.2 to 6.4 (0.10 to 0.20)	**Integrated Pest (Disease) Management (IPM):** HERITAGE Fungicide should be integrated into an overall disease management strategy that includes selection of varieties with tolerance to disease and removal of plant debris in which inoculum overwinters. **Resistance Management:** Do not apply more than 4 sequential sprays of HERITAGE Fungicide before alternation with a fungicide that has a different mode of action. Do not make more than 6 applications of HERITAGE Fungicide per acre per year. **Application Directions:** HERITAGE Fungicide applications should begin prior to or in the early stages of disease development and continue throughout the season on 7- to 21-day intervals following the resistance management guidelines. Applications may be made by ground or chemigation. An adjuvant may be added at recommended rates to improve coverage. Do not apply more than 2.4 pounds product per acre per season (1.2 pounds active ingredient per acre). Do not apply within 45 days of harvest.

DIRECTIONS FOR APPLICATION

Crop	Target Diseases	Use Rate Oz. Product/Acre (Lbs. ai/Acre)	Remarks
Stone Fruit Apricot Cherry, sweet Cherry, tart Nectarine Peach Plum Plumcot Prune	Scab (*Cladosporium carpophilum*) Alternaria Spot and Fruit Rot (*Alternaria alternata*) Anthracnose (*Colletotrichum pruicola, C. gloeosporioides*) Leaf Rust (*Tranzschelia discolor*) Powdery Mildew (*Sphaerotheca parnnosa, Podosphaera clandestina*) Shothole (*Wilsonomyces carpophilus*)	3.2 to 8.0 (0.10 to 0.25)	**Integrated Pest (Disease) Management (IPM):** HERITAGE Fungicide should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters, and pruning to provide sunlight and aeration into the canopy. **Resistance Management:** For blossom blight, do not apply more than 2 sequential sprays of HERITAGE Fungicide before alternating with a fungicide that has a different mode of action. For all other diseases, do not apply more than 4 sequential sprays of HERITAGE Fungicide before alternation with a fungicide that has a different mode of action. Do not alternate or tank mix with fungicides to which resistance has developed in the pathogen population. Do not make more than 6 applications of HERITAGE Fungicide per acre per year for all diseases. Do not make more than 4 applications of HERITAGE Fungicide per acre per year at 8 ounces product per acre (0.25 pound active ingredient per acre). **Application Directions:** For brown rot blossom blight, begin applications at early bloom and continue through petal fall. Do not apply more than 2 applications of HERITAGE Fungicide before alternating with fungicides that have a different mode of action. For brown rot on fruit, HERITAGE Fungicide may be applied to fruit up to the day of harvest. Do not apply more than 2 applications before alternating with fungicides that have a different mode of action. For scab, begin applications at petal fall and continue at 7- to 14-day intervals. For all other diseases, begin application at the onset of disease as a protectant fungicide and continue on a 7- to 14-day schedule. For peaches only, 4.7 to 8.0 ounces of HERITAGE Fungicide may be used for scab control. Applications may be made by ground or chemigation. Do not apply more than 2.4 pounds product per acre per season (1.2 pounds active ingredient per acre). May be applied the day of harvest.
	Brown Rot Blossom Blight and Fruit Rot (*Monilinia fructicola, M. laxa*)	6.4 to 8.0 (0.20 to 0.25)	
Tree Nuts Almonds (see specific use instructions) Beechnut Brazil Nut Butternut Cashew Chestnut Chinquapin Filbert Hickory Macadamia Pecan Walnut	Alternaria Leaf and Fruit Spot (*Alternaria alternata*) Anthracnose (*Colletotrichum acutatum, Glomerella cingulata*) Late Blight (*Alternaria alternata*) Scab (*Cladosporium carpophilum*) Septoria Leaf Spot (*Septoria pistaciarum*) Shothole (*Wilsonomyces carpophilus*)	3.2 to 6.4 (0.10 to 0.20)	**Integrated Pest (Disease) Management (IPM):** HERITAGE Fungicide should be integrated into an overall disease management strategy that includes selection of varieties with disease tolerance, removal of plant debris in which inoculum overwinters, and proper timing and placement of irrigation. **Resistance Management:** For blossom blight, do not apply more than 2 sequential sprays of HERITAGE Fungicide before alternating with a fungicide that has a different mode of action. For all other diseases, do not apply more than 4 sequential sprays of HERITAGE Fungicide before alternation with a fungicide that has a different mode of action. Do not make more than 6 applications of HERITAGE Fungicide per acre per year. **Application Directions:** HERITAGE Fungicide applications should begin prior to or in the early stages of disease development and continue throughout the season following the resistance management guidelines. Applications may be made by ground or chemigation. An adjuvant may be added at recommended rates to improve coverage. For blossom blight, begin applications at early bloom and continue through petal fall. For all other diseases, begin applications prior to or in the early stages of disease development and continue at 7- to 21-day intervals throughout the season. Do not apply more than 2.4 pounds product per acre per season (1.2 pounds active ingredient per acre). Do not apply within 45 days of harvest.
	Blossom Blight (*Monilinia laxa, M. fructicola*)	6.4 (0.20)	

HERITAGE Fungicide Rate Conversion Chart

Ounces Product/Acre	Lb. ai/Acre	Treated Acres/ Lbs. Product
1.0	0.03	16.0
1.5	0.05	10.7
2.0	0.06	8.0
2.5	0.08	6.4
3.0	0.09	5.3
3.5	0.11	4.6
4.0	0.13	4.0
4.5	0.14	3.7
5.0	0.16	3.2
5.5	0.17	2.9
6.0	0.19	2.7
6.5	0.20	2.5
7.0	0.22	2.3
7.5	0.23	2.1
8.0	0.25	2.0

This is a specimen label and may be inaccurate or out of date. It is intended as a guide in providing general information regarding use of this product. Always read and follow the EPA approved label on the product container.
For current information, contact ZENECA Professional Products at 1-888-617-7690.

090004

Manufactured in the U.K. for distribution by

ZENECA Professional Products
1800 Concord Pike
Wilmington, DE 19850-5458
www.zenecaprofprod.com

A business unit of ZENECA Ag Products Inc.

ZPP-HER-075 10/00

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ZENECA Ag Products

MATERIAL SAFETY DATA SHEET

HERITAGE (TM) Fungicide

MSDS No. US006060_01

Version: 2 Date issued: 05/21/97 Date printed: 05/29/97

Section 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company	: Zeneca Agricultural Products 1800 Concord Pike Wilmington DE 19850
Phone number	: (302) 886-1000
Emergency phone	: Medical: 800-327-8633 (1-800 FASTMED) Chemtrec: 800-424-9300 Technical:302-886-3000
Name used on label	: HERITAGE (TM) Fungicide
Product use	: Fungicide

Section 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Identity	CAS-no.	Typical %	Other information
AZOXYSTROBIN TECHNICAL	131860-33-8	50 %	
KAOLIN	1332-58-7	40.9 %	
Other Ingredients:		9.1 %	

Section 3 – HAZARDS IDENTIFICATION

Physical hazards:

None

Health hazards:

This material may cause mild irritation following eye contact.

Section 4 – FIRST AID MEASURES

IF IN EYES:

Immediately flush with plenty of water for at least 15 minutes. If redness, itching or a burning sensation develops, have eyes examined and treated by medical personnel.

IF ON SKIN:

Wash material off the skin with plenty of soap and water. Irritation will probably not develop following contact with human skin. If redness, itching or a burning sensation develops, get medical attention.

IF SWALLOWED:

Provided the patient is conscious, give 1 or 2 glasses of water to drink. Immediately contact Zeneca's Emergency Information Network at 1-800-F-A-S-T-M-E-D (327-8633). Vomiting should only be induced under the direction of a physician or a poison control center. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer water. Immediately transport victim to an emergency facility.

IF INHALED:

Remove victim to fresh air. Apply artificial respiration if breathing has ceased or shows signs of failing. Obtain medical attention as a precaution.

Section 5 – FIRE FIGHTING MEASURES

Flash point :

Not applicable.

Autoignition temperature :

No data

Flammable limits (STP): :

Not applicable.

EXTINGUISHING MEDIA:

For small fires, use foam, carbon dioxide or dry powder extinguishant. For large fires, use foam or water-fog; avoid use of water jet. Contain run-off water with, for example, temporary earth barriers.

PROTECTIVE EQUIPMENT:

A self contained breathing apparatus and suitable protective clothing must be worn in fire conditions.

Section 6 – ACCIDENTAL RELEASE MEASURES

ENVIRONMENTAL PRECAUTIONS:

Washings must be prevented from entering surface water drains.

METHODS FOR CLEANING UP:

Cover spillage with moist sand, soil or sawdust. Transfer to a container for disposal. Wash the spillage area with water, and flush to a sewer serviced by a wastewater treatment facility, if that facility is permitted to treat such wastewaters. Washings must be prevented from entering surface water drains.

Section 7 – HANDLING AND STORAGE

SAFE HANDLING ADVICE:

Avoid contact with skin and eyes. Do not breathe dust. When using do not eat, drink or smoke. Wash face and hands before eating, drinking or smoking.

REQUIREMENTS FOR STORAGE ROOMS:

Keep away from food, drink and animal feeding stuffs. Keep only in the original container in a cool, well ventilated place.

ADDITIONAL INFORMATION:

Read the label before use.

Section 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits

ZENECA Standard AZOXYSTROBIN TECHNICAL

8 hr TWA	2 mg/m³

OES/HSE Propane-1,2-diol (Propylene glycol)

Total(vapour & particulates)

8 hr TWA	150 ppm
	470 mg/m³

Particulates

8 hr TWA	10 mg/m³

Occupational exposure standards

No ACGIH TLV or OSHA PEL assigned. Minimize exposure in accordance with good hygiene practice.

Not applicable to field use.

ENGINEERING CONTROLS:

This product is intended for use outdoors where engineering controls are not necessary.

BODY PROTECTION:

This product is FIFRA regulated. Refer to product labeling for end-user Personal Protection requirements.

Applicators and other handlers must wear: Long-sleeved shirt and long pants, waterproof gloves and shoes plus socks.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is: Coveralls, waterproof gloves and shoes plus socks.

HYGENIC MEASURES:

Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves

before removing. As soon as possible, wash thoroughly and change into clean clothing.

General information

An adequate supply of clean potable water should be available to allow thorough flushing of skin and eyes in event of contact with this compound.

Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	Granule
Color	:	Beige to brown
Odor	:	No characteristic odor
Melting point	:	237.2 .. 240.8 °F This information is on the technical material.
Vapor Pressure	:	1.25 mm Hg at 25 °C This information is on the technical material.
Vapour density	:	No data
Specific gravity	:	No data
Bulk density	:	31.2 .. 43.7 lb/cu ft
Solubility	:	dispersible in/with water
pH-value (quant.)	:	5 .. 8

Section 10 – STABILITY AND REACTIVITY

HAZARDOUS REACTIONS (CONDITIONS TO AVOID)

Stable under normal conditions.

Hazardous polymerization:

Will not occur

HAZARDOUS REACTIONS (MATERIALS TO AVOID)

oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Combustion products - Carbon dioxide, carbon monoxide.

Combustion or thermal decomposition will evolve toxic and irritant vapors.

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Section 11 – TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (LETHAL DOSES)

LD50 Oral rat
Dose : > 5000 mg/kg

LD50 Dermal rat
Dose : > 2000 mg/kg

LC50 Inhalation rat
Dose : > 4.67 mg/l
Additional inform. : Unlikely to cause harmful effects under normal conditions of handling and use.

ACUTE TOXICITY (IRRITATION, SENSITIZATION ETC.)

Eye Irritation
Results : Moderate irritant.

Skin Irritation
Results : SLIGHT IRRITANT

Skin Sensitization - Buehler guinea pig
Results : It is not a skin sensitizer.

Inhalation
Results : May be irritant to the respiratory tract.

DELAYED OR CHRONIC TOXICOLOGICAL EFFECTS

Long Term Exposure
Symptoms : No long term risks to man are associated with the normal handling and use of this material.

GENERAL INFORMATION ABOUT ACUTE OR OTHER TOXICITIES
General information
Subchronic and chronic studies at high doses showed bile duct and liver effects in lab animals.
Studies in animals have shown that repeated doses produce no carcinogenic, reproductive or developmental effects.
Material was not mutagenic in lab studies.
Inform. applies to : AZOXYSTROBIN TECHNICAL

Section 12 – ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to fish
LC50 bluegill sunfish
Dose : 1.1 ppm
Assessment : Toxic to fish.
Inform. applies to : AZOXYSTROBIN TECHNICAL
Toxicity to daphnia
EC50 daphnia magna
Dose : 259 ppb
Inform. applies to : AZOXYSTROBIN TECHNICAL

Section 13 – DISPOSAL CONSIDERATIONS

Discarded product is not a hazardous waste under RCRA, 40 CFR 261.
Plastic Containers: Triple rinse (or equivalent); then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or alternatives allowed by State and local authorities.
Paper/Box Container: Do not reuse container. Completely empty container into application equipment. Then dispose of empty container in sanitary landfill, or alternatives allowed by State and local authorities.

Section 14 – TRANSPORT INFORMATION

ROAD TRANSPORT DOT
Not regulated by DOT.

Section 15 – REGULATORY INFORMATION

Other regulations, restrictions and prohibitions

TSCA (Toxic Substances Control Act) Regulations, 40CFR 710:
This product is a pesticide and is exempt from TSCA regulation.

CERCLA and SARA Regulations (40 CFR 355, 370, and 372):
This product does not contain any chemicals subject to the reporting requirements of SARA Section 313.

Other Determined Regulations:

None

EPA

EPA Registration no.: 10182-408

Section 16 – OTHER INFORMATION

The information on this sheet is not a specification, it does not guarantee specific properties. The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage and use of the product. It is not applicable to unusual or non-standard uses of the product nor where instructions or recommendations are not followed.

ZENECA Ag Products believes that the information and recommendations contained herein (including data and statements) are accurate as of the date thereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and of the information referred to herein are beyond the control of ZENECA Ag Products, ZENECA Ag Products expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

A vertical bar (|) in the left margin indicates an amendment from the previous version.

Aventis

ProStar® 70 WP

FUNGICIDE Specimen Label

IN WATER SOLUBLE PACKAGING
For Use On Turf

ACTIVE INGREDIENT:

FLUTOLANIL: N-[3-(1-methylethoxy) phenyl]-2-(trifluoromethyl) benzamide	70.0%
INERT INGREDIENTS:	30.0%
TOTAL	100.0%

Manufactured under license from Nihon Nohyaku Co., Ltd.,Tokyo, Japan.

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF IN EYES: Flush eyes with plenty of water. Call a physician if irritation persists.

EPA Reg. No. 432-1223 EPA Est. No.

IN CASE OF MEDICAL, ENVIRONMENTAL, OR TRANSPORTATION EMERGENCIES OR INQUIRIES, CALL 1-800-334-7577 (24 HOURS/DAY).

For Product Information, Call Toll-Free: 1-800-331-2867

NET CONTENTS:

chipco®
Professional Products

AVENTIS ENVIRONMENTAL SCIENCE USA LP
95 Chestnut Ridge Road • Montvale, NJ 07645

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Causes moderate eye irritation. Harmful if absorbed through the skin. AVOID contact with eyes, skin or clothing.

PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

USER SAFETY RECOMMENDATIONS

Do not eat, drink, smoke, or chew gum or tobacco while handling this product and until hands and face are thoroughly washed with soap and water. Do not use the toilet before thoroughly washing hands.

If this product penetrated through your clothing or personal protective equipment, stop handling this product immediately, remove the clothing and equipment, wash your body thoroughly, and put on clean clothing and equipment before resuming the handling activity.

After handling this product, remove personal protective equipment immediately. Wash the outside of gloves before taking them off. Shower or wash thoroughly and change into clean clothing as soon as possible.

Discard clothing and personal protective equipment that cannot be reused, including clothing and other absorbent materials that have been drenched or thoroughly contaminated with this product's concentrate. Otherwise, wash clothing and personal protective equipment (including both the inside and outside of gloves) before each day of reuse according to manufacturer's directions or, if no such directions, in detergent and hot water. Keep and wash them separately from other laundry.

ENGINEERING CONTROLS STATEMENT

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40CFR Part 170.240(d)(4-6)], the handler requirements may be reduced or modified as specified in the WPS.

ENVIRONMENTAL HAZARDS

This product is toxic to aquatic invertebrates. For terrestrial uses, do not apply to water, areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

This labeling MUST be in possession of the user at the time of pesticide application.

STORAGE AND DISPOSAL

STORAGE: Store in a cool, dry place.

PESTICIDE DISPOSAL: Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL

Completely empty box into application equipment, then dispose of box in a sanitary landfill, or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

DO NOT REUSE THIS CONTAINER.
DESTROY WHEN EMPTY.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency in your State responsible for pesticide regulation.

The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Gloves
- Shoes plus socks

NONAGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are not within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

GENERAL INFORMATION FOR USE ON TURF

PROSTAR® 70WP is a systemic fungicide recommended for control of diseases of turf caused by Basidiomycetes fungi. This product should be used particularly for control of *Rhizoctonia* Brown Patch, and has excellent safety on Kentucky bluegrass, creeping bentgrass, perennial ryegrass, red fescue, tall fescue; bermudagrass, St. Augustinegrass, and zoysiagrass. When used on turf, do not apply this product through any type of irrigation system.

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APPLICATION AND DOSAGE

Apply the recommended amount of PROSTAR 70WP Fungicide in 2 to 5 gallons of water per 1,000 square feet as a broadcast application, unless otherwise specified. (See *Fairy Ring* directions.) Add appropriate amount of water to the spray tank.

Drop the water soluble bag into the tank, and allow the bag to dissolve for 5 minutes prior to agitation. The bag may float, but do not disturb it. Agitation may be started once the bag begins to disintegrate in the spray tank solution.

If PROSTAR 70WP is to be tank mixed with an appropriately labeled fungicide or other product to control another pest, add PROSTAR 70WP first.

After the PROSTAR 70WP bag is completely dissolved, add the mixture partner.

Prior to spraying with a tank mixture not specified on this label, it is advisable to determine if the products are physically compatible.

For best results, spray the treated area uniformly, using equipment such as flat fan nozzles. Use 50-mesh or larger screens. Avoid mowing for 24 hours after application and do not irrigate until spray has dried on grass, unless otherwise noted. When nonlabeled diseases are also present, PROSTAR 70WP may be tank mixed with appropriate labeled fungicides if the products are physically compatible.

DOSAGE TABLE*

Disease	Rate of ProStar 70WP per 1000 sq. ft.	Coverage (ft^2) per 1 lb. of ProStar 70WP	Timing (days)
Brown Patch			
(Preventative)	1.5–2.2 oz	11,000–7,500	14–21
(Curative)	3.0 oz.	5,500	14
Fairy Ring			
(Preventative)	2.2 oz.	7,500	21–28
(Curative)	4.5 oz.	3,500	30
Red Thread/ Pink Patch Yellow Patch/ Southern Blight	1.5 oz.	11,000	21–28
Gray Snow Mold	3.0 oz.	5,500	Prior to
	3.75 oz.	4,500	permanent
	4.5 oz.	3,500	snow cover
Large Brown Patch	2.2 oz.	7,500	30

*See specific directions for each disease below.

BROWN PATCH (*Rhizoctonia solani*):
Preventative: Apply 1.5 to 2.2 oz. of PROSTAR 70WP Fungicide per 1,000 square feet in 2 to 5 gallons of water prior to initial signs of disease development. Repeat after a 14 to 21 day interval if conditions favor disease development.

Curative: For turf with active brown patch, apply 3.0 oz. of PROSTAR 70WP Fungicide per 1000 square feet in 2 to 5 gallons of water to turf with active brown patch. Make a second application 14 to 21 days later, if conditions favor disease development.

Tank Mixes:

- PROSTAR 70WP Fungicide does not control dollar spot. If *Sclerotinia* dollar spot and brown patch occur simultaneously, tank mix PROSTAR 70WP at 1.5 oz. per 1000 square feet in 2 to 5 gallons of water with other registered fungicides, such as PCNB, Bayleton®, Banner® Maxx, Eagle®, or Sentinel®, to control both diseases. Repeat application 21 to 28 days later if needed.
- PROSTAR 70WP Fungicide does not control gray leaf spot, *Curvularia* leaf spot, or algae. In areas where these problems occur simultaneously with brown patch, tank mix appropriate fungicides at recommended rates with PROSTAR 70WP.
- Follow the label directions for the most restrictive of label limitations and precautions. This product cannot be mixed with any product containing a label prohibition against such mixing.

PRECAUTION: Do not use water-soluble PVA packets in a tank mix with products that contain boron or release free chlorine. The resultant reaction of PVA and boron or free chlorine is a plastic which is not soluble in water or solvents such as oils, kerosene, gasoline, or alcohol.

FAIRY RING
(including *Marasmius* spp., *Lepiota* spp., *Agaricus* spp.):
Preventative: PROSTAR 70WP Fungicide, applied in 10 to 50 gallons of water at 2.2 oz. per 1000 square feet, may suppress the development of fairy ring caused by various basidiomycete pathogens. A second application may be made at a 21- to 28-day interval using the same dosage rate.

Curative: PROSTAR 70WP Fungicide, applied in 10 to 50 gallons of water at 4.5 oz. per 1000 square feet, may suppress the development of fairy ring caused by various basidiomycete pathogens. Application should be made to the affected area at the first sign of ring development (greening, death of turf, mushrooms). Symptom suppression may be temporary and symptoms may reoccur. In these cases, a second application at 4.5 oz. per 1000 square feet is suggested, not less than 30 days after the first application. Aerification prior to subsurface applications has been beneficial in some cases. Use of a nonionic surfactant in combination with PROSTAR 70WP is recommended. Treated areas should be irrigated prior to and after application with sufficient water to maintain growth of turf. Disease control is improved if turf is maintained at optimum fertility levels after symptom development. Turf that has been damaged extensively by fairy ring development may have to be reseeded. Do not treat more than 10,000 square feet per acre of turf area.

RED THREAD (*Laetisaria fuciformis*),
PINK PATCH (*Limonomyces roseipellis*),
YELLOW PATCH (*Rhizoctonia cerealis*), and
SOUTHERN BLIGHT (*Sclerotium rolfsii*):
Apply 1.5 oz. PROSTAR 70WP Fungicide per 1,000 square feet in 2 to 5 gallons of water prior to or after initial signs of disease development and repeat after 21 to 28 days if needed.

GRAY SNOW MOLD (*Typhula* spp.):
Apply 3.0 to 4.5 oz. of PROSTAR 70WP Fungicide per 1,000 square feet of green or tee area in 2 to 5 gallons of water in the fall prior to permanent snow cover. Use of a wetting agent has proven beneficial. If Pink Snow Mold (*Fusarium nivale*) is also suspected, PROSTAR 70WP may be tank mixed with products labeled for control of that disease, such as PCNB, Bayleton, or Banner Maxx. Prior to application, both products should be mixed in small volumes to ascertain physical compatibility. Do not treat more than 10,000 square feet per acre of turf area.

LARGE BROWN PATCH (*Rhizoctonia solani*) of
ZOYSIAGRASS (formerly Zoysia Patch):
Apply PROSTAR 70WP Fungicide in the fall or spring for control of large brown patch on zoysiagrass. Disease control is more effective if made prior to or after initial symptom development. Apply 2.2 oz. of PROSTAR 70WP per 1000 square feet in 2 to 5 gallons of water and repeat 30 days later if symptoms persist. A nonionic surfactant is recommended for best results. Fall

applications may suppress disease development in the following spring.

USE PRECAUTIONS

For use rates over 2.2 oz. per 1,000 square ft., do not apply PROSTAR 70WP Fungicide within 100 ft. of any estuary or marine habitat or within 100 feet of any ditches, drainage tiles, or other waterways that drain directly into (within ½ mile of) estuaries or marine habitats.

Apply no more than a combined total of 9.0 oz. PROSTAR 70WP per 1000 square feet as a broadcast application during a single growing season.

IMPORTANT: READ BEFORE USE

Read the entire Directions for Use, Conditions, Disclaimer of Warranties amd Limitations of Liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following conditions, warranty, disclaimer of warranties and limitations of liability.

CONDITIONS: The directions for use of this product are believed to be adequate and should be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Ineffectiveness or other unintended consequences may rersult because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Aventis Environmental Science USA LP. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: AVENTIS ENVIRONMENTAL SCIENCE USA LP MAKES NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, THAT EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of Aventis Environmental Science USA LP is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. Aventis Environmental Science disclaims any liability whatsoever for incidental or consequential damages, resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT AVENTIS ENVIRONMENTAL SCIENCE'S ELECTION, THE REPLACEMENT OF PRODUCT.

TRADEMARK INFORMATION

ProStar is a registered trademark of the Aventis Group..
Bayleton is a registered trademark of Bayer Corporation
Banner Maxx and Sentinel are registered trademarks of Novartis
Eagle is a registered trademark of Rohm & Haas Company

Replaces: PS70WP-SL-5M-(980903)-Rev. 4/00

Revisions Include:

- New EPA Registration number

DISCARD PREVIOUS LABELS!

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Material Safety Data Sheet

Print date – August 7th, 2000 3:07 p.m. (E) PS PSA PSFHV – 1.1 (1/10)

1. CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Product Name: PROSTAR 70WP
Product Code: 15526
MSDS Number : C2984
Chemical Name: N-{3-(1-methylethoxy)phenyl}-2-(trifluoromethyl) benzamide (active ingredient)
Chemical Formula: Mixture (active ingredient: C17H16F3NO2)
EPA Registry Number: 432-1223

AVENTIS ENVIRONMENTAL SCIENCE USA LP
95 Chestnut Ridge Road
Montvale, New Jersey 07645
UNITED STATES

PRODUCT USE:
END-USE PRODUCT DESCRIPTION: ProStar 70WP in WSF is a fungicide for use on turf.

2. COMPOSITION / INFORMATION on INGREDIENTS

Component	Cas number	%
Flutolanil	66332-96-5	70%
Inert ingredients, including:		30%
Hydrated aluminum silicate	1332-58-7	
Amorphous silica	7631-86-9	
Crystalline Quartz	14808-60-7	

SYNONYMS: NA 304/01 (PROSTAR 70WP)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Causes moderate eye irritation.
- Toxic to aquatic invertebrate (e.g., shrimp).
- The product is slight-tan powder with no distinct odor.

3. HAZARDS IDENTIFICATION (Continued)

POTENTIAL HEALTH EFFECTS

ROUTES OF EXPOSURE:

Dust inhalation, skin contact.

SIGNS AND SYMPTOMS OF EXPOSURE:

Effects of overexposure are probably non-specific and slight.

IMMEDIATE EFFECTS

SKIN:

Not known to be a skin irritant. Harmful if absorbed through the skin. Does not cause skin sensitization in animal studies.

EYES:

Causes moderate eye irritation, especially under conditions of prolonged eye contact.

INHALATION:

Excessive dust inhalation may irritate upper respiratory track. No other specific health effects are known.

INGESTION:

No specific health effects are known for ingestion of a small amount incidental to routine handling and use.

DELAYED/LONG TERM EFFECTS

CARCINOGENIC:

Flutolanil technical is not listed as carcinogenic by NTP, IARC, or OSHA.

One inert ingredient contains a small amount of crystalline silica which is a naturally occuring component of sand, clay and inorgainc soil. Chronic exposure to respirable crystalline silica is known to cause silicosis (formation of fibrous tissue in the lung) if inhaled. IARC has listed the crystalline silica as a probable human carcinogen (class 2A), based on human inhalation exposures under excessive and chronic conditions (e.g., long-term clay or mineral mining working conditions). However, under the normal handling and use of this product in accordance with the product label,

CARCINOGENIC: (Continued)

such excessive and chronic inhalation exposure by the users is unlikely.

NATIONAL TOXICOLOGY PROGRAM CANCER LISTING :
Crystalline Quartz 4.999% (14808-60-7)

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
Excessive dust inhalation may aggravate pre-existing conditions of the upper respiratory system.

4. FIRST AID MEASURES

After contact with skin:
Wash with plenty of soap and water. Get medical attention.

After contact with eyes:
Flush eyes with plenty of water. Call a physician if irritation persists.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES
Flash point: Does not flash

Advice on protection against fire and explosion:
FIRE AND EXPLOSION HAZARDS: Dispersion of fine dust in the air can form an explosive mixture. Will burn to give off toxic oxides of carbon and nitrogen.

FIRE FIGHTING INSTRUCTIONS: Wear positive pressure self-contained breathing apparatus. Spray containers with water to keep cool.

Suitable extinguishing media:
Water, foam, carbon dioxide, or dry powder.

6. ACCIDENTAL RELEASE MEASURES

GENERAL AND DISPOSAL: Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the effects of the spill. Ensure that the disposal is in compliance with federal or local disposal regulations (see Section 13). Notify the appropriate authorities immediately (see Section 15 for any applicable Reportable Quantity (RQ)). Report to authorities if water enters watercourse or sewer.

LAND SPILL OR LEAK: Sweep up carefully while avoiding the formation of a dust cloud. Place in suitable container and seal for disposal. Area can be washed with water to remove last traces of material, by keep out of watercourses or sewers. Inform authorities immediately if contamination occurs.

7. HANDLING and STORAGE

Handling:

- Avoid contact with skin, eyes, or clothing.

Storage:

- Store in a cool, dry place.
- Do not store near or contaminate food or feed products.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Additional advice on system design:

ENGINEERING CONTROLS: Control airborne concentrations below the exposure guideline (see below for any applicable OSHA/ACGIH Exposure Limits). Local exhaust ventilation may be necessary under certain confined conditions.

Personal protective equipment

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)

Body protection:
PVC protective gloves recommended

Eye protection:
Safety glasses; chemical workers goggles.

Respiratory protection:
Ensure good ventilation. If not adequate, use a suitable dusk mask or a dust respirator.

EXPOSURE GUIDELINES:

Hydrated aluminum silicate (1332-58-7)

OSHA PEL	ACGIH TLV	HCC WEL
None	2 mg/m³ (TWA)	None

Crystalline Quartz (14808-60-7)

OSHA PEL	ACGIH TLV	HCC WEL
None	.1 mg/m³ (TWA)	None

Note: Refer to the product label for applicable details concerning the "User Safety Recommendations" and the use of Personal Protective Equipment under the EPA Worker Protection Standards (40 CFR Part 170). However, please note that use of ProStar 70WP on golfcourses is not within the scope of WPS uses.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE: Light tan free-flowing powder (packaged in water soluble bags).

ODOR: Essentially odorless

BASIC PHYSICAL PROPERTIES
PHYSICAL STATE: Solid
BOILING POINT: Not applicable
MELTING POINT: 219-221°F 104-105°C*
VAPOR PRESSURE: 1.33 x 10(-5) mm Hg at 20°C*
VAPOR DENSITY (AIR=1): not volatile
PACKING DENSITY: 24 lb/cubic ft.
SOLUBILITY (H2O): 9.6 mg/l (9.6 ppm) at 68°F*
PARTITION COEFFICIENT: Not available (n-Octonol/Water)

*No data for the formulated product; these values are for the a.i.

10. STABILITY and REACTIVITY

CHEMICAL STABILITY:
Stable (at ambient conditions)

CONDITIONS TO AVOID:
Extreme heat or moisture

HAZARDOUS POLYMERIZATION:
None

11. TOXICOLOGICAL INFORMATION

ACUTE STUDIES
THE FOLLOWING DATA WERE DEVELOPED WITH: ProStar 70WP

ORAL LD50 (rat): > 5,000 mg/kg (practically non-toxic)
DERMAL LD50 (rat): > 5,000 mg/kg (practically non-toxic)
INHALATION LC50 (rat-4hrs): >7.37 mg (practically non-toxic)
EYE IRRITATION (rabbit): Slightly irritating
(Irritation Index: 1.2/110)
SKIN IRRITATION (rabbit): Non-irritating
(Primary Irritation Index = 0.0/8.0)

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11. TOXICOLOGICAL INFORMATION (Continued)

SKIN SENSITIZATION (guinea pig): Non-sensitizing

THE FOLLOWING DATA WERE DEVELOPED WITH: Flutolanil Technical, the active ingredient:

SUBCHRONIC (TARGET ORGAN EFFECTS)
Results from 90-day animal studies suggest no target organ effects under the conditions of normal handling and use.

CHRONIC (CANCER INFORMATION)
In two-year feeding studies with flutolanil in rats, no organotoxic effects were observed at dose levels up to 200 ppm. At very high experimental dose levels (2,000-10,000 ppm), slight anemia, minor liver damage and some nephrosis were observed. However, flutolanil had no significant effect on mortality and was not carcinogenic at any of the doses tested. Similar results were observed in dogs administered up to 1250 mg/kg/day.

CARCINOGENICITY: NTP: No IARC: No OSHA: No

TERATOGENICITY (BIRTH DEFECTS)
Flutolanil Technical demonstrated no teratogenic effects in rabbits at oral dose levels up to 1000 mg/kg/day.

REPRODUCTIVE EFFECTS
Flutolanil technical showed no adverse effects on reproduction in a three-generation rat reproduction study at dietary doses up to 10,000 ppm.

NEUROTOXICITY
Data not available.

MUTAGENICITY (GENETIC EFFECTS)
Flutolanil technical was not mutagenic or genotoxic when tested in the Ames gene mutation assay, the mouse micronucleus test, or the chromosomal aberration assay.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL PRECAUTIONS: This product is toxic to aquatic invertebrates. Do not apply directly to water, areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Do not apply this product through any type of irrigation system.

User of this product MUST refer to the product labeling at the time of pesticide applications.

13. DISPOSAL CONSIDERATIONS

GENERAL DISPOSAL GUIDANCE: Any disposal practice must be in compliance with all Federal, State/Provincial, and local laws and regulations. State (Provincial) and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Chemical additions, processing, storage, or otherwise altering this material may make the waste disposal information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Waste characterization and disposal compliance are the responsibility solely of the party generating the waste or deciding to discard or dispose of the material. Refer to appropriate Federal (RCRA: 40 CFR.261), State/Provincial, or local requirements for proper classification information. For regulatory information on the ingredient components, see Section 15.

Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved disposal facilities.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

13. DISPOSAL CONSIDERATIONS (Continued)

RCRA CLASSIFICATION:

RCRA Hazardous Waste ingredients: None

14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: None

DOT SHIPPING LABEL: None

15. REGULATORY INFORMATION

STATE REGULATIONS

The following chemicals associated with the product are subject to the right-to-know regulations in these states:
Hydrated aluminum silicate (1332-58-7): IL, PA
Amorphous silica (7631-86-9): FL, MA, NJ, PA
Crystalline Quartz (14808-60-7): FL, IL, MA, NJ, PA

U.S. FEDERAL REGULATIONS

EPA REGISTRATION NUMBER: 264-665
ARA TITLE III NOTIFICATION AND INFORMATION:
Section 302 (EHS) ingredients: None
Section 304 (CERCLA & EHS) Ingredients (RQ): None

SARA TITLE III - HAZARD CLASSES
Acute Health Hazard - Yes
Chronic Health Hazard - No
Fire Hazard - No
Sudden Release of Pressure Hazard - No
Reactivity Hazard - No

TSCA inventory status
These components are not listed:
Inert ingredients, including: 30%
Flutolanil 70% (66332-96-5)

SARA 313 : No components listed

15. REGULATORY INFORMATION (Continued)

INTERNATIONAL REGULATIONS

Die folgende(n) Chemikalie(n), die mit dem Produkt verbunden sind, sind auch auf folgenden internationalen Listen aufgef¿hrt:
Hydrated aluminum silicate (1332-58-7): CANADIAN NDSL
Amorphous silica (7631-86-9): CANADIAN DSL, EINECS
Crystalline Quartz (14808-60-7): CANADIAN DSL, EINECS

WHMIS INGREDIENT DISCLOSURE LISTED COMPONENTS:

CPC NUMBER: None

The MSDS contains all CPR required hazard-related information.

16. OTHER INFORMATION

HAZARD RATINGS

	HEALTH	FLAMM	REACT	OTHER
NFPA	1	1	0	None
HMIS	1	1	0	E

REVISED SECTIONS:

MSDS REVISION INDICATOR: New Format, Company Name and EPA Number.

PREPARED BY: Dept. of Regulatory Affairs
PHONE: 800-438-5837
SUPERCEDES MSDS DATED: 02/13/97

DISCLAIMER:

THIS INFORMATION IS PROVIDED IN GOOD FAITH BUT WITHOUT EXPRESS OR IMPLIED WARRANTY. BUYER ASSUMES ALL RESPONSIBILITY FOR SAFETY AND USE NOT IN ACCORDANCE WITH LABEL INSTRUCTIONS.

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* Aventis *

SAFETY DATA SHEET
COMPASS

2537 1.00 GB Current 30.11.2000

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

Trade Name	COMPASS
Product (Specification) Code	2537
Aventis CropScience Product Code	None known.
Usage	Suspension Concentrate (water based) Fungicide
Appearance	Flowable off white liquid suspension
Manufacturer/Supplier	Aventis CropScience Ireland Limited
Address	Bracetown Business Park Clonee Co Meath
Phone Number	01 8014030
Fax Number	01 8014038
Emergency Phone Number	1800 409399 (24 hr UK) +44 1603 242424 (24 hr Overseas)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components in Product for EC

Component Name	CAS No	Conc. %w/w	R Phrases	Classification
1. Thiophanate-methyl	23564-05-8	15.50	R40, R50/53	MC3, N
2. Iprodione	36734-19-7	15.50	R48/22, R50/53	Xn, N

3. HAZARDS IDENTIFICATION

Main Hazards	Harmful in contact with skin. Irritating to eyes and skin.

4. FIRST-AID MEASURES

Eyes	Rinse immediately with clean water for at least 15 minutes and obtain medical aid.
Skin	Carefully remove contaminated clothing. Wash affected area with soap and water. Seek medical aid if at all worried.
Ingestion	Wash out mouth with water. Do not induce vomiting. Keep patient at rest and seek medical advice.
Inhalation	If inhaled, remove to fresh air and keep at rest. Obtain medical aid if at all worried.
Advice to Physicians	Brief Summary of Symptoms and Signs: Local Contamination: May cause skin and eye irritation . Systemic Poisoning: No symptoms reported. Treatment: Local Contamination: Symptomatic after decontamination. Treat as documented above under 'First-Aid Measures'. Systemic Poisoning: Initial treatment should be symptomatic and supportive. There is no specific antidote. Further advice is available from; Aventis CropScience UK Limited via the emergency telephone number above or from the National Poisons Information Service on 01 837 9964 or 837 9966.

5. FIRE-FIGHTING MEASURES

Extinguishing Media	Product is not combustible. If product is involved in a fire, use waterspray, foam, dry powder, carbon dioxide or sand.
Unsuitable Extinguishing Media	None.
Special Exposure Hazards	May give off toxic fumes if heated to decomposition.

5. FIRE-FIGHTING MEASURES (continued)

Protective Equipment for Fire-Fighting	Do not breathe fumes. Wear self contained breathing apparatus.
Fire Fighting Guidance	If possible and without risk, remove intact containers from exposure to fire. Otherwise, spray unopened containers with water to keep cool. Whenever possible , contain fire-fighting water by bunding area with sand or earth.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Avoid contact with spilled material or contaminated surfaces. If ordinary clothing becomes contaminated remove it immediately. When dealing with the spillage do not eat, drink or smoke and wear personal protective clothing as detailed in Section 8.
Environmental Precautions	Keep people and animals away. Prevent entry into drains, sewers and watercourses. In the UK if spillage enters drains leading to sewage works inform local water company plc immediately. If spillage enters rivers or watercourses, inform the Environment Agency (emergency telephone number 0800 807060). Overseas, inform the appropriate authority immediately.
Spillages	Contain/absorb spillage in sand/earth or in a suitable inert material. Transfer collected material to heavy duty plastic drums and keep safe for disposal.
Note	Check also for any local site procedures in force.

7. HANDLING AND STORAGE

Handling	No specific precautions required when handling unopened containers; follow any relevant manual handling guidance. Refer to Section 8 if exposure to product is possible. Wash thoroughly with soap and water after handling and before eating, drinking or smoking.
Storage	Store in original packs/containers in a dry secure area designated for pesticides with access for authorised staff only. Store away from seeds, fertilizers and animal feedstuffs.
Technical Storage Measures	Protect from frost.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards	
1. Product	None assigned.
Engineering Control Measures	Refer to any applicable COSHH assessments. Engineering controls should be used where practicable in preference to personal protection.
Respiratory Protection	None required when handling the product.
Hand Protection	Wear chemical resistant PVC or nitrile gloves.
Eye Protection	Wear safety goggles with unperforated side shield or goggles (conforming to BS EN 166 or BS 2092 for older goggles).
Other	Wear PVC or chemical resistant disposable overalls and PVC boots.
Other Information	If feasible, decontaminate protective clothing before removal. Where decontamination is not feasible (before or after removal) dispose of as contaminated waste.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid.
Colour	Off-white.
Odour	No data.
pH	Range between 2 to 4.5.
Boiling Range/Point (deg C)	Not determined.

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9. PHYSICAL AND CHEMICAL PROPERTIES (continued)

Melting Point/Freezing Point (deg C)	Not determined.
Flash Point (deg C)	Non-combustible.
Explosion Limits (%)	None.
Solubility in Water	Miscible.
Vapour Pressure	Not determined.
Density (g/ml)	1.08 at 20 °C.
Flammability	Not combustible
Auto-flammability (deg C)	Not applicable
Explosive Properties	None.
Oxidising Properties	None.
Vapour Density (Air = 1)	As for water
Dust Explosion Data	Not applicable
Summary/Other Data	A non-combustible liquid.

10. STABILITY AND REACTIVITY

Stability	Stable at ambient conditions.
Conditions to Avoid	None in particular.
Materials to Avoid	None under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Inhalation	Low toxicity
Skin and Eye Contact	Harmful in contact with skin; rat dermal LD50 > 2160 mg/kg. Irritating to the skin and eyes.
Ingestion	Low toxicity; rat oral LD50 > 4860 mg/kg.
Carcinogenicity	No data.
Genotoxicity	Thiophanate methyl; Classified by EEC as a category 3 mutagen:- substances which cause concern for man owing to possible mutagenic effects but where the available information does not satisfactorily demonstrate heritable genetic damage. Iprodione; Not mutagenic in the Ames assay.
Reproductive Toxicity	No data.

12. ECOLOGICAL INFORMATION

Mobility	No data.
Persistence/Degradability	Thiophanate methyl; Water DT50 24.5 hours (pH 9.0 @ 22 deg. C). Iprodione; Rapidly metabolised in soil. Soil DT50 20 to 80 days (laboratory) . Soil DT50 20 to 160 days (field) . Rate of degradation in soil increases with successive treatments, hence accumulation does not occur. Water DT50 1 to 7 days (pH 7.0), 1 hour (pH 9.0).
Bio-accumulation	Thiophanate methyl; Log P = 1.50. Iprodione; Log P = 3.0 (pH 3.0 and 5.0).
Aquatic Toxicity	Thiophanate methyl; 48 hr LC50 rainbow trout 7.8 mg/l, carp 11 mg/l, 48 hr EC50 daphnia 20.2 mg/l, 96 hr EC50 algae 0.8 mg/l. Iprodione; 96 hr LC50 rainbow trout 4.1 mg/l, bluegill sunfish 3.7 mg/l, 48 hr EC50 daphnia 0.25 mg/l, 72 hr EC50 algae 7.4 mg/l.

12. ECOLOGICAL INFORMATION (continued)

Other Toxicity	Thiophanate methyl; Acute oral LD50 mallard duck > 10400 mg/kg, bobwhite quail > 2000 mg/kg. Low toxicity to the following species; bees earthworms and other beneficial insects . Iprodione; Acute oral LD50 japanese quail > 5000 mg/kg. Low toxicity to the following species; bees .

13. DISPOSAL CONSIDERATIONS

Product Disposal	Disposal of product would usually be by incineration in an appropriately licensed commercial incinerator. Small quantities may be accepted in licensed landfill sites. Advice may be obtained from the local waste regulation authority (part of the Environment Agency in the UK). In the UK disposal arrangements should be in accordance with the Duty of Care Regulations and, where applicable, with the Special Waste Regulations.
Container Disposal	Lightly contaminated packaging may be acceptable for landfill, otherwise incineration will be required. See above for advice.

14. TRANSPORT INFORMATION

UN Number	3082
UN Proper Shipping Name	Environmentally hazardous substances, liquid, n.o.s. (contains iprodione 15.5 %)
UN Class	9
UN Packaging Group	III
ADR/RID - Description	3082, Environmentally hazardous substance, liquid, n. o. s (contains thiophanate methyl 15.5 % and iprodione 15.5 %), 9, 11*(c), ADR
CDG(CPL) - Description	3082, Environmentally hazardous substance, liquid, n.o.s (contains thiophanate methyl 15.5 % and iprodione 15.5 %). Class: 9. Hazard Identification Number: 90. Packing Group: III.
IMDG - Proper Shipping Name	As for UN + marine pollutant symbol used where appropriate.
IMDG - Ems Number	None.
IMDG - MFAG Table Number	None.
ICAO - Proper Shipping Name	As for UN

15. REGULATORY INFORMATION

Risk symbol	☐ None
Hazard Classification	Not classified
Designated Name	Compass (contains thiophanate methyl 167 g/l and iprodione 167 g/l)
R phrases	Not classified
S phrases	26-In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. 36/37-Wear suitable protective clothing and gloves. 45-In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
Control of Pesticides Regulations 1986: Precautions	WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES AND FACE PROTECTION (FACESHIELD) when handling the concentrate. **WEAR** SUITABLE PROTECTIVE CLOTHING (COVERALLS) when applying by vehicle mounted equipment. WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES, RUBBER BOOTS AND FACE PROTECTION (

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15. REGULATORY INFORMATION (continued)

	FACESHIELD) when handling contaminated surfaces and applying by hand-held equipment. HARMFUL TO FISH OR OTHER AQUATIC LIFE. Do not contaminate surface waters or ditches with chemical or used container. A maximum of two applications of any 'MBC' product (containing benomyl, carbendazim and thiophenate-methyl) is allowed on any one crop. DO NOT feed treated straw or haulm to livestock. A minimum of 3 weeks must be observed between applications. WASH HANDS before meals and after work. KEEP IN ORIGINAL CONTAINER, tightly closed in a safe place. WASH OUT CONTAINER THOROUGHLY, empty washings into spray tank and dispose of safely.
Note	The labelling information above is that which has been approved under 'The Control of Pesticide Regulations 1986' and may differ from that indicated by any toxicological and/or other testing otherwise indicated in this 'Safety Data Sheet' If you require any further clarification please contact Aventis CropScience UK Limited via the phone number quoted elsewhere in this 'Safety Data Sheet'.

16. OTHER INFORMATION

MSDS first issued	30 November 2000
MSDS data revised	
Footnote	This Safety Data Sheet was prepared in compliance with Commission Directive 93/112/EC, 67/548/EEC and 88/379/EEC as well as their relevant ammendments, on the approximation of laws, regulations and administrative provisions relative to the classification, packaging and labelling of dangerous substances and preparations.

Disclaimer

The above information is intended to give general health and safety guidance on the storage and transport of the substance or product to which it relates. It is not intended to apply to the use of the substance or product for which purposes the substance or product label and any appropriate technical usage literature available should be consulted and any relevant licences, consents or approvals complied with. The requirements or recommendations of any relevant site or working procedure, system or policy in force or arising from any risk assessment involving the substance or product should take precedence over any of the guidance contained in this safety data sheet where there is a difference in the information given. The information provided in this safety data sheet is accurate at the date of publication and will be updated as and when appropriate. No liability will be accepted for any injury loss or damage resulting from any failure to take account of information or advice contained in this safety data sheet.

1660 CA

Net Contents

Talstar®

Lawn & Tree *Flowable*

INSECTICIDE/MITICIDE

Only for Use and Storage by Commercial Applicators. To control insect pests and mites indoors, in interiorscapes and outdoors on ornamentals and lawns in landscaped areas around residential, institutional, public, commercial, and industrial buildings, parks, recreational areas and athletic fields.

EPA Reg. No. 279-3162 **EPA Est. 279-**

Active Ingredient:	**By Wt.**
Bifenthrin*	7.9%
Inert Ingredients:	92.1%
	100.0%

Talstar® Flowable contains ⅔ pound active ingredient per gallon.

*Cis isomers 97% minimum, trans isomers 3% maximum
U.S. Patent No. 4,238,505

KEEP OUT OF REACH OF CHILDREN

CAUTION

See other panels for additional precautionary information.

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger, or if available by administering syrup of ipecac. If person is unconscious, do not give anything by mouth and do not induce vomiting.

IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

IF IN EYES: Flush with plenty of water. Contact a physician if irritation occurs and persists.

Note to Physician:
This product is a pyrethroid. If large amounts have been ingested, the stomach and intestine should be evacuated. Treatment is symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and so should be avoided.

For Emergency Assistance Call (800) 331-3148.

For Information Regarding the Use of this Product Call 1-800-321-1FMC (1362).

PRECAUTIONARY STATEMENTS

Hazards to Humans (and Domestic Animals)

CAUTION
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

Environmental Hazards

This pesticide is extremely toxic to fish and aquatic invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and run-off from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters. Care should be used when spraying to avoid fish and reptile pets in/around ornamental ponds.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow to drift to blooming crops if bees are visiting the treatment area.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Do not apply this product through any kind of irrigation system.

Do not apply by air.

Do not apply in greenhouses and nurseries.

Not for use on sod farm turf, golf course turf, or grass grown for seed.

FMC

FMC Corporation
Agricultural Products Group
Philadelphia PA 19103

9/00-C (California Version)

STORAGE AND DISPOSAL

Prohibitions: Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Keep out of reach of children and animals. Store in original containers only. Store in a cool, dry place and avoid excess heat. Carefully open containers. After partial use replace lids and close tightly. Do not put concentrate or dilute material into food or drink container.

In case of spill, avoid contact, isolate area and keep out animals and unprotected persons. Confine spills. Call FMC:

(800) 331-3148.

To Confine Spill: If liquid, dike surrounding area or absorb with sand, cat litter or commercial clay. If dry material, cover to prevent dispersal. Place damaged package in a holding container. Identify contents.

Pesticide Disposal: Pesticide wastes are toxic. Do not contaminate water, food or feed by storage or disposal. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. Dispose of excess or waste pesticide by use according to label directions, or contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:

Plastic Container: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Returnable/Refillable Sealed Container: Do not rinse container. Do not empty remaining formulated product. Do not break seals. Return intact to point of purchase.

Formula for Determining the Active Ingredient Content of the Finished Spray Mixture: The following formula may be used to determine the percent active ingredient that is in the spray tank after mixing Talstar® Lawn & Tree Flowable Insecticide/Miticide:

$$\frac{(7.9)(\text{Fl. Oz. of Talstar added to tank})}{(\text{Gallons of finished spray mix})(128)} = \text{Percent Active Ingredient of spray mix}$$

General Applications Instructions

Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes. For use on plants intended only for aesthetic purposes or climatic modifications and being grown in interior plantscapes, ornamental gardens or parks, or lawns and grounds.

Talstar Lawn & Tree Flowable formulation mixes readily with water and other aqueous carriers, and controls a wide spectrum of insects and mites on trees, shrubs, foliage plants, non-bearing fruit and nut trees, and flowers in interiorscapes including hotels, shopping malls, office buildings, etc., and, outdoor plantscapes, such as around residential dwellings, parks, institutional buildings, recreational areas, athletic fields and home lawns. Non-bearing crops are perennial crops that will not produce a harvestable raw agricultural commodity during the season of application.

Talstar Lawn & Tree Flowable may be tank-mixed with other pesticides, including insect growth regulators. When tank mixing Talstar Lawn & Tree with other pesticides, observe all precautions and limitations on each separate product label. The physical compatibility of Talstar Lawn & Tree may vary with different sources of pesticide products, and local cultural practices. Any tank mixture which has not been previously tested should be prepared on a small scale (pint or quart jar), using the proper proportions of pesticides and water to ensure the physical compatibility of the mixture.

The following procedure is recommended for preparation of a new tank mix, unless specified otherwise in label directions: (1) Add wettable powders to tank water, (2) Agitate, (3) Add liquids and flowables, (4) Agitate, (5) Add emulsifiable concentrates, and (6) Agitate. If a mixture is found to be incompatible following this order of addition, try reversing the order of addition, or increase the volume of water. **Note:** If the tank-mixture is found to be compatible after increasing the amount of water, then the sprayer will need to be recalibrated for a higher volume application. Do not allow tank mix to stand overnight.

Resistance: Some insects are known to develop resistance to products used repeatedly for control. Because the development of resistance cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. Consult your local or state pest management authorities for details.

If resistance to this product develops in your area, this product, or other products with a similar mode of action, may not provide adequate control. If poor performance cannot be attributed to improper application or extreme weather conditions, a resistant strain of insect may be present. If you experience difficulty with control and suspect that resistance is a reasonable cause, immediately consult your local company representative or pest management advisor for the best alternative method of control for your area.

APPLICATION RECOMMENDATIONS

LAWNS: Apply Talstar® Lawn & Tree Flowable Insecticide/Miticide as a surface or sub-surface treatment. Use application volumes of up to 10 gallons per 1000 square feet to get uniform coverage when treating dense grass foliage.

For low volume applications, less than 2 gallons/1000 square feet, immediate irrigation of treated area with at least 0.25 inches of water following application is recommended to ensure efficacy of sub-surface pests such as, but not limited to, Mole Crickets.

LAWN APPLICATION RATES

The application rates listed in the following table will provide excellent control of the respective pests under typical conditions. However, at the discretion of the applicator, Talstar Lawn & Tree Flowable may be applied at up to 1 fluid oz. per 1000 square feet to control each of the pests listed in this Table. The higher application rates should be used when maximum residual control is desired.

Pest	Application Rate Talstar Lawn & Tree Flowable
Armyworms[1] Cutworms[1] Sod Webworm[1]	0.18 - 0.25 fluid oz. per 1000 sq. ft.
Annual Bluegrass Weevil (Hyperodes) (Adult)[2] Banks Grass Mite[6] Billbugs (Adult)[3] Black Turfgrass Ataenius (Adult)[4] Centipedes Chinch Bugs[5] Crickets Earwigs Fleas (Adult) Grasshoppers Leafhoppers Mealybugs Millipedes Mites[6] Pillbugs Sowbugs	0.25 - 0.5 fluid oz. per 1000 sq. ft.
Ants Fleas (Larvae)[7] Imported Fire Ants[8] Japanese Beetle (Adult) Mole Cricket (Adult)[9] Mole Cricket (Nymph)[10] Ticks[11]	0.5 - 1.0 fluid oz. per 1000 sq. ft.

Comments

[1]**Armyworms, Cutworms and Sod Webworms:** To ensure optimum control, delay watering (irrigation) or mowing for 24 hours after application. If the grass area is being maintained at a mowing height of greater than 1 inch, then higher application rates (Up to 1 fluid oz. per 1000 square feet) may be required during periods of high pest pressure.

[2]**Annual Bluegrass Weevil (*Hyperodes*) adults:** Applications should be timed to control adult weevils as they leave their overwintering sites and move into grass areas. This movement generally begins when *Forsythia* is in full bloom and concludes when flowering dogwood (*Cornus florida*) is in full bloom. Consult your State Cooperative Extension Service for more specific information regarding application timing.

[3]**Billbug adults:** Applications should be made when adult billbugs are first observed during April and May. Degree day models have been developed to optimize application timing. Consult your State Cooperative Extension Service for information specific to your region. In temperate regions, spring applications targeting billbug adults will also provide control of over-wintered chinch bugs.

[4]**Black Turfgrass Ataenius adults:** Applications should be made during May and July to control the first and second generation of black turfgrass ataenius adults, respectively. The May application should be timed to coincide with the full bloom stage of Vanhoutte spiraea (*Spiraea vanhouttei*) and horse chestnut (*Aesculus hippocastanum*). The July application should be timed to coincide with the blooming of Rose of Sharon (*Hibiscus syriacus*).

[5]**Chinch Bugs:** Chinch Bugs infest the base of grass plants and are often found in the thatch layer. Irrigation of the grass area before treatment will optimize the penetration of the insecticide to the area where the chinch bugs are located. Use higher volume applications if the thatch layer is excessive or if a relatively long mowing height is being maintained. Chinch Bugs can be one of the most difficult pests to control in grasses and the higher application rates (Up to 1 fluid oz. per 1000 square feet) may be required to control populations that contain both nymphs and adults during the middle of the summer.

[6]**Mites:** To ensure optimal control of eriophyid mites, apply in combination with the labeled application rate of a surfactant. A second application, five to seven days after the first, may be necessary to achieve acceptable control.

[7]**Flea larvae:** Flea larvae develop in the soil of shaded areas that are accessible to pets or other animals. Use a higher volume application when treating these areas to ensure penetration of the insecticide into the soil. Note: if the lawn area is being treated with Talstar Lawn & Tree Flowable at 0.25 fluid oz. per 1000 square feet for adult flea control, then the larval application rate may be achieved by increasing the application volume two- to four-fold.

[8]**Imported Fire Ants:** Control will be optimized by combining broadcast applications that will control foraging workers and newly mated fly-in queens with mound

drenches that will eliminate existing colonies. If the soil is not moist, then it is important to irrigate before application or use a high volume application. Broadcast treatments should apply 1 fluid oz. per 1,000 square feet. Mounds should be treated by diluting 1 teaspoon of Talstar Lawn & Tree Flowable per gallon of water and applying 1 to 2 gallons of finished spray per mound. The mounds should be treated with sufficient force to break their apex and allow the insecticide solution to flow into the ant tunnels. A four foot diameter circle around the mound should also be treated. For best results, apply in cool weather (65 - 80°F) or in early morning or late evening hours. Note: a spray rig that is calibrated to apply 1 fluid oz. per 1,000 square feet of Talstar Lawn & Tree Flowable in 5 per 1,000 square feet contains the approximate dilution (1 teaspoon per gallon) that is required for fire ant mound drenches in the spray tank.

[9]**Mole Cricket adults:** Achieving acceptable control of adult mole crickets is difficult because preferred grass areas are subject to continuous invasion during the early spring by this extremely active stage. Applications should be made as late in the day as possible and should be watered in with up to 0.5 inches of water immediately after treatment. If the soil is not moist, then it is important to irrigate before application to bring the mole crickets closer to the soil surface where contact with the insecticide will be maximized. Grass areas that receive pressure from adult mole crickets should be treated at peak egg hatch to ensure optimum control of subsequent nymph populations (see below).

[10]**Mole Cricket nymphs:** Grass areas that received intense adult mole cricket pressure in the spring should be treated immediately prior to peak egg hatch. Optimal control is achieved at this time because young nymphs are more susceptible to insecticides and they are located near the soil surface where the insecticide is most concentrated. Control of larger, more damaging, nymphs later in the year may require both higher application rates and more frequent applications to maintain acceptable control. Applications should be made as late in the day as possible and should be watered in with up to 0.5 inches of water immediately after treatment. If the soil is not moist, then it is important to irrigate before application to bring the mole crickets closer to the soil surface where contact with the insecticide will be maximized.

[11]**Ticks (Including ticks that may transmit Lyme Disease and Rocky Mountain Spotted fever):** Do not make spot applications. Treat the entire area where exposure to ticks may occur. Use higher spray volumes when treating areas with dense ground cover or heavy leaf litter. Ticks may be reintroduced from surrounding areas on host animals. Retreatment may be necessary to achieve and/or maintain control during periods of high pest pressure. Repeat application is necessary only if there are signs of renewed activity.Repeat application should be limited to no more than once per seven days.

Deer ticks (*Ixodes sp.*) have a complicated life cycle that ranges over a two year period and involves four life stages. Applications should be made in the late fall and/or early spring to control adult ticks that are usually located on brush or grass above the soil surface and in mid to late spring to control larvae and nymphs that reside in the soil and leaf litter.

American dog ticks may be a considerable nuisance in suburban settings, particularly where homes are built on land that was previously field or forest. These ticks commonly congregate along paths or roadways where humans are likely to be encountered. Applications should be made as necessary from mid-spring to early fall to control American dog tick larvae, nymphs and adults.

Talstar Lawn & Tree Flowable Lawn Dilution Chart

Applic. Volume: Gallons Per 1,000 sq. ft.	Applic. Rate: Fluid Ounces per 1,000 sq. ft.	Fluid Ounces* of Talstar Lawn & Tree Flowable Diluted to these Volumes of Finished Spray: 1 Gallon	5 Gallons	10 Gallons	100 Gallons
1.0	0.18	0.18	0.90	1.8	18.0
1.0	0.25	0.25	1.25	2.5	25.0
1.0	0.5	0.5	2.5	5.0	50.0
1.0	1.0	1.0	5.0	10.0	100.0
2.0	0.18	—	0.45	0.90	9.0
2.0	0.25	0.13	0.63	1.25	12.5
2.0	0.5	0.25	1.25	2.5	25.0
2.0	1.0	0.5	2.5	5.0	50.0
3.0	0.18	—	0.30	0.60	6.0
3.0	0.25	—	0.42	0.83	8.3
3.0	0.5	0.17	0.83	1.67	16.7
3.0	1.0	0.33	1.67	3.33	33.3
4.0	0.18	—	0.23	0.45	4.5
4.0	0.25	—	0.31	0.63	6.3
4.0	0.5	0.13	0.63	1.25	12.5
4.0	1.0	0.25	1.25	2.5	25.0
5.0	0.18	—	0.18	0.36	3.6
5.0	0.25	—	0.25	0.5	5.0
5.0	0.5	0.1	0.5	1.0	10.0
5.0	1.0	0.2	1.0	2.0	20.0
10.0	0.18	—	—	0.18	1.8
10.0	0.25	—	0.13	0.25	2.5
10.0	0.5	—	0.25	0.5	5.0
10.0	1.0	0.1	0.5	1.0	10.0

*To convert to milliliters, multiply by 29.57

1 fluid oz. = 29.57 ml = 2 tablespoons = 6 teaspoons

Do not use household utensils to measure Talstar Lawn & Tree Flowable.

ORNAMENTALS AND TREES

For ornamental applications (including but not limited to trees, shrubs ground covers, bedding plants, and foliage plants) apply 0.125 to 1.(fluid oz. of Talstar® Lawn & Tree Flowable insecticide/miticide pe 1,000 square feet or 5.4 to 43.5 fl. oz. per 100 gallons. Talstar Lawn & Tree Flowable may be diluted and applied in various volumes of wate providing that the maximum label rate (1.0 fluid oz. per 1,000 squar feet or 43.5 fl. oz per 100 gallons.) is not exceeded. Talstar Lawn & Tree Flowable may be applied through low volume application equip ment by dilution with water or other carriers and providing that the maximum label rate (1.0 fluid oz. per 1,000 square feet or 43.5 fl. o: per 100 gallons) is not exceeded.

Apply the specified application rate as a full coverage foliar spray Repeat treatment as necessary to achieve control using higher appli cation rates as pest pressure & foliage area increases. Repeat appli cation should be limited to no more than once per seven days.

Certain cultivars may be sensitive to the final spray solution. A smal number of plants should be treated and observed for one week prior tc application to the entire planting.

Use of an alternate class of chemistry in a treatment program is rec ommended to prevent or delay pest resistance

Talstar Lawn & Tree Flowable Ornamental Dilution Chart

Application Volume: Gallons Per 1,000 sq. ft.	Acre	Applic. Rate: Fluid Ounces per 1,000 sq. ft.	Fluid Ounces* of Talstar Lawn & Tree Flowable Diluted to these Volumes of Finished Spray: 1 Gallon	5 Gallons	10 Gallons	100 Gallons
2.3	100	0.125	—	0.27	0.54	5.4
2.3	100	0.25	0.11	0.54	1.08	10.8
2.3	100	0.5	0.22	1.09	2.17	21.7
2.3	100	1.0	0.44	2.17	4.35	43.5
4.6	200	0.125	—	0.14	0.27	2.7
4.6	200	0.25	—	0.27	0.54	5.4
4.6	200	0.5	0.11	0.54	1.09	10.9
4.6	200	1.0	0.22	1.09	2.17	21.7
6.9	300	0.125	—	—	0.18	1.8
6.9	300	0.25	—	0.18	0.36	3.6
6.9	300	0.5	—	0.36	0.72	7.2
6.9	300	1.0	0.15	0.72	1.45	14.5

*To convert to milliliters, multiply by 29.57
300 gallons per acre is a typical application volume for landscape ornamental applications.

1 fluid oz. = 29.57 ml = 2 tablespoons = 6 teaspoons

Do not use household utensils to measure Talstar Lawn & Tree Flowable.

Calculating Dilution Rates using the Ornamental Application Rates Table and the Talstar Lawn & Tree Flowable Ornamental Dilution Chart: The following steps should be taken to determine the appropriate dilution of Talstar Lawn & Tree Flowable that is required to control specific pests:

1) Identify the least susceptible target pest (the pest requiring the highest application rate for control).
2) Select an application rate in terms of fluid oz. of Talstar.
3) Identify your application volume and how much spray mix you want to prepare.
4) Use the Ornamental Dilution Chart to determine the appropriate volume of Talstar Lawn & Tree Flowable that must be mixed in your desired volume of water.

For example, suppose you are trying to control black vine weevil adults on rhododendron. The Ornamental Application Rates table shows that 0.25 to 0.5 fluid oz. of Talstar Lawn & Tree Flowable should be applied per 1,000 square feet. You select an application rate of 0.5 fluid oz. per 1,000 square feet because maximum residual control is desired. Your application volume is approximately 300 gallons per acre, which is equivalent to 6.9 gallons per 1,000 square feet. Consulting the Ornamental Dilution Chart reveals that you should dilute 0.72 fluid oz. of Talstar Lawn & Tree Flowable in 10 gallons of water.

ORNAMENTAL APPLICATION RATES

The application rates listed in the following table will provide excellent control of the respective pests under typical conditions. However, at the discretion of the applicator, Talstar Lawn & Tree Flowable may be applied at up to 1 fluid oz. per 1,000 square feet (43.5 fl. oz. per 100 gallons) to control each of the pest listed in this Table. The higher application rates should be used when maximum residual control is desired.

Pest	Application Rate Talstar Lawn & Tree Flowable	
	Fluid Ounces per 1,000 square feet	Fluid Ounces per 100 gallons
Bagworms[12] Cutworms Elm Leaf Beetles Fall Webworms Gypsy Moth Caterpillars Lace Bugs Leaf Feeding Caterpillars Tent Caterpillars	0.125 - 0.25	5.4 - 10.8
Ants Aphids Bees Beet Armyworm Black Vine Weevil (Adults) Brown Soft Scales Broad Mites Budworms California Red Scale (Crawlers)[13] Centipedes Citrus Thrips Clover Mites Crickets Diaprepes (Adults) Earwigs European Red Mite Flea Beetles Fungus Gnats (Adults) Grasshoppers Leafhoppers Leafrollers Mealybugs Millipedes Mites Mosquitoes Orchid Weevil Pillbugs Pine Needle Scales (Crawlers)[13] Plant Bugs (Including *Lygus spp.*) San Jose Scales (Crawlers)[13] Scorpions Sowbugs Spider Mites Spiders Thrips Tip Moths Twig Borers[13] Wasps Weevils[13] Whiteflies	0.25 - 0.5	10.8 - 21.7
Imported Fire Ants** Leafminers Pecan Leaf Scorch Mite Pine Shoot Beetle (Adults) Spider Mites[14]	0.5 - 1.0	21.7 - 43.5

[12]**Bagworms:** Apply when larvae begin to hatch and spray larvae directly. Applications when larvae are young will be most effective.

[13] **Scale Crawlers, Twig Borers, and Weevils:** Treat trunks, stems and twigs in addition to plant foliage.

[14]**Spider Mites:** Talstar Lawn & Tree Flowable provides optimal twospotted spider mite control when applied during spring to mid-summer. Higher application rates and/or more frequent treatments may be required for acceptable twospotted spider mite control during mid- to late-summer. The addition of a surfactant or horticultural oil may increase the effectiveness of Talstar Lawn & Tree Flowable. Combinations of Talstar Lawn & Tree Flowable with other registered miticides have also proven effective. Alternately, Talstar Lawn & Tree Flowable applications may be rotated with those of other products that have different modes of action in control programs that are designed to manage resistance by twospotted spider mites. Consult your local Cooperative Extension Service for resistance management recommendations in your region.

**For foraging ants.

PEST CONTROL ON OUTSIDE SURFACES AND AROUND BUILDINGS

For control of Ants, Bees, Biting Flies, Boxelder Bugs, Centipedes, Cockroaches, Crickets, Earwigs, Elm Leaf Beetles, Firebrats, Fleas, Flies, Millipedes, Mosquitoes, Pillbugs, Scorpions, Silverfish, Sowbugs, Spiders, Ticks, and Wasps.

Apply Talstar® Lawn & Tree Flowable Insecticide/Miticide using a 0.02 to 0.06% suspension as a residual spray to outside surfaces of buildings including, but not limited to, exterior siding, foundations, porches, window frames, eaves, patios, garages, refuse dumps, lawns such as grass areas adjacent or around private homes, duplexes, townhouses, condominiums, house trailers, apartment complexes, carports, garages, fence lines, storage sheds, barns, and other residential and non-commercial structures, soil, trunks of woody ornamentals and other areas where pests congregate or have been seen. Use a spray volume of up to 10 gallons of emulsion per 1,000 square feet. Higher application volumes may be used to obtain the desired coverage of dense vegetation or landscaping materials.

Mixing Directions: For 0.02% suspension, mix 0.33 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water. For 0.06% emulsion, mix 1 fluid oz. Talstar Lawn & Tree Flowable per gallon of water (1 fluid oz. = 2 tablespoons). Do not use household utensils to measure Talstar Lawn & Tree Flowable. Use the higher rate for heavy pest infestation, quicker knockdown or longer residual control. Retreatment may be necessary to achieve and/or maintain control during periods of high pest pressure. Repeat application is necessary only if there are signs of renewed insect activity. Repeat application should be limited to no more than once per seven days.

Perimeter Treatment: Treat a band of soil and vegetation 6 to 10 feet wide around and adjacent to the structure. Also, treat the foundation of the structure to a height of 2 to 3 feet. Apply 0.33 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per 1,000 square feet in sufficient water to provide adequate coverage (refer to Perimeter Application Dilution Chart).

Talstar Lawn & Tree Flowable Perimeter Application Dilution Chart

Applic. Volume: Gallons Per 1,000 sq. ft.	Applic. Rate: Fluid Ounces per 1,000 sq. ft.	Fluid Ounces* of Talstar Lawn & Tree Flowable Diluted to these Volumes of Finished Spray			
		1 Gallon	5 Gallons	10 Gallons	100 Gallons
1	0.33	0.33	1.67	3.33	33.3
1	0.5	0.5	2.5	5.0	50.0
1	0.67	0.67	3.33	6.67	66.7
1	0.75	0.75	3.75	7.5	75.0
1	1.0	1.0	5.0	10.0	100.0
2	0.33	0.17	0.83	1.65	16.5
2	0.5	0.25	1.25	2.5	25.0
2	0.67	0.33	1.67	3.35	33.5
2	0.75	0.38	1.88	3.75	37.5
2	1.0	0.5	2.5	5.0	50.0
3	0.33	0.11	0.55	1.10	11.0
3	0.5	0.17	0.83	1.67	16.7
3	0.67	0.22	1.11	2.23	22.3
3	0.75	0.25	1.25	2.5	25.0
3	1.0	0.33	1.67	3.33	33.3
4	0.33	—	0.41	0.83	8.3
4	0.5	0.13	0.63	1.25	12.5
4	0.67	0.17	0.84	1.67	16.7
4	0.75	0.19	0.94	1.88	18.8
4	1.0	0.25	1.25	2.5	25.0
5	0.33	—	0.33	0.67	6.7
5	0.5	0.1	0.5	1.0	10.0
5	0.67	0.13	0.67	1.33	13.3
5	0.75	0.15	0.75	1.5	15.0
5	1.0	0.2	1.0	2.0	20.0
10	0.33	—	0.17	0.33	3.3
10	0.5	—	0.25	0.5	5.0
10	0.67	—	0.33	0.67	6.7
10	0.75	—	0.38	0.75	7.5
10	1.0	0.1	0.5	1.0	10.0

*To convert to milliliters, multiply by 29.57

1 fluid oz. = 29.57 ml = 2 tablespoons = 6 teaspoons

Do not use household utensils to measure Talstar Lawn & Tree Flowable.

For Ant and Fire Ant Mounds use Talstar Lawn & Tree Flowable 0.06% emulsion as Drench Method: Apply 1-2 gallons of emulsion to each mound area by sprinkling the mound until it is wet and treat a 4 foot diameter circle around the mound. Use the higher volume for mounds larger than 12". For best results, apply in cool weather, such as in early morning or late evening hours, but not in the heat of the day.

Mosquito Control: Dilute 0.33 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and apply at the rate of one gallon of dilution per 1,000 square feet as a general spray around landscapes, lawn and buildings to control mosquitoes. For higher volume applications, Talstar Lawn & Tree Flowable may be diluted at lower concentrations and applied at greater volumes to deliver the desired amount of product per area (refer to the Ornamental or Perimeter Application Dilution Charts).

INDOOR USE

Do not use in food/feed areas of food/feed handling establishments, restaurants or other areas where food is commercially prepared or processed. Do not use in serving areas while food/feed is exposed or facility is in operation. Serving areas are areas where prepared foods are served, such as dining rooms, but excluding areas where food may be prepared or held. In the home, all food processing surfaces and utensils should be covered during treatment or thoroughly washed before use. Exposed food should be covered or removed. Not for use in Federally Inspected Meat and Poultry Plants.

For control of ants, bees, beetles, boxelder bugs, centipedes, cockroaches, crickets, earwigs, firebrats, flies, millipedes, pillbugs, scorpions, silverfish, sowbugs, spiders, ticks and wasps.

Use a 0.02% to 0.06% suspension (0.33 to 1 fluid oz. per gallon of water) for residual pest control in buildings and structures and on modes of transport. Apply either as a crack and crevice, pinstream, spot, coarse, low pressure spray (25 psi or less) or with a paint brush.

Indoor Treatments: Apply as a coarse, low pressure, crack and crevice or spot spray to areas where pests hide, such as baseboards, corners, storage areas, closets, around water pipes, doors and windows, attics and eaves, behind and under refrigerators, cabinets, sinks, furnaces, stoves, the underside of shelves, drawers and similar areas. Do not use as a space spray. Pay particular attention to cracks and crevices.

Mixing Directions: See mixing directions in "Pest Control on Outside Surfaces and Around Buildings" section.

Talstar Lawn & Tree Flowable is to be diluted with water for spray or brush application. Fill sprayer with the desired volume of water and add Talstar Lawn & Tree Flowable. Close and shake before use in order to insure proper mixing. Mix only the amount of solution needed for the application. Retreatment may be necessary to achieve and/or maintain control during periods of high pest pressure. Repeat application is necessary only if there are signs of renewed insect activity. Repeat application should be limited to no more than once per seven days.

Cockroaches, Crickets, Firebrats, Scorpions, Silverfish, Spiders, and Ticks: Apply as a coarse, low pressure spray to areas where these pests hide, such as baseboards, corners, storage areas, closets, around water pipes, doors and windows, attics and eaves, behind and under refrigerators, cabinets, sinks, furnaces, and stoves, the underside of shelves, drawers and similar areas. Pay particular attention to cracks and crevices.

Ants: Apply to any trails, around doors and windows and other places where ants may be found.

Bees and Wasps: Application to nests should be made late in the evening when insects are at rest. Thoroughly spray nest and entrance and surrounding areas where insects alight.

Boxelder Bugs, Centipedes, Earwigs, Beetles, Millipedes, Pillbugs, and Sowbugs: Apply around doors and windows and other places where these pests may be found or where they may enter premises. Spray baseboards, storage areas and other locations.

Food Handling Establishments: Places other than private residences in which food is held, processed, prepared or served.

Nonfood Areas: Permitted areas of use include industrial buildings, houses, apartment buildings, laboratories, buses, and the nonfood/feed areas of stores, warehouses, vessels, railcars, trucks, trailers, aircraft (Do not use in aircraft cabins), schools, nursing homes, hospitals, restaurants, hotels, food manufacturing, processing and service establishments. Permitted nonfood/feed areas such as garbage rooms, lavatories, floor drains (to sewers), entries and vestibules, offices, locker rooms, machine rooms, garages, mop closets and storage (after canning or bottling). Talstar Lawn & Tree may be used as a general spot, crack and crevice treatment in nonfood areas. All areas where insects hide or through which insects may enter should be treated.

Foam Applications

Talstar Lawn & Tree Flowable may be converted to foam and used to treat structural voids. Dilute 0.33 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and add the manufacturers recommended volume of foaming agent to produce a 0.02 to 0.06 percent foam concentration. Verify before treatment that the foaming agent is compatible with Talstar Lawn & Tree Flowable.

ANT CONTROL

Nuisance Ants Indoors: For best results, locate and treat ant nests. Dilute 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and apply at the rate of one gallon of dilution per 1,000 square feet as a general surface, crack and crevice or spot treatment to areas where ants have been observed or are expected to forage. These areas include, but are not limited to, baseboards, in and behind cabinets, under and behind dishwashers, furnaces, refrigerators, sinks and stoves, around pipes, cracks and crevices and in corners. Particular attention should be given to treating entry points into the home or premises such as around doors and windows. When using Talstar Lawn & Tree Flowable in combination with baits, apply Talstar as instructed above, and use baits in other areas that have not been treated with Talstar.

Nuisance Ants Outdoors: For best results, locate and treat ant nests. Apply Talstar Lawn & Tree Flowable to ant trails around doors and windows and other places where ants have been observed or are expected to forage. Apply a perimeter treatment using either low or high volume applications described in the "Pest Control on Outside Surfaces and Around Buildings" section of this label. The higher dilutions and/or application volumes, as well as more frequent applications, may be necessary when treating concrete surfaces for ant control. Maximum control is generally achieved using the following procedure:

1) Treat non-porous surfaces with low volume applications using 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and applying this dilution at the rate of one gallon per 1,000 square feet.
2) Treat porous surfaces and vegetation with high volume applications using dilutions that are calculated to deliver 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per 1,000 square feet (refer to the Ornamental and Perimeter Application Dilution Charts).
3) For maximum residual control, dilute 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and apply at a rate of up to 10 gallons of dilution per 1,000 square feet.

Carpenter Ants Indoors: Dilute 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and apply at the rate of one gallon of dilution per 1,000 square feet as a general surface, crack and crevice or spot treatment to areas where carpenter ants have been observed or are expected to forage. These areas include, but are not limited to, baseboards, in and behind cabinets, under and behind dishwashers, furnaces, refrigerators, sinks, and stoves, around pipes, cracks and crevices and in corners. Particular attention should be given to treating entry points into the home or premises such as around doors and windows. Spray or foam into cracks and crevices or drill holes and spray, mist or foam into voids where carpenter ants or their nests are present. When using Talstar Lawn & Tree Flowable in combination with baits, apply Talstar Lawn & Tree Flowable as instructed above, and use baits in other areas that have not been treated with Talstar Lawn & Tree Flowable.

Carpenter Ants Outdoors: Apply Talstar Lawn & Tree Flowable to carpenter ant trails around doors and windows and other places where carpenter ants have been observed or are expected to forage. For best results, locate and treat carpenter ant nests. Apply a perimeter treatment using either low or high volume applications described in the "Pest Control on Outside Surfaces and Around Buildings" section of this label. The higher dilutions and/or application volumes, as well as more frequent applications, may be necessary when treating concrete surfaces for carpenter ant control. Maximum control is generally achieved using the following procedure:

1) Treat non-porous surfaces with low volume applications using 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and applying this dilution at the rate of one gallon per 1,000 square feet
2) Treat the trunks of trees that have carpenter ant trails, or upon which carpenter ants are foraging, using 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and applying this dilution to thoroughly wet the bark from the base of the tree to as high as possible on the trunk
3) Treat porous surfaces and vegetation with high volume applications using dilutions that are calculated to deliver 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per 1,000 square feet (refer to the Ornamental and Perimeter Application Dilution Charts)
4) For maximum residual control, dilute 0.5 to 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and apply at a rate of up to 10 gallons of dilution per 1,000 square feet.

To control carpenter ants inside trees, utility poles, fencing or deck materials and similar structural members, drill to locate the interior infested cavity and inject or foam a 0.06% dilution (1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water) into the cavity using a sufficient volume and an appropriate treatment tool with a splash-back guard.

To control carpenter ants that are tunneling in the soil, dilute 0.5 to 1.0 fluid ounces of Talstar Lawn & Tree Flowable per gallon of water and apply as a drench or inject the dilution or foam at intervals of 8 to 12 inches. Establish a uniform vertical barrier at the edges of walls, driveways or other hard surfaces where ants are tunneling beneath the surfaces.

For wood piles and stored lumber apply a 0.06% emulsion. Use a hose-end sprayer or sprinkling can to deliver a coarse drenching spray. Treated wood can be burned or used for lumber one month after treatment. Do not use in structures.

To protect firewood from carpenter ants, dilute 1.0 fluid oz. of Talstar Lawn & Tree Flowable per gallon of water and apply to the soil beneath where the firewood will be stacked at the rate of one gallon of dilution per 8 square feet. DO NOT treat firewood with this product.

Attention

Do not allow people or pets on treated surfaces until spray has dried

Let surfaces dry before allowing people and pets to contact surfaces.

Do not treat pets with this product.

Do not apply this pesticide when class rooms are in use.

Do not apply this pesticide in occupied patient rooms, or in any rooms occupied by the infirm, elderly or children for extended periods of time.

Talstar Lawn & Tree Flowable will not stain or damage any surface that water alone will not stain or damage.

Do not apply water-based dilutions of Talstar Lawn & Tree Flowable to electrical conduits, motor housings, junction boxes, switch boxes or other electrical equipment because of possible shock hazard.

Application equipment that delivers low volume treatments, such as the Micro-Injector® or Actisol® applicators, may also be used to make crack and crevice, deep harborage, spot and general surface treatments of Talstar Lawn & Tree Flowable.

Dealers Should Sell in Original Packages Only

Terms of Sale or Use: On purchase of this product buyer and user agree to the following conditions:

Warranty: FMC makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Except as so warranted, the product is sold as is. Buyer and user assume all risk of use and/or handling and/or storage of this material when such use and/or handling and/or storage is contrary to label instructions.

Use of Product: FMC's recommendations for use of this product are based upon tests believed to be reliable. The use of this product being beyond the control of the manufacturer, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice.

Damages: Buyer's or user's exclusive remedy for damages for breach of warranty or negligence shall be limited to direct damages not exceeding the purchase price paid and shall not include incidental or consequential damages.

Revisions:

1. See shaded areas.
2. Removal of New York specific label language.

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MATERIAL SAFETY DATA SHEET

TALSTAR® LAWN & TREE FLOWABLE INSECTICIDE/MITICIDE

FMC

MSDS Ref. No: 82657-04-3-37
Version: Global
Date Approved: 08/13/1998
Revision No: 2

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 91/155/EEC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: TALSTAR® LAWN & TREE FLOWABLE INSECTICIDE/MITICIDE
PRODUCT CODE: 1660
ACTIVE INGREDIENT: Bifenthrin
CHEMICAL FAMILY: Pyrethroid Pesticide
MOLECULAR FORMULA: $C_{23}H_{22}ClF_3O_2$ (bifenthrin)
SYNONYMS: FMC 54800; (2-methyl[1,1'-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate; IUPAC: 2-methylbiphenyl-3-ylmethyl (Z)-(1RS)-cis-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103 USA
General Information: 800-528-8873

Emergency Telephone Numbers:

Emergency Phone (FMC) 800-331-3148 (U.S.A. & Canada)
Emergency Phone (FMC) 716-735-3765 (Reverse Charges)
CHEMTREC (800) 424-9300 (U.S.A. & Canada)
(202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS #	Wt.%	PEL/TLV	EC No.	EC Class
Bifenthrin	82657-04-3	7.9	None	None	None
Propylene Glycol	57-55-6	<6.2	10.0 mg/m3 WEEL	None	None

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS:
- Beige liquid with a bland odor.
- Slightly combustible. May support combustion at elevated temperatures.
- Thermal decomposition and burning may form toxic by-products.
- For large exposures or fire, wear personal protective equipment.
- Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.
- Moderately toxic if inhaled.

POTENTIAL HEALTH EFFECTS: Effects from overexposure may result from either swallowing, inhaling or coming into contact with the skin or eyes. Symptoms of overexposure include bleeding from the nose, tremors and convulsions. Contact with bifenthrin may occasionally produce skin sensations such as rashes, numbing, burning or tingling. These skin sensations are reversible and usually subside within 12 hours.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

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4. FIRST AID MEASURES

EYES: Flush with plenty of water. Get medical attention if irritation occurs and persists.

SKIN: Wash with plenty of soap and water.

INGESTION: Drink 1 or 2 glasses of water and induce vomiting by touching the back of the throat with a finger or by giving syrup of ipecac. Never induce vomiting or give anything by mouth to an unconscious person. Contact a medical doctor.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

NOTES TO MEDICAL DOCTOR: This product has moderate inhalation, and low oral and dermal toxicity. It is practically non-irritating to the eyes and non-irritating to the skin. Reversible skin sensations (paresthesia) may occur and ordinary skin salves have been found useful in reducing discomfort. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

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5. FIRE FIGHTING MEASURES

FLASH POINT AND METHOD: >100°C (>212°F) (TCC)

EXTINGUISHING MEDIA: Foam, CO2 or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

EXPLOSION HAZARDS: Slightly combustible. This material may support combustion at elevated temperatures.

FIRE FIGHTING PROCEDURES: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases or vapors generated.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, chlorine, fluorine, hydrogen chloride and hydrogen fluoride.

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6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8, "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of lakes, streams, ponds and sewer drains. Dike to confine spill and absorb with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a suitable solution of caustic or soda ash, and an appropriate alcohol (i.e., methanol, ethanol or isopropanol). Follow this by washing with a strong soap and water solution. Absorb, as above, any excessive liquid and add to the drums of waste already collected. Repeat if necessary. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Store in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Store in original containers only. Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use local exhaust at all process locations where vapor or mist may be emitted. Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For splash, mist or spray exposure, wear chemical protective goggles or a face shield.

RESPIRATORY: For splash, mist or spray exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

PROTECTIVE CLOTHING: Depending upon concentrations encountered, wear coveralls or long-sleeved uniform and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit, such as a PVC suit. Leather items - such as shoes, belts and watchbands - that become contaminated should be removed and destroyed. Launder all work clothing before reuse (separately from household laundry).

WORK HYGIENIC PRACTICES: Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking or using tobacco. Shower at the end of the workday.

GLOVES:
Wear chemical protective gloves made of materials such as rubber, neoprene, or PVC. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

COMMENTS: Personal protective recommendations for mixing or applying this product are prescribed on the product label. Information stated above provides useful, additional guidance for individuals whose use or handling of this product is not guided by the product label.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Bland

APPEARANCE: Beige liquid

pH: 6.7

SOLUBILITY IN WATER: Disperses

SPECIFIC GRAVITY: 1.024 @ 20°C (water =1)

MOLECULAR WEIGHT: 422.88 (bifenthrin)

WEIGHT PER VOLUME: 8.53 lb/gal. (1024 g/L)

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10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY: Stable

POLYMERIZATION: Will not occur

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11. TOXICOLOGICAL INFORMATION

DERMAL LD_{50}: >2000 mg/kg (rabbit)

ORAL LD_{50}: 632 mg/kg (rat)

INHALATION LC_{50}: 11.58 mg/L/1 hr (rat)

ACUTE EFFECTS FROM OVEREXPOSURE: This product has moderate inhalation, and low oral and dermal toxicity. It is practically non-irritating to the eyes and non-irritating to the skin. Large doses of bifenthrin ingested by laboratory animals produced signs of toxicity including convulsions, tremors and bloody nasal discharge. Bifenthrin does not cause acute delayed neurotoxicity. Experience to date indicates that contact with bifenthrin may occasionally produce skin sensations such as rashes, numbing, burning or tingling. These sensations are reversible and usually subside within 12 hours.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. In studies with laboratory animals, bifenthrin did not cause reproductive toxicity or teratogenicity. Tremors were associated with repeated exposure of laboratory animals to bifenthrin. In lifetime feeding studies conducted with rodents, a slight increase in the incidence of urinary bladder tumors at the highest dose in male mice was considered to be an equivocal response, not evidence of a clear compound-related effect. The overall absence of genotoxicity has been demonstrated in mutagenicity tests with bifenthrin.

CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: (ACGIH) Not listed

12. ECOLOGICAL INFORMATION

Unless otherwise indicated, the data presented below are for the active ingredient.

ENVIRONMENTAL DATA: In soil, bifenthrin is stable over a wide pH range and degrades at a slow rate which is governed by soil characteristics. Bifenthrin will also persist in aquatic sediments. Bifenthrin has a high Log Pow (>6.0), a high affinity for organic matter, and is not mobile in soil. Therefore, there is little potential for movement into ground water. There is the potential for bifenthrin to bioconcentrate (BCF = 11, 750).

ECOTOXICOLOGICAL INFORMATION: Bifenthrin is highly toxic to fish and aquatic arthropods and LC50 values range from 0.0038 to 17.8 µg/L. In general, the aquatic arthropods are the most sensitive species. Care should be taken to avoid contamination of the aquatic environment. Bifenthrin had no effect on mollusks at its limit of water solubility. Bifenthrin is only slightly toxic to both water fowl and upland game birds (LD50 values range from 1,800 mg/kg to >2,150 mg/kg).

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location, and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

EMPTY CONTAINER: Non-returnable containers which held this material should be cleaned, prior to disposal, by triple rinsing. Containers which held this material may be cleaned by being triple-rinsed, and recycled, with the rinsate being incinerated. Do not cut or weld metal containers. Vapors that form may create an explosion hazard.

14. TRANSPORT INFORMATION

U.S. DOT (DEPARTMENT OF TRANSPORTATION)

REPORTABLE QUANTITY (RQ): None

U.S. SURFACE FREIGHT CLASS: Insecticides, NOI, other than Poison. NMFC Item 102120.

MARINE POLLUTANT #1: bifenthrin (Severe Marine Pollutant)

OTHER SHIPPING INFORMATION:
When shipped by highway, railroad or air, in packages <119 gallons/450 L in volume: Not regulated.

Non-bulk packages by water and bulk packages by highway, railroad or water, the material is Class 9: Environmentally hazardous substances, liquid, n.o.s. (bifenthrin 7.9%), 9, UN3082, III. NAERG Guide 171.

15. REGULATORY INFORMATION

UNITED STATES

. SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311 HAZARD CATEGORIES (40 CFR 370): Immediate, Delayed

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370): The threshold planning quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs. This product contains the following ingredients with a TPQ of less than 10,000 lbs.: None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372): This product contains the following ingredients subject to Section 313 reporting requirements: (bifenthrin) (glycol ethers)

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): Not listed

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT):

Chemical Name	Wt.%	RQ
Propylene Glycol	<6.2	1 lb.

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Signal Word : CAUTION

16. OTHER INFORMATION

Talstar and FMC Logo - FMC Trademarks

Section(s) Revised : New Format

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MACH 2™

Liquid Turf Insecticide

FOR CONTROL OF IMMATURE STAGES OF CERTAIN INSECTS IN TURFGRASS.

NOT FOR SALE OR USE IN NASSAU AND SUFFOLK COUNTIES, NEW YORK.

ACTIVE INGREDIENT: Halofenozide	
Benzoic acid, 4-chloro-, 2 benzoyl-2-(1,1-dimethylethyl) hydrazid	22.3%
INERT INGREDIENTS:	77.7%
	100.0%

Contains 2 lbs. active ingredient per gallon

EPA Reg. No. 69075-2

Note: Before using this product, read entire Precautionary Statements, Directions for Use, Use Restrictions, and Storage and Disposal Instructions.

KEEP OUT OF REACH OF CHILDREN

CAUTION!/¡PRECAUCION!

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Flush eyes with plenty of water. Consult a physician if irritation persists.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation persists.

IF INHALED: Move victim to fresh air.

IF SWALLOWED: Call a physician or poison control center. Drink one or two glasses of water. If person is unconscious, do not give anything by mouth and do not induce vomiting.

See Inside For Additional Precautionary Statements

ROHMID

A marketing partnership of American Cyanamid Company and Rohm and Haas Company

™ Trademark of Rohmid L.L.C.

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PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS
AND DOMESTIC ANIMALS

CAUTION!

May cause eye irritation. Harmful if absorbed through skin, inhaled, or swallowed. Avoid breathing spray mist. Avoid contact with eyes, skin, or clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

WPS USES

Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR part 170) - In general, agricultural plant uses are covered - must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standards (WPS) for agricultural pesticides [40 CFR 170.240(d) (4-6)], the handlers PPE requirements may be reduced or modified as specified in the WPS.

NON-WPS USES

Applicators and other handlers who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR part 170) - in general, only agricultural plant uses are covered by the WPS - must wear:

- Shirt and pants
- Gloves
- Shoes plus socks

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands *before* eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

ENVIRONMENTAL HAZARDS

For terrestrial uses, do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.

This chemical has the properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow may result in groundwater contamination.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons either directly or through drift. Only protected handlers may be in the area during application.

For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE). The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as turf, plants, soil or water, is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep children and pets out of treated area until sprays have dried.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store in a cool, dry, well-ventilated area. Prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of reach of children.

Do not allow product to freeze.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your local State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA region office for guidance.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

IN CASE OF AN EMERGENCY ENDANGERING LIFE OR PROPERTY INVOLVING THIS PRODUCT, CALL DAY OR NIGHT, 1-800-424-9300.

GENERAL INFORMATION

MACH 2™ Liquid Turf Insecticide can be used as directed on the following commercial turfgrass sites (lawns, sod, turf areas). Examples of such sites include: commercial lawns, grounds or lawns around business and office complexes, shopping centers, airports, military and other institutions, cemeteries, golf courses, and sod farms.

MACH 2™ mimics the action of a natural insect hormone which induces the molting and metamorphosis process in insects. MACH 2 is highly active against grubs and lepidopterous larvae listed as target pests. MACH 2 controls listed larvae through a novel mode-of-action which starts within hours of ingestion. Actual death of larvae may take several days to occur.

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USE RATE DETERMINATION

Carefully read, understand, and follow label use rates, recommendations and restrictions. Apply the amount specified in the following table with a properly calibrated ground sprayer. Check calibration periodically to ensure that equipment is working properly. Failure to follow the DIRECTIONS FOR USE and all precautions on this label may result in grass injury or poor pest control.

APPLICATION TIMING

The activity of MACH 2™ Liquid Turf Insecticide is expressed following ingestion by the target larvae. Consequently, the timing of application is dependent upon the feeding behavior of the target pest. Consult your local State Extension Specialists for more specific information regarding timing of applications.

To achieve optimal effectiveness, the following turf management practices are suggested:

- **Minimize thatch** since heavy thatch will prevent the insecticide from penetrating to the area where insects are feeding.
- **Apply when larvae are small and actively feeding.**
- **MACH 2 is not dependent upon irrigation for activation. However, avoid mowing turf until after product is washed from leaf blades so that uniformity of application is not affected.**

APPLICATION EQUIPMENT

Apply MACH 2™ through conventional spray equipment in a minimum of 1 gallon finished spray per 1000 sq. ft. to provide uniform spray distribution. DO NOT apply MACH 2 through sprayers that use cluster spray nozzles due to variability in application use rates and spray patterns. DO NOT apply MACH 2 to golf course tees and greens using low pressure (i.e., 200 psi or less) hand wand applicators. Application using backpack equipment is permitted. Calibrate application equipment prior to use. Avoid skips by using marker dyes or foam aids.

TANK MIXTURES

Read the label of each tank mixture product used and follow the Precautionary Statements, Directions for Use, and other restrictions. MACH 2™ may be tank-mixed with fluid fertilizers or other pesticides. When applied according to label directions, a tank mixture of MACH 2 and an EPA-registered pesticide will provide control of susceptible pests listed on the respective labels for the two products. A compatibility test (see Compatibility test section) is suggested before tank-mixing this product with fluid fertilizers or other pesticides.

COMPATIBILITY TEST

Before mixing MACH 2™ with fluid fertilizers or other pesticides, it is advisable to test compatibility by mixing all the components in a small jar in proportionate quantities.

Compatibility Test Mixing Instructions

		Amount of Pesticide Added to Spray Carrier (Assuming Volume of 50 GPA)
[redacted]		[redacted]
Pesticide Formulation	**RATE per Acre**	**Level teaspoons per Pint Jar of Carrier Solution**
Dry	1 Pound	1/2
Liquid	1 Quart	1/2

This compatibility test is designed for 50 gallons of spray solution per acre. The table above gives general guidelines for use rate ratios of pesticides to be tank-mixed with this product. Determine the amount of pesticide to tank-mix by referring to the pesticide label(s). Then calculate the amount of pesticide to add to the jar based on use rate ratios in the table. For a use rate of 1 pound per acre of dry pesticide or 1 quart per acre of liquid pesticide add 1/2 teaspoon to the jar. MACH 2™ Liquid Turf Insecticide should be added based on use rate ratios for liquid pesticides. For a use rate of 1.5 oz. per 1000 sq. ft. (app. 2 qt/Acre) add 1 teaspoon to the jar. For changes in spray volume or insecticide rate, make appropriate changes in the ingredients for the test. Shake well after mixing.

If pesticide(s) does not form crystals, flakes, sludge, jelly, oily films or layers, then the tested components are compatible. Incompatibility in any of the above described forms will usually occur within 5 minutes after mixing.

If components are incompatible, the use of a compatibility agent is recommended. Repeat the above test with a suitable compatibility agent (one-half teaspoon per pint jar is equivalent to 1 pint per 50 gallons of spray solution).

MIXING INSTRUCTIONS

MACH 2™ Liquid Turf Insecticide Alone:

Fill the spray tank to about three-fourths of the desired volume with clean water and begin tank agitation. Add the recommended amount of MACH 2 to the tank and complete the filling process. Maintain agitation through the mixing and spraying operations. If MACH 2 is allowed to settle, agitate thoroughly to resuspend before spraying is resumed.

Tank Mixes:

First determine the compatibility of MACH 2™ Liquid Turf Insecticide and the desired tank mixture partner(s) in water by mixing small proportional quantities in advance. See the "Compatibility Test" Section of this label, then adhere to the following mixing procedures.

1. Fill the sprayer half to two-thirds full with clean water. Start agitation and continue agitation through mixing and spraying operations.
2. Add a compatibility agent if needed. Read and follow all of the information found on the product label for the selected compatibility agent.
3. If a wettable powder or dry flowable pesticide is used, make a slurry with the water, and add it slowly to the tank.
4. Add MACH 2 and other flowable formulations to the tank.
5. Add emulsifiable concentrate pesticide to the tank.
6. Add water-soluble liquid pesticide formulations followed by surfactants, marker dyes or foams, or drift control additives while continuing the filling process.
7. Maintain good agitation at all times until the contents of the tank have been sprayed. If the spray mixture is allowed to settle, agitate thoroughly to resuspend the mixture before resuming spraying.

USE DIRECTIONS FOR TURFGRASS

PEST	Amount of MACH 2™ Liquid Turf Insecticide	COMMENTS
larvae of cutworms, sod webworms, armyworms, and fall armyworms	2 quarts/Acre (1.5 fl. oz per 1,000 sq. ft.)	Apply at first sign of pest damage. A single repeat application can be made if needed.
White grub larvae such as: Japanese beetle, *Popillia japonica* Northern masked chafer, *Cyclocephala borealis* Southern masked chafer, *Cyclocephala lurida* European chafer, *Rhizotrogus majalis* Oriental beetle, *Exomala orientalis* Asiatic garden beetle, *Maladera castanea* May/June beetle, *Phyllophaga* spp. Black turfgrass ataenius, *Ataenius spretulus* Green June beetle, *Cotinus nitida* Annual bluegrass weevil larvae, *Hyperodes* spp. Billbugs, *Sphenophorus* spp. Aphodius beetle, *Aphodius* spp.	3 quarts/Acre (2.2 fl. oz./ 1,000 sq. ft.)	MACH 2 may be used as either a preventative or a curative treatment. Make only one application.

Apply in sufficient water to achieve thorough coverage. Do not apply more than 1 gallon of product (2 lbs. active ingredient) per acre per year regardless of pests controlled.

CHEMIGATION

Do not apply this product through any type of irrigation system.

FOR SOD FARMS: Allow at least 7 days to elapse between last application and harvest of sod.

DISCLAIMER

The label instructions for use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the use or application of the product contrary to label instructions, all of which are beyond the control of **RohMid L.L.C.** All such risks shall be assumed by the user.

RohMid L.L.C. warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use, subject to the risk referred to above.

Any damages arising from a breach of this warranty shall be limited to direct damages and shall not include consequential commercial damages such as loss of profits or values or any other special or indirect damages.

RohMid L.L.C. makes no other express or implied warranty, including other express or implied warranty of FITNESS or of MERCHANTABILITY.

A Product of

ROHMID LLC

One Campus Drive
Parsippany, NJ 07054

A marketing partnership of
American Cyanamid Company and
Rohm and Haas Company

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ROHMID L.L.C.
PARSIPPANY, NJ 07054

MATERIAL SAFETY DATA SHEET

MSDS NO. AG09197-4
CAS NO. Mixture

DATE: JUN 02, 1997

EMERGENCY TELEPHONE: (800)-424-9300 (U.S.A.)

PRODUCT IDENTIFICATION	TRADE NAME:	MACH 2™ Liquid Turf Insecticide
	SYNONYMS:	N-tert-butyl-N'-(4-chlorobenzoyl) benzohydrazide; benzoic acid, 4-chloro-2-benzoyl-2-(1,1-dimethylethyl) hydrazide RH-0345 2SC
	CHEMICAL FAMILY:	Diacylhydrazine
	MOLECULAR FORMULA:	$C_{18}H_{19}ClN_2O_2$
	MOLECULAR WEIGHT.	330.810
	USAGE:	Insecticide

WARNING STATEMENTS	CAUTION! Keep out of reach of children. May cause eye or skin irritation. Do not get in eyes or on skin or clothing. Do not breathe dusts, sprays, or mist.

INGREDIENTS	COMPONENT	CAS NO.	%	PEL/TLV
	Inerts		68.90	
	Propylene Glycol	57-55-6	8.00	100 ppm
	RH-0345	112226-61-6	23.10	
	REFERENCE:	Inerts		
		Propylene Glycol	Dow - 1990	
		RH-0345	None	

PHYSICAL PROPERTIES	APPEARANCE AND ODOR:	Tan, liquid

(cont from pg 1)

BOILING POINT:	100°C/212°F Water
MELTING POINT:	0°C/32°F Water
VAPOR PRESSURE:	17 mm Hg @ 20°C/68°F Water
SPECIFIC GRAVITY:	1.0 to 1.2 Approximate
VAPOR DENSITY:	< 1.0 water
% VOLATILITY (BY VOL.):	69 TO 71% Water and solvents
PH:	5 - 7
EVAPORATION RATE	< 1 0 Water
SOLUBILITY IN WATER:	Dispersible
VISCOSITY:	300 to 1100 CPS

FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT: > 100°C/> 212°F TCC (Propylene glycol)

FLAMMABLE LIMITS (% BY VOL.): Not Applicable

FIRE CONTROL TACTICS:
Wear self-contained, breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear.

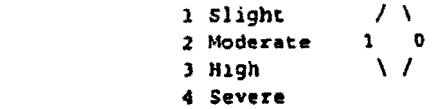
Remain upwind. Avoid breathing smoke. Use water spray to cool containers exposed to fire.

FIRE EXTINGUISHING MEDIA:
Pesticide particulates can become airborne.

Use the following extinguishing media when fighting fires involving this material Carbon dioxide, dry chemical, water spray.

NFPA HAZARD RATING

0 Least
1 Slight
2 Moderate
3 High
4 Severe



(cont from pg 3)

NOTES TO PHYSICIAN:
There is no specific antidote for exposure to this material. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

If accidentally swallowed, careful evacuation of the stomach is advisable under professional care.

EXPOSURE CONTROL METHODS

Personal Protective Clothing/Equipment: Use butyl rubber gloves and apron. Wear self-contained breathing apparatus (NIOSH approved or equivalent full-face respirator). Use other chemically resistant or impervious clothing to avoid prolonged or repeated skin contact.

Engineering Controls for Ventilation: Use explosion proof local exhaust ventilation with minimum capture velocity of 150 ft/min. (0.75 m/sec) at the point of dust or mist evolution. Refer to the current edition of ACGIH Industrial Ventilation Manual of Recommended practice for information on design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment: Facilities storing or utilizing this material should be equipped with eyewash facilities and a safety shower.

SPILL OR LEAK PROCEDURES

Appropriate protective equipment must be worn when handling a spill of this material. See the PERSONAL PROTECTION MEASURES section for recommendations. If exposed to material during clean-up operations, see the FIRST AID PROCEDURES section for actions to follow.

Remove all contaminated clothing promptly. Wash all exposed skin areas with soap and water immediately after exposure. Thoroughly launder clothing before reuse. Do not take clothing home to be laundered.

WASTE DISPOSAL: Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. Keep spills and cleaning run-off out of municipal sewers and open bodies of water.

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REACTIVITY DATA	STABILITY	Stable
	POLYMERIZATION:	Product will not undergo polymerization
	INCOMPATIBLE MATERIALS:	Avoid contact with strong oxidizing agents
	HAZARDS DECOMPOSITION PRODUCTS:	There are no known hazardous decomposition products for this material

HEALTH HAZARD INFORMATION

TOXICITY DATA AND EFFECTS OF OVEREXPOSURE:

ACUTE TOXICITY DATA:

Oral LD_{50} - rat: > 5000 mg/kg

Dermal LD_{50} - rat: > 2000 mg/kg

Inhalation LC_{50} - rat: > 1.1 mg/l (highest obtainable dose).

Skin Irritation - Rabbit: Non-irritating
Eye Irritation - Rabbit: Non-Irritation
Skin Sensitization (Guinea Pig): Not a sensitizer

EMERGENCY AND FIRST AID PROCEDURE:

IF SWALLOWED: Drink two large glasses of water. Consult a physician. Never give anything by mouth to an unconscious person

IF ON SKIN: Wash affected skin areas thoroughly with soap and water. Consult a physician if irritation persists. Remove and wash contaminated clothing thoroughly. Do not take clothing home to be laundered.

IF IN EYES: Flush eyes with a large amount of water for at least 15 minutes. Consult a physician if irritation persists.

IF INHALED: Move subject to fresh air.

(cont from pg 4)

Pesticide or rinsate that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticides. Triple rinse (or equivalent) all containers. Consult federal, state, or local disposal authorities for approved alternative procedures.

SPECIAL PRECAUTIONS: HANDLING AND STORAGE:
Do not store this material near food, feed or drinking water. The minimum recommended storage temperature for this material is 0°C/32°F. The maximum recommended storage temperature for this material is 43°C/110°F.

ADDITIONAL REGULATORY INFORMATION

SARA Title III Data

Section 311 and 312 Hazard Categories

Immediate Health Hazard - Y
Delayed Health Hazard - N
Fire Hazard - N
Reactive Hazard - N
Sudden Pressure Release Hazard - N

Section 302 Extremely Hazardous Substances - None

Section 313 Toxic Chemicals - None

CERCLA Reportable Quantity
None

APPENDIX

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.

MACH 2™ Liquid Turf Insecticide is a trademark of Rohmid L.L.C.

SOURCE AND DATE INFORMATION
SHEET NO.: AG09197-4
DATE: JUN 02, 1997

Merit® 75 WSP

Insecticide

For foliar and systemic insect control in turfgrass, landscape ornamentals and interior plantscapes.

ACTIVE INGREDIENT:

Imidacloprid, 1-[(6-Chloro-3-pyridinyl)methyl]- -*N*-nitro-2-imidazolidinimine	75%
OTHER INGREDIENTS	25%
	100%

Keep water soluble packets in this container and store in a cool dry place but not below freezing (32°F).

Do Not Remove Packets From Container Except For Immediate Use.

EPA Reg. No. 3125-439

Four 1.6-oz Packets Per Carton, Four Cartons Per Case
Or Eighty 1.6-oz Packets Per Mini-drum

STOP - Read the label before use.
Keep out of reach of children.

CAUTION

PRECAUCION AL USUARIO: Si usted no puede leer o entender inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

(TO THE USER: If you cannot read or understand English, do not use this product until the label has been fully explained to you.)

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if swallowed, inhaled, or absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes, or clothing. Avoid breathing dust or vapor. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. Keep children or pets off treated area until spray is dry.

STATEMENTS OF PRACTICAL TREATMENT

If swallowed: Call a physician or Poison Control Center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person. **If on skin:** Wash thoroughly with soap and water. Get medical attention if irritation occurs. **If in eyes:** Hold eyelids open and flush with plenty of water.

To Physician: No specific antidote is available. Treat the patient symptomatically.

ENVIRONMENTAL HAZARDS

This product is highly toxic to aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. This chemical demonstrates the properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

IMPORTANT: Read these entire DIRECTIONS FOR USE, GENERAL INFORMATION, AND CONDITIONS OF SALE before using MERIT 75 WSP Insecticide.

CONDITIONS OF SALE: THE DIRECTIONS ON THIS LABEL WERE DETERMINED THROUGH RESEARCH TO BE APPROPRIATE FOR THE CORRECT USE OF THIS PRODUCT. THIS PRODUCT HAS BEEN TESTED UNDER DIFFERENT ENVIRONMENTAL CONDITIONS BOTH INDOORS AND OUTDOORS UNDER CONDITIONS SIMILAR TO THOSE THAT ARE ORDINARY AND CUSTOMARY WHERE THE PRODUCT IS TO BE USED. INSUFFICIENT CONTROL OF PESTS OR PLANT INJURY MAY RESULT FROM THE OCCURRENCE OF EXTRAORDINARY OR UNUSUAL CONDITIONS, OR FROM FAILURE TO FOLLOW LABEL DIRECTIONS. IN ADDITION, FAILURE TO FOLLOW LABEL DIRECTIONS MAY CAUSE INJURY TO ANIMALS, MAN, AND DAMAGE TO THE ENVIRONMENT. BAYER OFFERS, AND THE BUYER ACCEPTS AND USES, THIS PRODUCT SUBJECT TO THE CONDITIONS THAT EXTRAORDINARY OR UNUSUAL ENVIRONMENTAL CONDITIONS, OR FAILURE TO FOLLOW LABEL DIRECTIONS ARE BEYOND THE CONTROL OF BAYER AND ARE, THEREFORE, THE RESPONSIBILITY OF THE BUYER.

Do not formulate this product into other end-use products.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

APPLICATION TO TURFGRASS:

MERIT 75 WSP Insecticide can be used for the control of soil inhabiting pests of turfgrass, such as Northern & Southern masked chafers, *Cyclocephala borealis, C. immaculata*, and/or *C. lurida*; Asiatic garden beetle, *Maladera castanea*; European chafer, *Rhizotrogus majalis;* May or June beetle, *Phyllophaga* spp.; Japanese beetle, *Popillia japonica*; Oriental beetle, *Anomala orientalis;* Billbugs, *Spherophorus* spp.; Annual bluegrass weevil, *Hyperodes* spp.; Black turfgrass ataenius, *Ataenius spretulus* and

Aphodius spp.; and mole crickets, *Scapteriscus* spp. MERIT 75 WSP Insecticide can also be used for the suppression of cutworms in turfgrass areas. MERIT 75 WSP Insecticide can be used as directed on turfgrass in sites such as home lawns, business and office complexes, shopping complexes, multi-family residential complexes, golf courses, airports, cemeteries, parks, playgrounds, and athletic fields. MERIT 75 WSP Insecticide can not be used on commercial sod farms.

The active ingredient in MERIT 75 WSP Insecticide has sufficient residual activity so that applications can be made preceding the egg laying activity of the target pests. High levels of control can be achieved when applications are made preceding or during the egg laying period. The need for an application can be based on historical monitoring of the site, previous records or experiences, current season adult trapping or other methods. Optimum control will be achieved when applications are made prior to egg hatch of the target pests, followed by sufficient irrigation or rainfall to move the active ingredient through the thatch.

Applications should not be made when turfgrass areas are waterlogged or the soil is saturated with water. Adequate distribution of the active ingredient cannot be achieved when these conditions exist. The treated turf area must be in such a condition that the rainfall or irrigation will penetrate vertically in the soil profile. Applications cannot exceed a total of 8.6 oz (0.4 lb of active ingredient) per acre per year.

Application Equipment for Use on Turfgrass

Apply MERIT 75 WSP Insecticide in sufficient water to provide adequate distribution in the treated area. The use of accurately calibrated equipment normally used for the application of turfgrass insecticides is required. Use equipment which will produce a uniform, coarse droplet spray, using a low pressure setting to eliminate off target drift. Check calibration periodically to ensure that equipment is working properly.

APPLICATION TO ORNAMENTALS:

MERIT 75 WSP Insecticide is for use on ornamentals in commercial and residential landscapes and interior plantscapes. MERIT 75 WSP Insecticide is a systemic product and will be translocated upward into the plant system. To assure optimum effectiveness, the product must be placed where the growing portion of the target plant can absorb the active ingredient. The addition of a nitrogen containing fertilizer, where applicable, into the solution will enhance the uptake of the active ingredient. Application can be made by foliar application or soil applications; including soil injection, drenches, and broadcast sprays.

When making soil applications to plants with woody stems, systemic activity will be delayed until the active ingredient is translocated throughout the plant. In some cases, this translocation delay can take up to 60 days. For this reason, applications should be made prior to anticipated pest infestation to achieve optimum levels of control.

For outdoor ornamentals, **broadcast applications** cannot exceed a total of 8.6 oz (0.4 lb of active ingredient) per acre per year.

Ant Management Programs

Use MERIT 75 WSP to control aphids, scale insects, mealybugs and other sucking pests on ornamentals to limit the honeydew available as a food source for ant poplulations. MERIT 75 WSP applications can be then be supplemented with residual sprays, bait placements or other ant control tactics to further reduce the pest population.

NOTE: Not for use in commercial greenhouses, nurseries, on sod farms or on grass grown for seed. For use on plants intended for aesthetic purposes or climatic modification and being grown in interior plantscapes, ornamental gardens or parks, or on golf courses or lawns and grounds.

Application Equipment for Ornamental Uses

MERIT 75 WSP Insecticide mixes readily with water and may be used in many types of application equipment. Mix product with the required amount of water and apply as desired dependent upon the selected use pattern.

RECOMMENDED APPLICATIONS

CROP	PEST	DOSAGE MERIT 75 WSP	REMARKS
Turfgrasses	**Larvae of:** Annual bluegrass weevil Asiatic garden beetle Billbugs Black turfgrass ataenius Cutworm (suppression) European chafer Japanese beetle Northern masked chafer Oriental beetle *Phyllophaga* spp. Southern masked chafer	1.6 oz (1 Packet) per 8,250 to 11,000 sq ft	For optimum control of grubs, billbugs and annual bluegrass weevil, make application prior to egg hatch of the target pest. Be sure to read "APPLICATION EQUIPMENT" Section of this label.
	Hairy chinchbug (suppression) Mole crickets	1.6 oz (1 packet) per 8,250 sq ft	For control of mole crickets make application prior to or during the peak egg hatch period. When adults or large nymphs are present and actively tunneling, MERIT application should be accompanied by a curative insecticide. Follow label instructions for other insecticides when tank-mixing.
Consult your local State Agricultural Experiment Station, or State Extension Turf Specialists for more specific information regarding timing of application.			
NOTE: For optimum control, irrigation or rainfall should occur within 24 hours after application to move the active ingredient through the thatch. Do not apply more 8.6 oz (0.4 lb of active ingredient) per acre per year. Avoid mowing turf or lawn area until after irrigation or rainfall has occurred so that uniformity of application will not be affected.			

RECOMMENDED APPLICATIONS FOR USE ON or IN ORNAMENTALS For use only in and around industrial and commercial buildings and residential areas			
CROP	PEST	DOSAGE MERIT 75 WSP	REMARKS
Trees Shrubs Evergreens Flowers Foliage plants Ground covers	Adelgids Aphids Elm leaf beetles Japanese beetles Lacebugs Leafhoppers Mealybugs Sawfly larvae Thrips (suppression) White Flies	1.6 oz (1 packet) per 300 gal of water	**Foliar Applications:** Start treatments prior to establishment of high pest populations and reapply on an as needed basis.
	White grub larvae (such as Japanese beetle larvae, Chafers, *Phyllophaga* spp. Asiatic garden beetle, Oriental beetle)	1.6 oz (1 packet) per 8,250 to 11,000 sq ft	**Broadcast Applications:** Mix required amount of product in sufficient water to uniformly and accurately cover the area being treated. Do not use less than 2 gallons of water per 1000 sq ft. For optimum control, irrigate thoroughly to incorporate MERIT 75 WSP Insecticide into the upper soil profile. Refer to REMARKS section for use directions specific for FLOWERS and GROUND COVERS concerning additional use directions.
Trees Shrubs Flowers & Ground Covers	Adelgids Aphids Armored scales (suppression) Black vine weevil larvae Elm Leaf beetles Eucalyptus longhorned borer Flatheaded borers (including bronze birch borer and alder-birch borer) Japanese beetles Lacebugs Leafhoppers Leafminers Mealybugs Pine Tip moth larvae Psyllids Royal Palm bugs Sawfly larvae Soft scales Thrips (suppression) White grub larvae Whiteflies	**For Trees:** 1.6 oz (1 packet) per 24 to 48 inches of cumulative trunk diameter	**Soil Injection:** GRID SYSTEM: Holes should be spaced on 2.5 foot centers, in a grid pattern, extending to the drip line of the tree. CIRCLE SYSTEM: Apply in holes evenly spaced in circles, (use more than one circle dependent upon the size of the tree) beneath the drip line of the tree extending in from that line. BASAL SYSTEM: Space injection holes evenly around the base of the tree trunk no more than 6 to 12 inches out from the base. Mix required dosage in sufficient water to inject an equal amount of solution in each hole. Maintain a low pressure and use sufficient solution for distribution of the liquid into the treatment zone. For optimum control, keep the treated area moist for 7 to 10 days. Do not use less than 4 holes per tree. **Soil Drench:** Uniformly apply the dosage in no less than 10 gallons of water per 1000 square feet as a drench around the base of the tree, directed to the root zone. Remove plastic or any other barrier that will stop solution from reaching the root zone. **For Control of Specified Borers:** Application to trees already heavily infested may not prevent the eventual loss of the trees due to existing pest damage and tree stress.
		For Shrubs: 1.6 oz (1 packet) per 24 to 48 ft of cumulative shrub height	**Soil Injection:** Apply to individual plants using dosage indicated. Mix required dosage in sufficient water to inject an equal amount of solution in each hole. Maintain a low pressure and use sufficient solution for distribution of the liquid into the treatment zone. Keep the treated area moist for 7 to 10 days. Do not use less than 4 holes per shrub. **Soil Drench:** Uniformly apply the dosage in no less than 10 gallons of water per 1000 square feet as a drench around the base of the tree, directed to the root zone. Remove plastic or any other barrier that will stop solution from reaching the root zone.
		For Flowers & Ground Covers: 1.6 oz (1 packet) per 8,250 to 11,000 sq ft	Apply as a broadcast treatment and incorporate into the soil before planting or apply after plants are established. If application is made to established plants, optimum control will be attained if area is irrigated thoroughly after application.

When making foliar applications on hard to wet foliage such as holly, pine, or ivy, the addition of a spreader/ sticker is recommended. If concentrate or mist type spray equipment is used, an equivalent amount of product should be used on the area sprayed, as would be used in a dilute application.

MIXING: Within each foil pouch is a clear inner packet containing MERIT 75 WSP Insecticide. The clear inner packet is **water soluble**. Do not allow packets to become wet prior to adding to the spray tank. Do not handle the clear inner packets with wet hands or wet gloves. Rough handling may cause breakage. Reseal outer carton to protect remaining packets.

To prepare the spray mixture, remove the outer foil pouch and drop the required number of **unopened** clear water soluble packets, as determined under "Recommended Applications", into the spray tank while filling with water to the desired level. Operate the agitator while mixing. Depending on the water temperature and the degree of agitation, the packets should be completely dissolved within a few minutes from the time they are added to the water. Cooler water temperatures increase the time needed for the inner packet to dissolve completely.

NOTE: Do not use MERIT 75 WSP packets in a tank- mix with products that contain Boron or release free chlorine. The resultant reaction of PVA and boron or free chlorine is a plastic which is not soluble in water or solvents such as diesel oils, kerosene, gasoline or alcohol. Do not attempt to use the WSP packets directly in diesel oils or summer spray type oils as in ULV or LV uses. PVA packets are water soluble not oil soluble. Use of chlorinated water is acceptable.

MERIT 75 WSP Insecticide has been found to be compatible with commonly used fungicides, miticides, liquid fertilizers, and other commonly used insecticides.

Check physical compatibility using the correct proportion of products in a small jar test if local experience is unavailable.

Do not apply through any irrigation system.

RESTRICTIONS

Do not graze treated areas or use clippings from treated areas for feed or forage. Avoid runoff or puddling of irrigation water following application. Keep children and pets off treated area until dry. Avoid application of MERIT 75 WSP Insecticide to areas which are water logged or saturated, which will not allow penetration into the root zone of the plant. Do not apply more than 8.6 oz (0.4 lb of active ingredient) per acre per year. Do not plant any food crop within one year of a treatment with MERIT 75 WSP Insecticide.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

Handle and open container in a manner as to prevent spillage. If the container is leaking, invert to prevent leakage. If container is leaking or material spilled for any reason or cause, carefully dam up spilled material to prevent runoff. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Absorb spilled material with absorbing type compounds and dispose of as directed for pesticides below. In spill or leak incidents, keep unauthorized people away. You may contact the Bayer Emergency Response Team for decontamination procedures or any other assistance that may be necessary. The Bayer Kansas City Emergency Response telephone number is 800-414-0244 or contact Chemtrec at 800-424-9300.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Completely empty container into application equipment. Then dispose of empty container in a sanitary landfill, by incineration or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

M - 9021b 9/30/98

Bayer Corporation
Garden & Professional Care
Box 4913
Kansas City, MO 64120-0013
(800) 842-8020
http://usagri.bayer.com
ME 0005 GPC Printed in U.S.A.

IMPORTANT
Before using this product, read and carefully observe the directions, cautionary statements and other information appearing on the product packaging label. This product is sold subject to the Conditions of Sale set forth on the container label.

Bayer

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MATERIAL SAFETY DATA SHEET

Bayer

BAYER CORPORATION
AGRICULTURE DIVISION
P.O. Box 4913, Hawthorn Road
Kansas City, Missouri 64120-0013
(816) 242-2000

APPROVAL DATE 09/23/94
SUPERSEDES 07/20/94

TRANSPORTATION EMERGENCY
CALL CHEMTREC.....: 800-424-9300
DISTRICT OF COLUMBIA.....: 202-483-7616

NON-TRANSPORTATION
BAYER EMERGENCY RESPONSE.....: (800) 414-0244
BAYER CUSTOMER SERVICE.....: (800) 842-8020

I. PRODUCT IDENTIFICATION

PRODUCT NAME.....: MERIT 75 WP Insecticide
PRODUCT CODE.....: 216511
EPA REGISTRATION NO......: 3125-421
CHEMICAL FAMILY.....: Chloronicotinyl
CHEMICAL NAME.....: 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine
SYNONYMS.....: Imidacloprid; BAY NTN 33893
FORMULA.....: C9 H10 Cl N5 02

II. HAZARDOUS INGREDIENTS

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
Imidacloprid		
138261-41-3	OSHA.....: Not Established ACGIH.....: Not Established	75%
Ingredient 1968		
Specific chemical identity is withheld as a trade secret.	OSHA.....: Not Established ACGIH.....: Not Established	3-5%
Ingredient 1611		
Specific chemical identity is withheld as a trade secret.	OSHA.....: Not Established ACGIH.....: Not Established	10-20%

III. PHYSICAL PROPERTIES

PHYSICAL FORM.....: Powder; Solid
COLOR.....: Light brown
ODOR.....: None
MOLECULAR WEIGHT.....: 255.7 (for imidacloprid)
pH.....: 1% Slurry pH 6-8
BOILING POINT.....: Not established
MELTING/FREEZING POINT.....: Melting: 120-134 C (for imidacloprid)
SOLUBILITY IN WATER.....: 9-10% of the mixture
SOLUBILITY (NON AQUEOUS).....: Much of the mixture is soluble in acetone, methylene chloride and DMF.
SPECIFIC GRAVITY.....: Not established
BULK DENSITY.....: Tapped bulk density is approximately 30 lbs/cu-ft.
% VOLATILE BY VOLUME.....: Not applicable
% VOLATILE BY WEIGHT.....: Not applicable
EVAPORATION RATE.....: Not established (Butyl acetate = 1)
VAPOR PRESSURE.....: 1.5 x 10 -9 mm @ 20 C (for imidacloprid)
VAPOR DENSITY.....: Not established (Air = 1)
NITROGEN CONTENT.....: Approximately 20%

IV. FIRE AND EXPLOSION DATA

FLASH POINT.....: Not applicable
FLAMMABLE LIMITS:
UPPER EXPLOSIVE LIMIT (UEL) (%).....: Not established
LOWER EXPLOSIVE LIMIT (LEL) (%).....: Not established
EXTINGUISHING MEDIA.....: Water; Carbon Dioxide; Dry Chemical; Foam
SPECIAL FIRE FIGHTING PROCEDURES.....: Keep out of smoke, cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain runoff by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

V. HUMAN HEALTH DATA

ROUTE(S) OF ENTRY.....: Inhalation; Skin contact; Skin absorption
HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:
ACUTE EFFECTS OF EXPOSURE.....: No specific symptoms of acute overexposure are known to occur in humans. Animal studies have shown that this material is mildly toxic by the oral and dermal routes. It is minimally irritating to the conjunctiva of the eye but the irritation is reversible within 24 hours. It is a slight dermal irritant, but is not a dermal sensitizer.
CHRONIC EFFECTS OF EXPOSURE.....: No specific symptoms of chronic overexposure are known to occur in humans.
CARCINOGENICITY.....: This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE.....: No specific medical conditions are known which may be aggravated by exposure to this product.

VI. EMERGENCY AND FIRST AID PROCEDURES

FIRST AID FOR EYES.....: Hold eyelids open and flush with copious amounts of water for 15 minutes. Call a physician if irritation persists or develops after flushing.
FIRST AID FOR SKIN.....: Remove contaminated clothing. Wash skin with soap and water. Get medical attention if irritation persists. If signs of intoxication (poisoning) occur, get medical attention immediately.
FIRST AID FOR INHALATION.....: First, remove victim to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.
FIRST AID FOR INGESTION.....: If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.
NOTE TO PHYSICIAN.....: Treat symptomatically. In case of poisoning, it is also requested that Bayer Corporation, Agriculture Division, Kansas City, Missouri, be notified. Telephone:800/842-8020 (working hours) or 800/414-0244 (non-working hours).
ANTIDOTES.....: None.

VII. EMPLOYEE PROTECTION RECOMMENDATIONS

EYE PROTECTION REQUIREMENTS.....: Goggles should be used when needed to prevent dust from getting into the eyes.
SKIN PROTECTION REQUIREMENTS....: Wear long sleeves and trousers to skin contact.
HAND PROTECTION REQUIREMENTS...: The use of chemical-resistant gloves to prevent skin contact is recommended as good practice.
RESPIRATOR REQUIREMENTS.....: Under normal handling conditions, no respiratory protection is needed; however, when potential exposure to product dust is excessive, wear a NIOSH-approved respirator for dusts and mists or for pesticides.
VENTILATION REQUIREMENTS.....: Control exposure levels through the use of general and local exhaust ventilation where needed.
ADDITIONAL PROTECTIVE MEASURES.....: Clean water should be available for washing in case of eye or skin contamination. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing after use. Wash thoroughly after handling.

VIII. REACTIVITY DATA

STABILITY.....: This is a stable material.
HAZARDOUS POLYMERIZATION.: Will not occur.
INCOMPATIBILITIES.....: None known
INSTABILITY CONDITIONS.....: Strong exothermal reaction above 200 C (for imidacloprid)
DECOMPOSITION PRODUCTS....: Proposed: HC1, HCN, CO, NOx (for imidacloprid)

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IX. SPILL AND LEAK PROCEDURES

SPILL OR LEAK PROCEDURES ..: Isolate area and keep unauthorized people way. Do not walk through spilled material. Avoid breathing dusts and skin contact. Avoid generating dust (a fine water spray mist, plastic film cover, or floor sweeping compound may be used if necessary). Use recommended protective equipment while carefully sweeping up spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Rinse with water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways.

WASTE DISPOSAL METHOD .....: Follow container label instructions for disposal of wastes generated during use in compliance with the product label. In other situations, bury in an EPA approved landfill or burn in an incinerator approved for pesticide destruction. Do not reuse container.

X. SPECIAL PRECAUTIONS AND STORAGE DATA

STORAGE TEMPERATURE (MIN/MAX).....: None/30 day average not to exceed 100 F

SHELF LIFE .....: Not noted

SPECIAL SENSITIVITY .....: Not noted

HANDLING/STORAGE PRECAUTIONS.....: Store in a cool dry area designated specifically for pesticides. Do not store near any material intended for use or consumption by humans or animals.

XI. SHIPPING INFORMATION

TECHNICAL SHIPPING NAME .....: Imidacloprid

FREIGHT CLASS BULK.....: Insecticides, NOI - NMFC 102120

FREIGHT CLASS PACKAGE.....: Insecticides, NOI - NMFC 102120

PRODUCT LABEL.....: Not noted

DOT (HM-181) (DOMESTIC SURFACE)

PROPER SHIPPING NAME.....: Not hazardous or regulated

HAZARD CLASS OR DIVISION .....: Non-regulated

IMO / IMDG CODE (OCEAN)

PROPER SHIPPING NAME.....: Not hazardous or regulated

HAZARD CLASS

DIVISION NUMBER .....: Non-regulated

ICAO / IATA (AIR)

PROPER SHIPPING NAME.....: Not hazardous or regulated

HAZARD CLASS

DIVISION NUMBER .....: Non-regulated

XII. ANIMAL TOXICITY DATA

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the technical-grade active ingredient, Imidacloprid.

ACUTE TOXICITY

ORAL LD50.....: Male Rat: 2591 mg/kg; Female Rat: 1858 mg/kg

DERMAL LD50.....: Male and Female Rat: >2000 mg/kg

INHALATION LC50 .....: 4 Hr. Exposure to Liquid Aerosol: Male Rat: 2.65 mg/l (analytical); Female Rat: 2.75 mg/l (analytical) — 1 Hr. Exposure to Liquid Aerosol (extrapolated from 4 Hr. LC50): Male Rat: 10.6 mg/l (analytical); Female Rat: 11.0 mg/l (analytical)

EYE EFFECTS .....: Rabbit: Only minimal irritation to the conjunctiva was observed with all remarkable irritation resolving by 24 hours.

SKIN EFFECTS.....: Rabbit: Slight dermal irritant.

SENSITIZATION.....: Guinea Pig: Not a dermal sensitizer.

SUBCHRONIC TOXICITY .....: In a 3-week dermal toxicity study, rabbits were treated with the active ingredient, imidacloprid, at the limit dose level of 1000 mg/kg for 6 hours/day, 5 days/week. There were no local or systemic effects observed at any of the levels tested. The no-observed-effect-level (NOEL) was 1000 mg/kg. In a 4-week inhalation study, rats were exposed to dust concentrations of imidacloprid at 5.5, 30.5 and 191.2 mg/cubic meter for 6 hours/day, 5 days/week. Effects observed at the high concentration included decreased body weight gains, decreased heart and thymus weights, increased liver weights, and induction of the hepatic mixed-function oxidases. Histopathological examinations did not reveal any organ damage or local injury to the respiratory tract. The NOEL was 5.5 mg/cubic meter based on induction of the hepatic mixed-function oxidases.

CHRONIC TOXICITY.....: Dogs were administered imidacloprid for 1 year at dietary concentrations of 200, 500 or 1250 ppm. Due to the lack of significant effects, the high dose was increased to 2500 ppm at 17 weeks for the remainder of the study. Effects observed at the high dose included decreased food consumption, increased liver weights and elevated serum chemistries. The NOEL was 500 ppm. In chronic studies using rats, imidacloprid was administered for 2 years to rats at dietary concentrations of 100, 300, 900 or 1800 ppm. Histopathology examinations revealed an increased incidence of mineralization in the colloid of the thyroid follicles at concentrations of 300 ppm and greater. At 1800 ppm, there were changes in the serum chemistries and a slight increase in the incidence of parafollicular hyperplasia seen in the thyroids. Body weight gains were reduced at 900 and 1800 ppm. The overall NOEL was 100 ppm.

CARCINOGENICITY.....: Imidacloprid was investigated for carcinogenicity in chronic feeding studies using mice and rats at maximum levels of 2000 and 1800 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY.....: The imidacloprid mutagenicity studies, taken collectively, demonstrate that the active ingredient is not genotoxic or mutagenic.

DEVELOPMENTAL TOXICITY.....: In a teratology study using rats, imidacloprid was administered by oral gavage during gestation at doses of 10, 30 or 100 mg/kg. At the maternally toxic dose of 100 mg/kg, skeletal examinations of the fetuses revealed a slight increase in the incidence of wavy ribs. The NOELs for maternal and developmental toxicity were 10 and 30 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested. Rabbits were administered imidacloprid during gestation at oral doses of 8, 24 or 72 mg/kg. At the maternally toxic dose of 72 mg/kg, reduced body weights and delayed skeletal ossification were observed in the fetuses. The NOELs for maternal and developmental toxicity were 8 and 24 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested.

REPRODUCTION.....: In a reproduction study, imidacloprid was administered to rats for 2 generations at dietary concentrations of 100, 250 or 700 ppm. Offspring at 700 ppm, exhibited reduced mean body weights and body weight gain. No other reproductive effects were observed. The maternal and reproductive NOELs were 100 and 250 ppm, respectively.

NEUROTOXICITY.....: In an acute oral neurotoxicity study using rats, imidacloprid was administered as a single dose at concentrations of 42, 151 or 307 mg/kg. Clinical observations and neurotoxicity evaluations were performed over a period of 15 days followed by a neurohistiopathological examination. Deaths attributed to imidacloprid were observed at the high dose within a day of treatment. The NOEL for motor and locomotor activity was 42 mg/kg for males. Females at the low dose exhibited minimal decrease in activity in the figure-eight maze. In a subsequent study, the NOEL for motor and locomotor activity in females was 20 mg/kg. The NOEL for neurotoxicity was 307 mg/kg based on the absence of treatment-related microscopic lesions in skeletal muscle or neural tissue. In a 13-week neurotoxicity study, imidacloprid was administered to rats at dietary concentrations of 140, 963 or 3027 ppm. At the mid- and high dose, effects observed included reductions in body weight and feed consumption, and clinical chemistry findings. Neurobehavioral changes were observed only in males at the high dose. There were no correlative micopathologic findings in muscle or neural tissues in any animals at any treatment level. The NOEL for neurotoxicity was 3027 ppm. The overall NOEL was 140 ppm.

XIII. FEDERAL REGULATORY INFORMATION

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS .....: This product is exempt from TSCA Regulation under FIFRA Section 3 (2) (B) (ii) when used as a pesticide.

CERCLA REPORTABLE QUANTITY.....: No components listed.

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES .....: None

SECTION 311/312 HAZARD CATEGORIES .....: Immediate Health Hazard

SECTION 313 TOXIC CHEMICALS.....: None

RCRA STATUS.....: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

XIV. OTHER REGULATORY INFORMATION

NFPA 704M RATINGS:	Health	Flammability	Reactivity	Other
	1	1	1	0

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

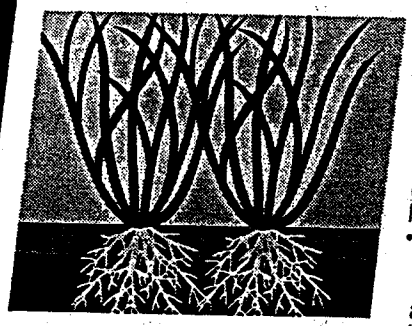
Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer Corporation as a customer service.

Product Code: 216511

07 8 116

PULL HERE TO OPEN

Barricade®



65WG

HERBICIDE

For selective preemergence control of grass and broadleaf weeds in:

- *established turf grasses (excluding golf course putting greens), lawns and sod nurseries*
- *landscape ornamentals*
- *established perennial and wildflower plantings*

Active Ingredient:	
Prodiamine [N^3, N^3-Di-*n*-propyl-2,4-dinitro-6-(trifluoromethyl)-*m*-phenylenediamine]	65.0%
Inert Ingredients:	35.0%
Total:	100.0%

Packaged in water-soluble packets

EPA Reg. No. 100-834

EPA Est. 065387-AR-001

NCP 206L2 0797

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

10 x 1/2 POUND
Water-Soluble Packets

5 POUNDS
Total Net Contents Per Container

NOVARTIS

DIRECTIONS FOR USE AND CONDITIONS OF SALE AND WARRANTY

IMPORTANT: Read the entire **Directions for Use** and the **Conditions of Sale and Warranty** before using this product. If terms are not acceptable, return the unopened product container at once.

CONDITIONS OF SALE AND WARRANTY

The **Directions for Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application all of which are beyond the control of Novartis Crop Protection, Inc. or the Seller. All such risks shall be assumed by the Buyer.

Novartis warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions for Use** subject to the inherent risks referred to above. **Novartis makes no other express or implied warranty of Fitness or Merchantability or any other express or implied warranty. In no case shall Novartis or the Seller be liable for consequential, special, or indirect damages resulting from the use or handling of this product.** Novartis and the Seller offer this product, and the Buyer and user accept it, subject to the foregoing **Conditions of Sale and Warranty,** which may be varied only by agreement in writing signed by a duly authorized representative of Novartis.

No end use of this product other than manufacturing is intended or implied by the above Conditions of Sale and Warranty.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

Barricade® 65WG Herbicide (Barricade) in this package is in 0.5 lb. water-soluble packets. These packets are intended to be added to the spray tank without opening (except for compatibility testing).

Do not remove water-soluble packets from container except for immediate use. Reseal the outer container after use.

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Barricade® 65WG

Barricade 65WG Herbicide (Barricade) is a selective preemergence herbicide that provides residual control of many grass and broadleaf weeds in:

- established turf grasses (excluding golf course putting greens), lawns and sod nurseries
- landscape ornamentals including established perennials and wildflower plantings

Barricade controls susceptible weeds by inhibiting weed seeds germination and root development. Most effective weed control will be obtained when Barricade is activated by at least 0.5 inch of rainfall or irrigation prior to weed seed germination and within 14 days following application.

Do not graze or feed livestock forage cut from areas treated with Barricade.

All applicable directions, restrictions, and precautions on the labels of EPA registered tank-mix partners are to be followed.

Do not blend Barricade 65WG onto dry fertilizer or any other granular material.

Do not apply this product through any type of irrigation system.

Do not apply aerially.

Do not apply to golf course putting greens.

Mixing and Application

Apply Barricade in a minimum of 20 gals./A (0.5 gal./1000 ft.^{2}) of carrier (water and/or fluid fertilizer) using a calibrated, low pressure sprayer with 50 mesh or coarser screens. A broadcast boom or hand held wand designed for herbicide or insecticide application will provide the best results. Select nozzle pressure and gallonage to provide complete coverage.

A spray colorant may be used to modify the color of Barricade to improve application accuracy by minimizing swath skips and overlaps.

Thorough mixing of Barricade in the spray tank is essential for uniform application. Fill the spray tank half full with clean water or fluid fertilizer. Start agitation and check to ensure it is working properly, then add Barricade directly into the tank. Do not remove Barricade from the water-soluble packet as it will dissolve in the tank.

Add the rest of the carrier to obtain the final spray volume. Maintain vigorous agitation to completely dissolve the bags and suspend the contents before and during the application. This will ensure a well mixed spray suspension.

Thoroughly clean the sprayer after use by flushing the system with water containing a detergent. Refer to **Pesticide Disposal** section of this label for waste disposal. Do not allow spray suspension to dry in the tank.

Barricade may be tank mixed with certain other EPA registered herbicides to provide a broader spectrum of weeds controlled or to control emerged weeds. See **Mixing Order** in this section and the **Established Turf** and **Landscape Ornamentals** sections for specific recommendations.

Mixing Order for Tank Mixtures

When mixing Barricade with other components (carrier and partner pesticide products) add the products to the spray tank in the following order:

1. Water dispersible granules (WG formulations) and wettable powders (WP formulations). Wettable powders should be premixed with a small amount of carrier to form a slurry before addition; water dispersible granules can be added directly during filling. Allow the product to disperse completely before other products are added.
2. Flowable liquids (FL) or suspension concentrates (SC).
3. Emulsifiable concentrates (EC).
4. Surfactants approved for application to turf and ornamentals listed on this label. Check surfactant label before use.

Compatibility Test

Before mixing Barricade with other pesticides in the spray tank, test the compatibility by mixing all components (carrier and pesticide products) in a small container in proportionate quantities (see following table).

Amount of Component to Add to One Pint of Spray Carrier (Assuming Volume is 25 gals./A)

Component Formulations	Rate Per		
	Acre	1,000 Ft.²	Teaspoons[1]
Dry	1.0 lb.	0.4 oz.	1.5
Liquid	1.0 pt.	0.4 oz.	0.5

[1] Remove the required amount of Barricade from a water-soluble packet for the compatibility test, saving the remainder in the packet for spray mixture preparation. The amount used will not decrease weed control if the packet is used according to the Maximum Rate Table under **Rates of Application.**

If components do not ball-up or form flakes, sludge, gels, oily films or layers; then the tested spray mix is compatible. Incompatibility in any of the above forms will usually occur within 5 minutes after mixing.

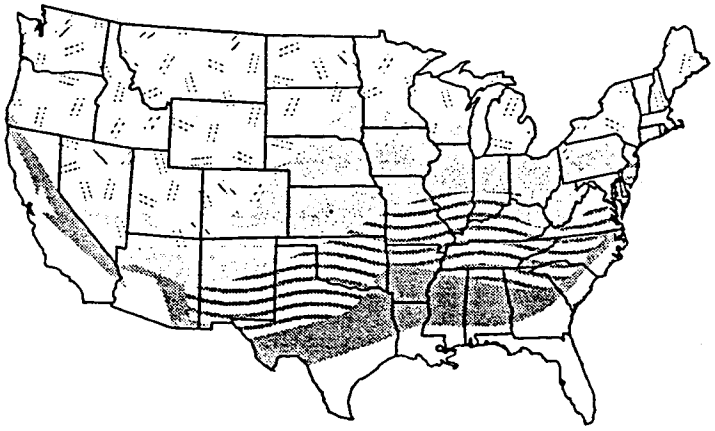
If components are incompatible, the use of a compatibility agent is recommended. Rerun the above test with commercially available compatibility agents until a suitable suspension is formed.

ESTABLISHED TURF

Barricade is a selective preemergence herbicide that, when properly applied, will control certain grass and broadleaf weeds in established turf grasses and lawns. The maximum amount of Barricade that may be applied per year is given for each turf grass species in the **Maximum Annual Rates** section of this label.

Most effective weed control in turf grasses will be obtained when Barricade is activated by at least 0.5 inch of rainfall or irrigation prior to weed seed germination and within 14 days following application. See the map below for approximate crabgrass seed germination dates.

CRABGRASS SEED GERMINATION DATES



USE PRECAUTIONS

The following precautions apply to the use of Barricade in turf grasses and lawns:

Application of Barricade may thin emerged annual bluegrass and newly overseeded grasses.

Do not apply to overseeded turf within 60 days after seeding or until after the second mowing, whichever is longer. Injury to desirable seedlings is likely if Barricade is applied before seedling secondary roots are in the second inch of soil, not thatch plus soil.

Do not cut treated sod before 120 days after application. Do not apply to newly set sod until the following year.

Application of Barricade to turf stressed by drought, low fertility, or pest damage may result in turf injury.

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Disturbing the herbicide barrier with cultural practices such as disking may result in reduced weed control.

Do not apply Barricade to putting greens or areas where dichondra, colonial bentgrass, velvet bentgrass or annual bluegrass *(Poa annua)* are desirable species.

Rates of Application

Barricade may be applied as a single application or in sequential applications to control weeds germinating throughout the year. All applications must be made prior to germination of the target weeds. Barricade will not control established weeds.

Maximum use rate selection should be based on turf species. The length of time of residual weed control provided by Barricade is related to the rate applied.

Maximum Annual Rates

Barricade is recommended for use on the turf grass species listed in the following table. Do not exceed the maximum yearly rate as given in the following table:

Maximum Application Rate Per Calendar Year of Barricade by Turf Grass Species[1]

Turf Species	ft.²/packet	lb./A	oz./1,000 ft.²
Bermudagrass[2] Bahiagrass Centipedegrass Seashore Paspalum St. Augustinegrass[3] Tall Fescue (including turf-type) Zoysia	9,638	2.30	0.83
Buffalograss Kentucky Bluegrass Perennial Ryegrass	14,545	1.50	0.55
Creeping Red Fescue	20,000	1.15	0.40
Creeping Bentgrass	21,622	1.00	0.37

[1] These are the maximum rates per calendar year by species limitations.

[2] May be used on newly sprigged or plugged Bermudagrass at rates not to exceed 0.80 lb./A (0.30 oz./1000 ft.²). Newly sprigged or plugged Bermudagrass stolon rooting may be temporarily retarded.

[3] Use at an initial rate of 0.75-1.5 lb./A per application followed by sequential applications at doses that would not exceed the maximum annual application rate of 2.3 lbs./A per year.

Weeds Controlled

When used in accordance with this label, Barricade will provide control of the following weeds:

Barnyardgrass
Bluegrass, Annual *(Poa annua)*
Carpetweed
Chickweed, Common
Chickweed, Mouseear (from seed)
Crabgrass (Large, Smooth)
Crowfootgrass
Cupgrass, Woolly
Foxtails, Annual
Goosegrass[1]
Henbit
Itchgrass
Johnsongrass (from seed)
Junglerice
Knotweed
Kochia
Lambsquarters, Common
Lovegrass
Panicum
(Texas, Fall, Browntop)
Pigweed
Purlane, Common
Pusley, Florida
Rescuegrass[3]
Signalgrass, Broadleaf
Shepherdspurse[2]
Speedwell, Persian
Sprangletop
Spurge, Prostrate
Witchgrass
Woodsorrel, Yellow
(from seed)

[1] In many areas a single application of 1-2.3 lbs./A of Barricade will control goosegrass. However, under heavy goosegrass pressure and/or an extended growing season, most effective weed control may be obtained by making an initial application of 1-1.5 lbs./A followed after 60-90 days by a second application at doses that would not exceed those given in the Maximum Annual Rate Table. Do not exceed the maximum rate for turf grass species listed in the Maximum Annual Rate Table above.

[2] Applications for this weed should be made in late summer, fall, or winter prior to germination.

[3] Suppression only.

Sequential applications may be made so long as the total amount of product applied does not exceed the maximum annual application rates recommended for each turf species. All applications must be made prior to germination of the weed seeds.

WHEN TO APPLY AFTER OVERSEEDING TURF

Do not apply to overseeded turf within 60 days after seeding or until after the second mowing, whichever is longer. Injury to desirable seedlings is likely if Barricade is applied before seedling secondary roots are in the second inch of soil, not thatch plus soil.

WHEN TO OVERSEED AFTER APPLICATION

Barricade will inhibit the germination of turf species if overseeded too soon after application. Follow rates and intervals in the table below for best overseeding/reseeding results.

Barricade Rate (lbs./A)		Interval Before Overseeding		
Product	a.i.	North	Transition	South
0.75	0.50	4 mo.	4 mo.	4 mo.
1.00	0.65	5 mo.	4 mo.	4 mo.
1.15	0.75	6 mo.	5 mo.	5 mo.
1.25	0.81	—	6 mo.	6 mo.
1.50	0.98	—	7 mo.	7 mo.
1.75	1.15	—	—	9 mo.
2.00	1.30	—	—	10 mo.

Turf Tank Mixes

Barricade may be tank mixed with other registered turf herbicides for broader spectrum weed control. Tank mixes may be used only in states where the tank-mix partner(s) are registered for the application site and the turf species listed above.

Consult the label(s) of the individual tank-mix partner(s) for uses, rate recommendations, application timing, weeds controlled, turf grass safety and specific precautions and/or restrictions.

Before mixing tank-mix partner(s) in the spray tank it is advisable to test compatibility by mixing the products in a small container. See the **Compatibility Test** section under **Mixing and Application.**

LANDSCAPE ORNAMENTALS (Including Established Perennials and Wildflower Plantings)

Barricade may be applied for residual preemergence weed control in ornamentals.

Use Rates

Apply Barricade at 1-2.3 lbs./A in fall and/or spring. Equivalent applications for smaller areas are 0.36-0.83 oz./1,000 ft.^{2} Use higher rates of application for longer control period. Sequential or single applications are allowed so long as the total amount of product applied does not exceed the maximum annual application rate of 2.3 lbs./A per year.

Application Timing and Information

Barricade may be applied to newly transplanted and established ornamentals as a broadcast over the top or directed spray. Irrigation or rainfall soon after application will wash residues off plant foliage and activate Barricade in the soil.

Barricade may be applied at any time to established plants. Delay application to allow soil to settle around new transplants and water thoroughly before applying Barricade. Apply Barricade after cuttings form roots and become established. Apply before budding/grafting or after buds/grafts have taken to avoid any inhibition of the tissue union.

Barricade is a preemergence herbicide and will not control emerged weeds. Most effective weed control in ornamentals will be obtained when Barricade is activated by at least 0.5 inch of rainfall or irrigation prior to weed seed germination and within 14 days following application.

Best weed control is obtained when Barricade is applied to soil free of clods, weeds, and debris such as leaves. Prior to application of Barricade, control existing vegetation by hand weeding, cultivation or the use of an appropriate postemergence herbicide.

The following section gives directions for the use of Barricade in tank mixtures for use on ornamentals.

Tank Mixtures For Use On Ornamentals

Barricade may be tank mixed with other registered herbicides listed on this label for a broader spectrum of preemergence control or postemergent weed control. Tank mixes with Barricade are for use only in states where the tank-mix partner(s), application site and intended use pattern are registered.

Follow the label(s) of Goal®, Gallery®, or other potential tank-mix partner(s) for use, rate recommendations, application timing, weeds controlled, phytotoxicity and specific use precautions and/or restrictions.

Do not apply sprays containing either paraquat, glyphosate or glufosinate-ammonium (Finale®) over the top of ornamental plants. Extreme care must be exercised to prevent contact of spray mixtures of these herbicides with foliage or stems of turfgrasses, trees, shrubs, or other desirable vegetation because severe damage or death may result. If spraying areas adjacent to desirable plants use a shield to prevent spray from contacting foliage or stems of desirable plants.

Before combining tank-mix partners in the spray tank it is advisable to test compatibility by mixing the products in a small container. See the **Compatibility Test** section under **Mixing and Application.**

Tolerant Ornamental Species

Barricade will not harm most ornamental trees, shrubs, and flowers. The species listed below are tolerant to Barricade. Barricade may be applied over the top of these species.

Scientific name	Common name
Abies spp.	Fir species** (Balsam, Fraser, Noble, etc.)
Acer palmatum	Japanese Maple
A. platanoides	Norway Maple
Actinidia chinensis	Kiwi*
Agapanthus africanus	Lily-of-the-Nile
Arctostaphylos densiflora	Vine Hill Manzanita
Arctotheca calendula	Cape Weed
Aucuba japonica	Japanese Aucuba
Barberis gladwynensis	Barberry
B. Julianae	Wintergreen Barberry
B. mentorensis	Mentor Barberry
B. Thunbergii	Japanese Barberry
B. verruculosa	Warty Barberry
Buxus microphylla	Japanese Barberry
Callistemon viminalis	Weeping Bottlebrush
Calluna vulgaris	Scotch Heather
Carpobrotus edulis	Hottentot Fig (Ice Plant)
Cassia artemisoides	Feathery Cassia
Ceanothus rigidus	Wild Lilac
Chamaecyparis pisifera	False Cypress
Cleyera japonica	Cleyera
Citrus spp.	Citrus species*
Cornuf florida	Flowering Dogwood
C. stolonifer	American Dogwood
Cortaderia selloana	Pampas Grass
Cotoneaster apiculatus	Cranberry Cotoneaster
C. buxifolius	Cotoneaster
C. dammeri	Bearberry Cotoneaster
C. microphyllus	Rockspray Cotoneaster
Cretaegus spp.	Hawthorne
Cupressus sempervirens	Italian Cypress
Delasperma alba	White Trailing Ice Plant
Dodonea viscosa	Hop Bush
Elaeagnus pungens	Silverberry
Euonymus fortunei	Wintercreeper
E. japonica	Japanese Spindle Tree (Evergreen Euonymus)
E. kiautschovica	Spreading Euonymus
Fatsia japonica	Japanese Aralia
Forsythia intermedia	Border Forsythia
F. viridissima	Greenstem Forsythia
Gardenia jasminoides	Gardenia, Cape-Jasmine
Gladiolus spp.	Gladiolus species**

Scientific name	Common name
Hedera helix	English Ivy
Hibiscus	Rose of Sharon**
Hibiscus rosa-sinensis	Chinese Hibiscus
Ilex cornuta	Chinese Holly
I. crenata	Japanese Holly
I. opaca	American Holly
I. pernyi	Holly
I. vomitoria	Yaupon
Iris spp.	Iris species**
Jasminium nudiflorum	Winter Jasmine
Juniperus chinesis	Chinese Juniper
J. conferta	Shore Juniper
J. horizontalis	Creeping Juniper
Juglans sp.	Walnut*
Justicia brandegeana	Shrimp Plant
Lagerstromia indica	Crepe Myrtle
Ligustrum amurense	Amur Privet
L. japonicum	Japanese Privet
L. lucidum	Glossy Privet (Waxleaf)
Liriope muscari	Big Blue Lily Turf
Lonicera japonica	Japanese Honeysuckle
L. tatarica	Tatarian Honeysuckle
Magnolia spp.	Magnolia species**
Maleophora luteola	Ice Plant
Malus sp.	Crabapple*
Nandina domestica	Heavenly Bamboo
Narcissus spp.	Narcissus species**
Nerium spp.	Oleander
Olea curopa	Olive*
Ophiopogon japonicus	Mondo Grass
Osteospermum fruticosum	Trailing African Daisy
Oxydendrum arboreum	Sourwood
Persea americana	Avocado*
Photinia fraseri	Frasier's Photinia (Redtip)
Picea spp.	Spruce species** (Colorado Blue, Norway, etc.)
Pieris japonica	Lilly-of-the-Valley Shrub
Pinus brutia	Calabrian Pine
P. canariensis	Canary Island Pine
P. elliottii	Slash Pine
P. halepensis	Aleppo Pine
P. nigra	Austrian Black Pine
P. palustrus	Longleaf Pine
P. radiata	Monterey Pine
P. thunbergiana	Japanese Black Pine
P. strobus	Eastern White Pine
P. sylvestris	Scotch Pine
P. taeda	Loblolly Pine
P. virginiana	Virginia Pine
Pistachio sp.	Pistachio*
Pittosporum rhombifolium	Queensland Pittosporum
P. tobira	Japanese Pittosporum
Podocarpus macrophyllus	Japanese Yew
Prunus laurocerasus	English Laurel
Prunus sp.	Almond, Apricot, Nectarine, Peach, Plum, and Prune*
Pseudotsuga menziensii	Douglas Fir**
Pyracantha coccinea	Firethorn, Scarlet
P. fortuneana	Firethorn
P. koidzumii	Firethorn
Purus sp.	Bradford Pear sp.
Quercus rubra	Oak Species
Raphiolepsis indica	Indian Hawthorne
Rhododendron (including Azalea)	Coral Bells Formosa Hino-crimson PJM Roseum Elegans

Scientific name	Common name
Rosa banksiae	Lady Bank's Rose
Rosmarinus officinalis	Rosemary
Rumohra adiantiformus	Leatherleaf Fern
Santolina virens	
Sedum album	Stonecrop
Syzgium paniculatun	Japanese Boxcherry
Taxus cuspidata	Japanese Yew
T. media	Yew
Thuja occidentalis	American Arborvitae
Trachelospermum asiatum	Star Jasmine
Tsuga canadensis	Canada Hemlock
Tulipa spp.	Tulip species
Viburnum japonicum	Japanese Viburnum
V. odoratissimum	Sweet Viburnum
V. plicatum	Japanese Snowball
V. rigidum	Canary Island Viburnum
V. tinus	Laurustinus
V. trilobium	Cranberry Bush
V. wrightii	Leatherleaf Viburnum
Vinca major	Vinca
Vinca minor	Dwarf Periwinkle
Vitis sp.	Grape*
Weigela florida	Old Fashioned Weigela
Yucca aloifolia	Spanish Bayonet
Y. filamentosa	Yucca, Adam's Needle

* On ornamental species only. Do not use on food producing trees or vines.
** For use field grown nursery stock and landscape ornamental sites.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Storage

Store in original container away from fertilizer, feed, or food stuffs and separated from other pesticides.

Pesticide Disposal

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal

Paper bags and boxes: Completely empty container into application equipment. Then dispose of empty bag or box in a sanitary landfill or at an incineration facility, or, if allowed by state and local authorities, by burning locally. If burned, stay out of smoke.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if inhaled or absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact, while mixing or handling the concentrated material, may cause allergic reactions in some individuals.

Statement of Practical Treatment

If on skin: Wash with soap and water. Rinse thoroughly.

If inhaled: Remove victim to clear air.

If in eyes: Flush thoroughly with water for several minutes. Contact a physician if irritation persists.

Personal Protective Equipment

WPS USES:

Applicators and other handlers (other than mixers and loaders) who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170)–in general, agricultural-plant uses are covered–must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixers and Loaders must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

NON-WPS USES:

Mixers and loaders who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR Part 170) – in general, only agricultural-plant uses are covered by the WPS – must wear:

- Waterproof gloves

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- After handling this product, immediately wash the outside of gloves before removing them, then remove gloves and all other PPE. Immediately wash thoroughly and change into clean clothing.

Environmental Hazards

This product has low solubility in water. At the limit of solubility, this product is not toxic to fish. However, at concentrations substantially above the level of water solubility, it may be toxic to fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Do not contaminate water when disposing of equipment wash waters.

Novartis Crop Protection, Inc.
Turf and Ornamental Products
Greensboro, North Carolina 27419
NCP 206L2 0797

This booklet manufactured using post-consumer, recycled paper.

Barricade® 65WG

HERBICIDE

For selective preemergence control of grass and broadleaf weeds in:

- established turf grasses (excluding golf course putting greens), lawns and sod nurseries
- landscape ornamentals
- established perennial and wildflower plantings

Active Ingredient: Prodiamine [N^3,N^3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine]	65.0%
Inert Ingredients:	35.0%
Total:	100.0%

Packaged in water-soluble packets

EPA Reg. No. 100-834

EPA Est. 065387-AR-001

Novartis Crop Protection, Inc.
Turf and Ornamental Products
Greensboro, North Carolina 27419

NCP 206L2 0797

10 x 1/2 POUND
Water-Soluble Packets

5 POUNDS
Total Net Contents Per Container

See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS
Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

Precautionary Statements

Hazards to Humans and Domestic Animals
Harmful if inhaled or absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact, while mixing or handling the concentrated material, may cause allergic reactions in some individuals.

Statement of Practical Treatment
If on skin: Wash with soap and water. Rinse thoroughly.

If inhaled: Remove victim to clear air.

If in eyes: Flush thoroughly with water for several minutes. Contact a physician if irritation persists.

Environmental Hazards
This product has low solubility in water. At the limit of solubility, this product is not toxic to fish. However, at concentrations substantially above the level of water solubility, it may be toxic to fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Do not contaminate water when disposing of equipment wash waters.

Storage and Disposal
Do not contaminate water, food, or feed by storage or disposal.

Storage
Store in original container away from fertilizer, feed, or food stuffs and separated from other pesticides.

Pesticide Disposal
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal
Paper bags and boxes: Completely empty container into application equipment. Then dispose of empty bag or box in a sanitary landfill or at an incineration facility, or, if allowed by state and local authorities, by burning locally. If burned, stay out of smoke.

Chemigation
Do not apply this product through any type of irrigation system.

NOVARTIS

syngenta

MATERIAL SAFETY DATA SHEET

In Case of Emergency, Call
1-800-888-8372

Syngenta Crop Protection, Inc
Post Office Box 18300
Greensboro, NC 27419

1. CHEMICAL IDENTIFICATION

Product Name:	**BARRICADE 65WG HERBICIDE**	Product No.:	A9950A
EPA Signal Word:	Caution		
Active Ingredient(%):	Prodiamine (65%)	CAS No.:	29091-21-2
Chemical Name:	N3,N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine		
Chemical Class:	Dinitoaniline Herbicide		

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Kaolin Clay	15 mg/m3 (Total Dust);5 mg/m3 (Respirable)	2 mg/m3 (Respirable)	Not Established	No
Surfactant	Not Established	Not Established	Not Established	No
Dispersing Agent	Not Established	Not Established	15 mg/m3 (Total Dust)*	No
Sodium Sulfite	Not Established	Not Established	Not Established	IARC, 3
Dispersant	Not Established	Not Established	Not Established	No
Prodiamine (65%)	Not Established	Not Established	Not Established	No

* recommended by manufacturer

3. HAZARDS IDENTIFICATION

Symptoms of Acute Exposure

Exposure may cause eye or skin irritation. A skin sensitizing (allergic) reaction may occur in some individuals.

Hazardous Decomposition Products

None Known

Physical Properties

Appearance: Greenish-Yellow Granules

Odor: Odorless

Unusual Fire, Explosion and Reactivity Hazards

Explosion/ Reactivity Hazards During Manufacturing and Processing: This product qualifies as a ST-2 Hazard Classification according to NFPA 68, Venting of Deflagrations Guide, 1988 edition. It poses a dust explosion hazard because it can generate and store static electricity, is sensitive to ignition by electrostatic discharge, ignites at low dust cloud concentrations and once ignited, generates pressure at a very rapid rate.

Fire Hazards: Thermal decomposition products may include, but are not limited to, Oxides of Nitrogen, Hydrogen Fluoride and Carbon Monoxide.

4. FIRST AID MEASURES

If poisoning is suspected, immediately contact a physician, the nearest hospital, or the nearest Poison Control Center. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given.

Ingestion: If victim is fully conscious, give a large quantity of water to drink and induce vomiting. Never give anything by mouth to an unconscious person.

Eye Contact: Immediately rinse eyes with a large amount of running water. Hold eye lids apart to rinse the entire surface of the eyes and lids. Do not apply any medicating agents except on the advice of a physician.

Skin Contact: Wash with plenty of soap and water, including hair and under fingernails. Do not apply any medicating agents except on the advice of a physician. Remove contaminated clothing and decontaminate prior to use.

Inhalation: Move victim from contaminated area to fresh air. Apply artificial respiration if necessary.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Medical Condition Likely to be Aggravated by Exposure

Individuals with allergic history or pre-existing dermatitis should use extra care in handling this product.

5. FIRE FIGHTING MEASURES

Fire and Explosion

Flash Point (Test Method):	Not Applicable
Flammable Limits (% in Air):	Lower: %; Upper: % Not Applicable
Autoignition Temperature:	Not Available
Flammability:	Not Flammable

Unusual Fire, Explosion and Reactivity Hazards

Explosion/ Reactivity Hazards During Manufacturing and Processing: This product qualifies as a ST-2 Hazard Classification according to NFPA 68, Venting of Deflagrations Guide, 1988 edition. It poses a dust explosion hazard because it can generate and store static electricity, is sensitive to ignition by electrostatic discharge, ignites at low dust cloud concentrations and once ignited, generates pressure at a very rapid rate.

Fire Hazards: Thermal decomposition products may include, but are not limited to, Oxides of Nitrogen, Hydrogen Fluoride and Carbon Monoxide.

In Case of Fire

Use dry chemical, foam, or CO2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Wear chemical safety glasses with side shields or chemical goggles, rubber gloves, rubber boots, long-sleeved shirt, long pants, head covering, and use a particulate filter, NIOSH approved per 42 CFR Part 84. Select N or R or P type as appropriate for the oil characteristics of any other air contaminants present. Filter efficiency may range from 95 - 99.97% as appropriate for the size distribution of dusts present. For small spills, sweep up, keeping dust to a minimum and place in an approved chemical container. Wash the spill area with water containing a strong detergent, absorb with pet litter or other absorbent material, sweep up and place in a chemical container. Seal the container and handle in an approved manner. Flush the area with water to remove any residue. Do not allow wash water to contaminate water supplies.

7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of the reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco usage, and cosmetic application in areas where there is a potential for exposure to the material. Always wash thoroughly after handling.

8. EXPOSURE CONTROLS/PERSO

THE FOLLOWING RECOMMENDATIONS F
THE MANUFACTURE, FORMULATION A
FOR COMMERCIAL APPLICATIONS AN

Ingestion:	Prevent eating, drinking, t exposure to the material.
Eye Contact:	To avoid eye contact, we
Skin Contact:	To avoid skin contact, w
Inhalation:	To avoid breathing dust, type as appropriate for t range from 95 - 99.97%

TECTION ARE INTENDED FOR

DUCT LABEL.

re there is a potential for

ggles.

rt, long pants and a head covering.

FR Part 84. Select N or R or P present. Filter efficiency may ent.

9. PHYSICAL AND CHEMICAL P

Appearance:	Greenish-Yello
Odor:	Odorless
Melting Point:	Not Available
Boiling Point:	Not Applicable
Specific Gravity/Density:	0.63 g/mL
pH:	9.21

Solubility in H2O

Prodiamine : 0.01

Vapor Pressure

Prodiamine : 1.0

10. STABILITY AND REACTIVITY

Reactivity

Stability:	Stable
Hazardous Polymerization:	Will N
Conditions to Avoid:	Oxidizi

tion Sources.

Hazardous Decomposition Products

None Known

11. TOXICOLOGICAL INFORMAT

Acute Toxicity/Irritation Studies

Ingestion:	Practically Non-T
	Oral LD50 (Rat)
Dermal:	Slightly Toxic
	Dermal LD50 (R
Inhalation:	Not Available
	Inhalation LC50
Eye Contact:	Mildly Irritating
Skin Contact:	Mildly Irritating
Skin Sensitization:	Sensitizing (Gu

Mutagenic Potential

Prodiamine: None Observed

Reproductive Hazard Potential

Prodiamine: Fetal toxicity

l toxicity observed at 1g/kg/day.

Chronic/Subchronic Toxicity Studies

Prodiamine: Liver (alteration

nbalances) at high dose levels

(rats); decreased body weight gains.

Carcinogenic Potential

Prodiamine: Benign thyroid tumors (rat). None observed (mouse).

Other Toxicity Information

Not Available

Toxicity of Other Components

Dispersant

Irritating to eyes, skin or respiratory tract. Ingestion may result in gastrointestinal irritation.

Dispersing Agent

Exposure can result in eye, skin and respiratory tract irritation.

Kaolin Clay

Long term overexposure to high concentrations of this dust without the use of a respirator may produce x-ray evidence of dust in the lungs and may affect respiratory function.

Surfactant

Exposure can result in moderate eye irritation. Prolonged or repeated contact may cause skin irritation.

Target Organs

Active Ingredients

Prodiamine	: Liver and Thyroid

Inert Ingredients

Dispersant	: Eyes, Skin or Respiratory Tract
Dispersing Agent	: Eyes, Skin and Respiratory Tract
Kaolin Clay	: Respiratory Tract
Surfactant	: Eyes and Skin

12. ECOLOGICAL INFORMATION

Summary of Effects

Prodiamine:

Not Available

Eco-Acute Toxicity

Prodiamine: Rainbow Trout 96-hour LC50 >829 ug/L
Bluegill Sunfish 96-hour LC50 >552 ug/L
Daphnia magna 48-hour LC50 >658 ug/L

Eco-Chronic Toxicity

Prodiamine: Not Available

Environmental Fate

Prodiamine:

No data available for the formulation. The information presented here is for the active ingredient, prodiamine. A thorough review of environmental information is not possible in this document. For additional information call the toll free number listed in Section 16.

ENVIRONMENTAL PERSISTENCE/MOBILITY:

Stable in sterile water, in the dark at pH 5,7 and 9, but degrades rapidly in the light, in both water ($t_{1/2}$ = 0.3 hr @ pH 5.5) and soil ($t_{1/2}$ = 50 hr). Degradation in soil, in the dark is variable under aerobic conditions ($t_{1/2}$ ~ 57 - 218 d), more rapid under anaerobic conditions ($t_{1/2}$ ~ 30 d). Immobile in various soils (Koc >9000). Bioaccumulation is high (BCF = 1300X, whole fish).

13. DISPOSAL CONSIDERATION

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification:

Not Applicable. Not regulated by DOT.

B/L Freight Classification

Herbicides, NOI

International Transportation

Not Applicable

15. REGULATORY INFORMATION

SARA Title III Classification

Section 311/312: Acute Health Hazard
Chronic Health Hazard
Reactive Hazard

Section 313 chemical(s): Not Applicable

Proposition 65

Not Applicable

CERCLA Reportable Quantity (RQ)

None

RCRA Classification

Not Applicable

TSCA Status

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings

Health:	1
Flammability:	1
Reactivity:	1

0	Least
1	Slight
2	Moderate
3	High
4	Severe

Questions concerning the safe handling of the product should be referred to:

1-800-334-9481

Issued Date: 1/2/1992

Revised Date: 2/28/2000 Supersedes: 2/17/2000

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

RSVP# : SCP-955-834A-00145K

Aventis

PROXY®

PLANT GROWTH REGULATOR

For Commercial Use Only. Not For Residential Use.
For use on Turf.

ACTIVE INGREDIENT:

Ethephon [(2-chloroethyl)phosphonic acid]*	21.7%*
INERT INGREDIENTS:	78.3%**
TOTAL	100.0%

*Contains 2 pounds ethephon per gallon.

KEEP OUT OF REACH OF CHILDREN

DANGER PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label find someone to explain it to you in detail.

EPA Reg. No. 264-267-432 **EPA Est. No.**

IN CASE OF MEDICAL, ENVIRONMENTAL, OR TRANSPORTATION EMERGENCIES OR INJURIES, CALL 1-800-334-7577 (24 HOURS/DAY).

FOR PRODUCT INFORMATION, CALL TOLL-FREE: 1-800-331-2867

The use of this product for a variety of plant growth regulation uses is covered by United States and foreign patents including U.S. Patent 4,240,819. No license is granted to use this product in countries other than the United States or for any use not contemplated by this label. Liability for patent infringement may result from use or sale of this product outside the United States.

chipco®
Professional Products

NET CONTENTS:

AVENTIS ENVIRONMENTAL SCIENCE USA LP
95 Chestnut Ridge Road • Montvale, NJ 07645

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses if present after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have a person sip a glass of water if able to swallow. Do not induce vomiting unless told by a poison control center or doctor.

IF ON SKIN: Take off contaminted clothing. Rinse immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF INHALED: Move person to fresh air. If person is not breathing call 911 or ambulance, then give artificial respiration preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. No specific antidote is avaiable. All treatmenmts should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occured.

Victims of severe overexposure, by inhalation, should be kept under medical observation for up to 72 hours for delayed onset of pulmonary edema. In a victim of overexposure by ingestion, careful gastric lavage is required due to the possibility of stomach or esophogeal perforation. This material is an acid, but the use of alkaline substances to neutralize it is contraindicated.

PRECAUTIONARY STATEMENTS

DANGER

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Corrosive. Causes irreversible eye damage. Wear safety goggles when handling. Harmful if swallowed or absorbed through skin. Do not get in eyes or on clothing. Avoid contact with skin. Do not inhale vapors as this product will irritate mucous membranes.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear long-sleeved shirts and long pants, waterproof gloves, shoes plus socks and protective eyewear.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this products concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPF separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Users should remove clothing immediately if pesticide gets inside. Then wash body thoroughly and put on clean clothing. The contaminated clothing should be washed before reuse.

Users should remove PPF immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing. Wash the outside of gloves before removing.

ENVIRONMENTAL HAZARDS

Do not contaminate water used for irrigation or domestic purposes. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Avoid spray drift to nearby crops as this product will cause modifications in plant growth. Plant injury may result.

IMPORTANT: Do not apply PROXY through any type of irrigation system.

Do not use this product for purposes other than those listed on the label.

Do not exceed the rate of PROXY per acre per year recommended on this label.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations. Read entire label before using this product.

STORAGE AND DISPOSAL

STORAGE: Do not contaminate water, food, or feed by storage and disposal.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

GENERAL INFORMATION

For local recommendations on rates, spray volumes (gallons of water per acre), and spray equipment under varying temperature and rainfall conditions consult RhÔne-Poulenc Ag Company Representative for his experience with this product in your area.

USE PRECAUTIONS

DO NOT MIX PROXY WITH AMMONIUM THIOSULFATE. SUCH TANK MIXTURES MAY RESULT IN FORMATION OF TOXIC FUMES.

Mix only the amount of spray you expect to use each day. Do not allow mixed solution to stand overnight.

Do not use PROXY with additives other than recommended on this label.

Avoid spills of concentrated product on spray equipment.

IMMEDIATELY RINSE ANY SPILLS WITH PLENTY OF WATER AS PROXY IS CORROSIVE.

EQUIPMENT CLEANING

Because of the acidic nature of this product, prolonged exposure to spray deposits will damage acrylic plastics, certain paints, and metals.

Rinse thoroughly all exposed acrylic-plastic materials and painted surfaces with a detergent and water within one hour after exposure to spray deposits.

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TURF

An application of PROXY slows the growth of turfgrasses thus reducing the required frequency of mowing and the volume of clippings collected.

SITES	RATE	APPLICATION	SPRAY VOLUME
Fairways, Roughs and Commercial Turfgrasses, including Bentgrass (Fairway cut), Kentucky Bluegrass, Perennial Ryegrass, Tall & Fine Fescue	5 fl. oz./1000 ft²	Apply to actively growing turf. It will require 7-10 days for PROXY to act. Reapplication intervals: Kentucky Bluegrass-7 wks. Perennial Ryegrass-7 wks. Tall/Fine Fescue-4 wks. Bentgrass 4 wks.	0.5-4.0 gals/1000 ft²

USE LIMITATIONS:

- Do not allow entry to treated areas until sprays have dried.
- For best results, apply with sprayer in sufficient volume of water to provide uniform coverage. PROXY is foliarly absorbed.
- Apply only to actively growing turf, under favorable growing conditions, that is not going into a dormancy period. Do not treat turfgrass with poor root systems or growing under stress due to poor soil conditions, drought, disease or insect damage.
- Do not apply to golf course greens.
- Use of spreaders/stickers with PROXY is not necessary.
- PROXY is an acidic product and prolonged exposure to spray deposits will damage acrylic plastics, certain paints and metals. Rinse thoroughly all exposed acrylic plastic materials and painted surfaces with a detergent and water within one hour after exposure to spray deposits.

Test tankmixes with other products on a small area before using widely.

IMPORTANT: READ BEFORE USE

Read the entire Directions for Use, Conditions, Disclaimer of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following conditions, disclaimer of warranties and limitations of liability.

CONDITIONS: The directions for use of this product are believed to be adequate and should be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Aventis Environmental Science USA LP. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: AVENTIS ENVIRONMENTAL SCIENCE USA LP MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, THAT EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of Aventis Environmental Science USA LP is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. Aventis Environmental Science disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT AVENTIS ENVIRONMENTAL SCIENCE'S ELECTION, THE REPLACEMENT OF PRODUCT.

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Material Safety Data Sheet

PROXY GROWTH REGULATOR

MSDS Number: 000000000141
MSDS Version

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name	PROXY GROWTH REGULATOR
Chemical Name	ETHEPHON
Synonym	ETHEPHON
MSDS Number	000000000141
Chemical Family	
Chemical Formulation	C2H6ClO3P
EPA Registration No.	432-1230
Canadian Registrat. No.	

Aventis
95 Chestnut Ridge Road
Montvale, NJ 07645
US

For Product Use Information: (800)331-2867 Monday through Friday 8:00AM-4:30PM
For Medical Emergency contact DART: (800) 334-7577 24 Hours/Day
For Transportation Emergency CHEMTREC: (800) 424-9300 24 Hours/Day

Product Use Description FIFRA regulated use only.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS No.	Concentration % by Weight	
		Minimum	Maximum
ETHEPHON ((2-CHLOROETHYL) PHOSPHONIC ACID)	16672-87-0	21.700	
Other ingredients (Trade secret)		78.300	

SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview Warning Statements: DANGER

HAZARDS TO HUMANS AND DOMESTIC ANIMALS
Corrosive: Causes irreversible eye damage. Wear safety goggles when handling. Harmful if swallowed or absorbed through skin. Do not get in eyes or on clothing. Avoid contact with skin. Do not inhale vapors, as this product will irritate mucous membranes.

Odor neutral odor.

Appearance clear / liquid.

Immediate Effects
Eye Corrosive: Causes irreversible eye damage.
Liquid or vapor can cause redness, tearing, irritation, eye injury which

	may persist for several days.
Skin	Harmful if absorbed through skin. May cause redness, irritation, swelling, on prolonged contact. .
Ingestion	Harmful if ingested. May cause burns to mouth and esophagus, cest pain, abdominal pain.
Inhalation	Harmful if inhaled. Mists may cause upper respiratory tract irritation, coughing, sore throat.
Chronic or Delayed Long-Term	This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens. Prolonged contact can cause chronic bronchitis.
Medical Conditions Aggravated by Exposure	Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

SECTION 4. FIRST AID MEASURES

Eye	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lense, if present, after the first 5 miutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Skin	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.
Ingestion	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
Inhalation	Move person to fresh air. If person is not breathing, call 911 or ambulance, and then give artificial respiration preferably mouth-tt-mouth if possible. Call poison control center or doctor for further treatment advice.
Note to Physician	All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Probable mucosal damage may contraindicte the use of gastric lavage. No specific antidote is available. All treatments should be based on observed signs and symptoms of distress in the patient. Victims of severe overexposure, by inhalation, should be kept under

medical observation for up to 72 hours for delayed onset of pulmonary edema. In a victim of overexposure by ingestion, careful gastric lavage is required due to the possibility of stomach or esophageal perforation. This material is an acid, but the use of alkaline substances to neuttralize it is contraindicted.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point	Not Applicable
Fire and Explosion Hazards	Under fire conditions, toxic, corrosive fumes are emitted.
Suitable Extinguishing Media	Not combustible. Use extinguishing method suitable for surrounding fire.
Fire Fighting Instructions	Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

SECTION 6. ACCIDENTAL RELEASE MEASURES

General and Disposal

Evacuation Procedures and Safety:
Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Cleanup and Disposal of Spill:
Pump any free liquid into an appropriate closed container (see Section 7: Handling and Storage). Absorb with an inert absorbent. Sweep up and place in an appropriate closed container (see Section 7: Handling and Storage). Clean up residual material by washing area with water. Collect washings for disposal. Decontaminate tools and equipment following cleanup.

Land Spill or Leaks

Containment of Spill:
Dike spill using absorbent or impervious materials such as earth, sand or clay. Follow procedure described below under Cleanup and Disposal of Spill.

Environmental and Regulatory Reporting:
Do not flush to drain. If spilled on the ground, the affected area should be removed to a depth of one or two inches and placed in an appropriate container for disposal. Prevent material from entering public sewer system or any waterways.

SECTION 7. HANDLING AND STORAGE

Handling Procedures

Do not get on skin or in eyes. Avoid breathing vapors and mists. Do not ingest. Avoid getting material on clothing. Do not contaminate

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water sources, food or feedstuffs when disposing of left-over material.

Storing Procedures

Do not contaminate water, food, or feed by storage and disposal.

Work/Hygienic Procedures

Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material:

(1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.

(2) Wash hands and face carefully before eating, drinking, chewing gum, using tobacco, applying cosmetics, or using the toilet.

(3) Wash exposed skin promptly to remove accidental splashes of contact with this material.

(4) Users should remove clothing immediately if pesticide gets inside. Then wash body thoroughly and change into clean clothing. The contaminated clothing should be washed before reuse.

(5) Users should remove PPE immediately after handling this product. As soon as possible, wash throughly and change into clean clothing. Wash the outide of gloves befor removing.

(6) Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product concentrate. Do not reuse them.

(7) Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

(8) Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.

(9) Do not apply this product in a way that will contact workers or other persons, either directly or through drift.

Min/Max Storage Temperatures

Not Available

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures.

Eye/Face Protection

Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular

use intended for this material.

Face contact should be prevented through use of a face shield and protective eyewear.

Body Protection

Skin contact must be prevented through the use of permeation resistant clothing including long-sleeved shirts and long pants, chemical resistant gloves and shoes plus socks, selected with regard for use conditions and exposure potential.

An emergency shower must be readily accessible to the work area.

Consideration must be given both to durability as well as permeation resistance.

Respiratory Protection

When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

Under normal conditions, in the absence of other airborne contaminants,the following devices should provide protection from this material up to the conditions specified by the appropriate OSHA, WHMIS or ANSI standard(s): Air-purifying (half-mask/full-face) respirator with cartridges/canister approved for use against dusts, mists and fumes, pesticides.

Under conditions immediately dangerous to life or health, or emergency conditions with unknown concentrations, use a full-face positive pressure air-supplied respirator equipped with an emergency escape airsupply unit or use a self-contained breathing apparatus unit.

General Protection

Introductory Remarks:
These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled inaccordance with Section 13: Disposal Considerations.

Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

PERSONAL PROTECTIVE EQUIPMENT (PPE)
Applicators and other handlers must wear:
Long-sleeved shirts and long pants
Chemical-resistant gloves made of any waterproof material such as polyethylene or polyvinal chloride
Shoes plus socks and protective eyeware.

Exposure Limits

No exposure limits were found for this product or any of its ingredients.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	clear / liquid.
Odor	neutral odor.
pH	1.9 at 1 wt/wt%.
Vapor Pressure	25 °C << 0.01 mmHg
Vapor Density (air = 1)	Not Available
Specific Gravity	1.106 25 °C
Boiling Point	Not Available
Melting/Freezing Point	Melting Point Range: Not Available Freezing Point Range: -5 °C (23 °F)
Solubility (in water)	soluble 100 wt/wt% 25 °C
Molecular Weight	144.5
Other Information	Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product Information phone number in Section 1 for its exact specifications.

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	This material is stable under normal handling and storage conditions described in Section 7.
Conditions to Avoid	elevated temperatures extreme humidity
Incompatibility with	zinc, iron, copper, strong oxidizing agents, bases, mild steel, aluminium Decomposition Temperature Range: 170 °C (338 °F)
Hazardous Products of Decomposition	Decomposition Type: thermal hydrogen chloride oxides of carbon
Hazardous Polymerization (Conditions to avoid)	not applicable

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SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity	Toxicological Information and Interpretation LD50 - lethal dose 50% of test species, > 5000 mg/kg, rat.
Acute Dermal Toxicity	Toxicological Information and Interpretation LD50 - lethal dose 50%of test species, > 2000 mg/kg, rabbit.
Acute Inhalation Toxicity	Acute Respiratory Irritation: No test data found for product. Acute Inhalation Toxicity: No test data found for product.
Skin Irritation	Toxicological Information and Interpretation Rabbit, skin irritation. Minimally irritating.
Eye Irritation	Toxicological Information and Interpretation Rabbit, eye irritation. Moderately irritating.
Chronic Toxicity	This product does not contain any substances thatare considered by OSHA, NTP, IARC or ACGIH to be probable or suspected human carcinogens. No additional test data found for product.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Precautions	Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.
Ecological Information	For ecotoxicological data call the product information phone number listed in Section 1.
Environmental Fate	For chemical fate data call the product information phone number listed in Section 1.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance	Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions Contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA Regional Office for guidance. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by incineration or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

EPA Hazardous Waste - YES
EPA RCRA HAZARDOUS WASTE CODES: C Corrosive.

SECTION 14. TRANSPORT INFORMATION

For Transportation Regulatory Information call the Product Information phone number in Section 1.

SECTION 15. REGULATORY INFORMATION

FEDERAL REGULATIONS
TSCA Inventory Status:
This product is excluded from TSCA because it is solely for FIFRA regulated use.

SARA Title III Hazard Classes:
Fire Hazard - NO
Reactive Hazard - NO
Release of Pressure - NO
Acute Health Hazard - YES
Chronic Health Hazard - NO

SARA Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances

Ingredient	CERCLA/SARA RQ	SARA EHS TPQ
UNLISTED HAZARDOUS - WASTES CHARACTERISTIC OF CORROSIVITY	100 lbs	

STATE REGULATIONS:
This product does not contain any components that are regulated under California Proposition 65.

SECTION 16. OTHER INFORMATION

National Fire Protection Association Hazard Ratings--NFPA(R):
2 Health Hazard Rating--Moderate
1 Flammability Rating--Slight
0 Instability Rating--Minimal

National Paint & Coating Hazardous Materials Identification
2 Health Hazard Rating--Moderate
1 Flammability Rating--Slight
0 Reactivity Rating--Minimal

Reason for Revisions: EPA Number changed and changes made to Section 3 Hazards Identification

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& 4 First Aid Measures.

Disclaimer:
The information herein is given in good faith but no warranty, expressed or implied, is made.

Print Date: 11/02/2001
Supersedes MSDS, which is older than: 06/28/2001

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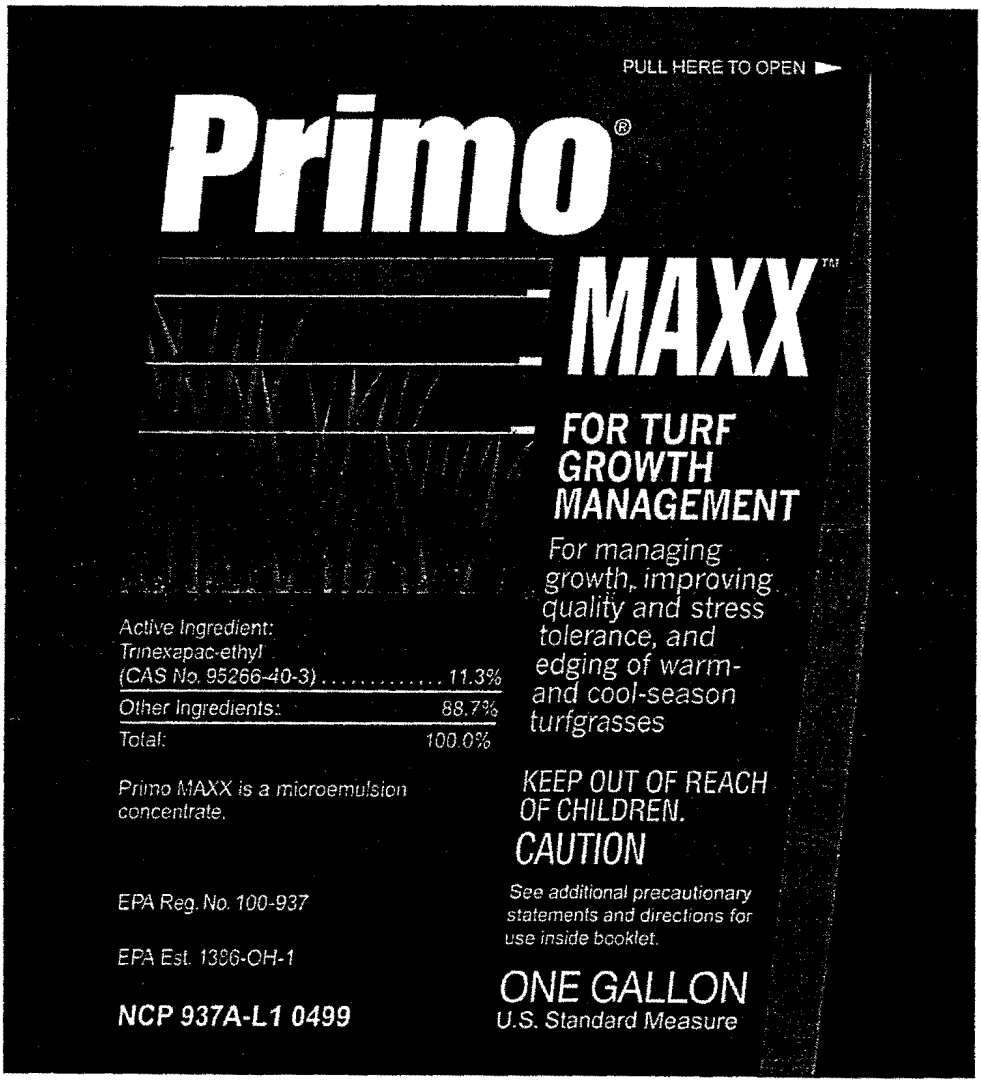

NOVARTIS

NCP 130-937A-L1

DIRECTIONS FOR USE AND CONDITIONS OF SALE AND WARRANTY

IMPORTANT: Read the entire **Directions for Use** and the **Conditions of Sale and Warranty** before using this product. If terms are not acceptable, return the unopened product container at once.

CONDITIONS OF SALE AND WARRANTY

The **Directions for Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Turf injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application all of which are beyond the control of Novartis Crop Protection, Inc. or the Seller. All such risks shall be assumed by the buyer.

Novartis warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions for Use** subject to the inherent risks referred to above. **Novartis makes no other express or implied warranty of Fitness or Merchantability or any other express or implied warranty. In no case shall Novartis or the Seller be liable for consequential, special, or indirect damages resulting from the use or handling of this product.** Novartis and the Seller offer this product, and the Buyer and user accept it, subject to the foregoing **Conditions of Sale and Warranty,** which may be varied only by agreement in writing signed by a duly authorized representative of Novartis.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter treated areas without footwear until sprays have dried.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter treated areas without footwear until sprays have dried.

Observe all precautions and limitations on this label and on the labels of each product used in tank mixture with this product.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN UNEVEN GROWTH REDUCTION OR SEVERELY STUNTED TURF.

GENERAL INFORMATION

Primo MAXX for turf growth management reduces the frequency of mowing and the amount of grass clippings by reducing the growth of warm- and cool-season turfgrasses. Other benefits, such as increased turf density, increased color, and increased turf quality, are frequently observed after Primo MAXX applications.

Primo MAXX can be applied to well-maintained, quality turfgrass areas, such as residential and commercial lawns, golf courses, sod farms, sports fields, cemeteries, and similar areas. Primo MAXX is useful in the management of difficult-to-mow areas and can be used to minimize the need for edging turfgrass along sidewalks, curbs, parking lots, driveways, flower beds, fences and around posts, storage sheds, and trees.

Primo MAXX reaches the growing point by foliar uptake and is rainfast from rainfall or irrigation after one hour. Watering-in is not necessary for activation.

NOTICE TO USER: Plant tolerances to Primo MAXX have been found to be acceptable for the grasses listed on this label. Due to the large number of species and cultivars of grasses, it is impossible to test every one for tolerance to Primo MAXX. Neither the manufacturer nor the seller has determined whether or not Primo MAXX can be used safely on grasses not specified on this label. The professional user should determine if Primo MAXX can be used safely prior to commercial use. Before using Primo MAXX for grasses not listed in the application table, test Primo MAXX on a small scale first. Apply the lower recommended rate for the turf setting (lawn, fairway, etc.) and evaluate for phytotoxicity and growth inhibition to widespread use.

APPLICATION INFORMATION

Environmental conditions, management, and cultural practices that affect turf growth and vigor will influence the response of the turf to Primo MAXX applications. Fertility level, moisture availability, plant vigor, height, and frequency of mowing, etc. have been shown to influence the activity of Primo MAXX.

The rates presented in the **Application Rate Table** provide approximately 50% growth inhibition over a 4-week period with little or no discoloration of turf growing under favorable conditions.

Excessive turf growth, which may occur with high fertilization or during spring flushes, may require higher rates of Primo MAXX. Under these conditions, Primo MAXX rates may need to be increased up to 50% to provide an adequate length of control.

For extended growth suppression up to 8 weeks, where temporary discoloration can be tolerated, a maximum of twice the recommended Primo MAXX rate from the **Application Rate Table** may be applied.

Primo MAXX use rates may need to be reduced up to 50% for turfgrass grown under conditions of low fertility, compaction, or other factors which stress the turf.

Multiple applications of Primo MAXX can be made each growing season, but do not exceed a total of 7.0 fl. oz./1,000 sq. ft. (305 fl. oz./A; 19.0 pts./A) per year.

Mowing

Generally, Primo MAXX provides more suppression when turfgrasses are maintained at lower mowing heights than higher mowing heights. Application rates have been selected for typical mowing heights. The application rate may need to be adjusted depending on actual mowing conditions. To minimize possible turf injury, apply Primo MAXX then wait at least 4 hours before mowing or mow first, wait at least 1 hour, then apply Primo MAXX.

Application Timing

Apply Primo MAXX to actively growing turf. If turf is going into dormancy because of high or low temperatures or lack of moisture, apply a lower rate of Primo MAXX.

Repeat applications of Primo MAXX may be made as soon as the turf resumes growth or more suppression is desired, but do not apply more than 7.0 fl.oz./1,000 sq. ft. per year.

Equipment

Primo MAXX may be applied with backpack sprayers, hand sprayers, boom sprayers, and with spraygun application devices. Clean spray equipment thoroughly before use. Make sure the sprayer is capable of accurate and uniform application. Calibrate the sprayer before applying Primo MAXX. Rinse sprayer with clean water after use and dispose of rinsate in an approved manner.

Mixing Instructions

Apply Primo MAXX in sufficient carrier (for example 0.5-4.0 gals. of water per 1,000 sq. ft.) to provide uniform and thorough coverage.

Primo MAXX is a microemulsion concentrate (MEC) with minimal odor because the product does not contain petroleum solvents. Primo MAXX mixes completely with water and may be tank mixed with many commonly-used pesticides and liquid fertilizers. Prepare no more mixture than is necessary for the immediate operation. Once Primo MAXX is uniformly mixed, no further agitation is required when the product is used alone, but agitation may be required for tank mixes. If using Primo MAXX in a tank mixture, observe all directions for use, sites, use rate dilution ratios, precautions, and limitations which appear on the tank mix product's label. Do not exceed any label use rate and follow the most restrictive label precautions and limitations. This product should not be mixed with any product which prohibits such mixing.

Backpack and Hand Sprayers (0.5-4.0 gals. capacity)

Primo MAXX Alone: Add all of the required water to the mix tank. Add the appropriate amount of Primo MAXX, close sprayer, and vigorously shake it. Begin application.

Boom and Hand Gun Sprayers

Primo MAXX Alone: Add all of the required amount of water to the spray tank. Then, while agitating, add Primo MAXX.

Primo MAXX + Tank Mixtures: When mixing Primo MAXX with other components (carrier and tank mix pesticide products) add the products to the spray tank using the following procedure:

1. Always check the compatibility of the tank mix using a jar test with proportionate amounts of Primo MAXX, other products to be used, and the water before mixing in the spray tank. Use a clear glass quart jar with lid and mix the tank mix ingredients in their relative proportions. Invert the jar containing the mixture several times and observe the mixture for approximately 1/2 hour. If mixture balls-up, forms flakes, sludges, gels, oily films or layers; or precipitates, it is not compatible and do not use the combination in a tank mix.
2. Fill tank at least 1/2 full of water.
3. Maintain sufficient agitation during filling to keep the tank mix uniformly suspended.
4. Add all products packaged in water soluble bags first. Allow the packages to dissolve and the contents to completely disperse into the mix water. Then add water-dispersible granules (WG formulations) while maintaining agitation in the mix tank. Next, add wettable powders (WP formulations). Allow the products to disperse completely before other products are added.
5. Add emulsifiable concentrates (EC).
6. Add flowable liquids (FL) or suspension concentrates (SC).
7. Add Primo MAXX.
8. Add spray adjuvants and spray markers. Use surfactants approved for application to turf. Check surfactant label before use.
9. Add the remainder of the water.
10. Do not leave tank mix combinations in the spray tank for prolonged periods without agitation. Mix and apply all of the spray solution on the same day.

Note: Do not mix Primo MAXX with any product which prohibits such mixing. Do not exceed any label application rate and follow the most restrictive label precautions and limitations. Refer to the tank mix partner label(s) for further information.

Application Near and Around Monuments and Hardscape Materials
Primo MAXX, at normal dilution rates, will not stain brass, bronze, concrete, marble, granite, or other types of stone. Before using Primo MAXX around other materials, test on a small scale basis first.

Turf Pre-Stress Conditioning
Multiple Primo MAXX applications along with cultural practices such as fertilization, irrigation, drainage, mowing height, etc., will delay the onset of stress, improve stress survival, and enhance turf's recovery from stress. Apply Primo MAXX to healthy, actively growing turf before the onset of stress and continue to apply Primo MAXX throughout the growing season as long as the turf remains healthy, but do not apply more than 7.0 fl. oz./1,000 sq. ft. per year. Turfgrass root-mass is often greater in Primo MAXX-treated turf than in similar, untreated turf. As turf top growth slows, energy is redirected to below-ground plant parts, and root and rhizome production increases. Research has demonstrated that Primo MAXX may also enhance the performance of fungicides. Monthly applications of Primo MAXX at the label rate or biweekly applications at 1/2 the label rate strengthen the turfgrass to help it resist disease. In addition, if mowing is less frequent, and leaf material removal is reduced, contact and systemic products stay at effective concentrations on or in the turf longer. Multiple applications of Primo MAXX will reduce water use and improve drought tolerance. Primo MAXX applications result in smaller, more compact turfgrass and leaf area is reduced for transpiration. Increased turf density reduces moisture loss from soil evaporation, and additional soil moisture is available due to increased root depth and mass. Primo MAXX also may increase carbohydrate levels which have been shown to enhance heat and cold tolerance.

POA ANNUA CONVERSION/RENOVATION

Primo MAXX can be applied to existing turf infested with stands of *Poa annua* as part of an overseeding/renovation program. Such an application allows better germination and seedling growth of more desirable turf. The use of Primo MAXX, with appropriate cultural practices, that help to ensure the vigor and growth of new seedlings, will also result in fewer clippings and thus reduce maintenance traffic on new seedlings. Because Primo MAXX is foliarly absorbed, seed germination is not affected. Apply Primo MAXX 1-5 days before seeding; and before verticutting, scalping, spiking, or other similar operations.

Temporary initial discoloration is possible with aggressive application rates of Primo MAXX to turf with *Poa annua*. The following spring, apply the upper end rate of Primo MAXX for the turf type and setting listed in the **Application Rate Table**. Actual conversion success will also depend on growing conditions, fertilization, rainfall, and other agronomic and environmental conditions.

BERMUDAGRASS OVERSEEDING

An application of Primo MAXX to bermudagrass will enhance the establishment of cool-season turfgrasses. Application of Primo MAXX, along with cultural practices that help ensure new seedling vigor and growth, will also result in fewer clippings and less maintenance traffic on new seedlings. Primo MAXX is foliarly absorbed, so germination and seedling growth is not affected.

Apply Primo MAXX before verticutting, scalping, spiking, or other similar operations to the bermudagrass. Apply Primo MAXX 1-5 days before seeding.

Temporary initial discoloration of turfgrass is possible with aggressive application rates of Primo MAXX. Use normal seeding rates for your area and turf setting (lawn, fairway, etc.). Actual overseeding success will also depend on growing conditions, fertilization, rainfall, and other agronomic and environmental conditions. For maintenance application, see the **Application Rate Table.**

APPLICATION WITH TURF MARKING PAINT

Primo MAXX can extend the duration of marking visibility when applied before or with marking agents. Mix Primo MAXX with water first when combining with latex-based marking agents. Refer to the marking agent's product label for further instructions.

Apply Primo MAXX at 1 oz./gal. of marking paint mix to treat approximately 1,000 sq. ft. of line surface area. Refer to the **Primo MAXX + Tank Mixtures** section of this label for additional instructions.

Notes: (1) Areas treated with Primo MAXX should continue to receive regular maintenance practices, including irrigation; fertilization; and weed, disease, and insect control when necessary, and as recommended for quality turf. Because some herbicides can injure turf, tank mixes with Primo MAXX should be tested on a small scale before widespread use. (2) Primo MAXX may cause temporary yellowing. This usually disappears about one week after application. To minimize yellowing and to enhance the green color of turf, apply readily available nitrogen at 0.2-0.5 lb. of actual nitrogen per 1,000 sq. ft. If desirable, recommended rates of iron per 1,000 sq. ft. can also be used. (3) Full growth regulation by Primo MAXX begins at about 3-5 days after application.

Table 1. Recommended Primo MAXX Application Rates[1,2]

	Residential and Commercial Turf[3]		Golf Course Fairways (Cut at 0.5 inch or less)		Golf Course Greens		Edging/Banding[4]	
Turf Type	fl. oz./ 1,000 sq. ft.	fl. oz./A	fl. oz./ 1,000 sq. ft.	fl. oz./A	fl. oz./ 1,000 sq. ft.	fl. oz./A	fl. oz./ 1,000 sq. ft.	fl. oz./A
Cool-Season								
Bentgrass	0.75	33	0.25	11	0.125	6	1.0	44
Fescue, Red	0.75	33					1.0	44
Fescue, Tall (Ky-31)	1.0	44					1.0	44
Fescue, Tall (Turf Types)	0.75	33					1.0	44
Kentucky Bluegrass	0.60	26	0.25	11			0.75	33
Mixture (Bentgrass/*Poa annua*)			0.25[5]	11	0.125	7		
Mixture (K. Bluegrass/Fescue/Ryegrass)	0.75	33						
Mixture (K. Bluegrass/Ryegrass/*Poa annua*)			0.50[5]	22				
Ryegrass, Annual	1.0	44					1.0	44
Ryegrass, Perennial	1.0	44	0.50	22			1.0	44
Warm-Season								
Bahiagrass	1.0	44					1-2	44-88
Bermudagrass[6]								
Bermudagrass, Common	0.75	33	0.25	11			1-2	44-88
Bermudagrass, Other Hybrids	0.25	11	0.20	9			0.50-0.75	22-33
Bermudagrass, Tifdwarf	0.20	9	0.20	9	0.062	3	0.50-0.75	22-33
Bermudagrass, Tifgreen (328)	0.25	11	0.20	9	0.125	6	0.75	33
Bermudagrass, Tifway (419)	0.38	16	0.25	11			0.75	33
Buffalograss	1.0	44					1.0	44
Carpetgrass	0.25-0.40	11-18					0.50	22
Centipedegrass	0.50	22					1.0	44
Kikuyugrass	0.30-0.50	13-22	0.30	13			1.0	44
St. Augustinegrass	0.10-0.15	4.50-6.50					0.40-0.80	18-36
St. Augustinegrass, Texas Common	0.10	4.5					0.20	9
Zoysiagrass	0.25	11	0.125	6			0.75	33

[1] These rates should provide 50% suppression of turf growth under good growing conditions for 4 weeks with minimal yellowing.

[2] **Seedheads:** At rates equal to or higher than the rates in Table 1, Primo MAXX provides seedhead suppression of hybrid bermudagrass, and partial seedhead suppression of annual bluegrass, bahiagrass, buffalograss, carpetgrass, common bermudagrass, Kentucky bluegrass, and tall fescue. Primo MAXX must be applied prior to seedhead formation. Do not apply more than 7.0 fl. oz./1,000 sq. ft. per year.

[3] Including, but not limited to home lawns, parks, recreation areas, golf course roughs, cemeteries, business sites, sports fields, and sod farms.

[4] Primo MAXX can be applied along the perimeter of lawns, sidewalks, curbs, parking lots, driveways, posts, storage buildings, pet pens, fences, or other areas. Primo MAXX can be used around trees, shrubs, flower beds, and other border plants or similar areas with no injury. Apply Primo MAXX in an 8 to 12-inch band with a single nozzle sprayer. Use the higher concentration to reduce the growth of the turfgrass into adjacent areas..

[5] Where yellowing of *Poa annua* is a concern, use half this rate and apply more frequently. For *Poa annua* conversion/renovation, where temporary discoloration can be tolerated, twice this rate may be applied.

[6] Bermudagrass overseeding preparation: 0.5 oz./1,000 sq. ft. for golf fairways and tees; 0.25 oz./1,000 sq. ft. for golf greens.

Precautions: (1) Do not apply Primo MAXX through any type of irrigation system. (2) Do not graze areas or feed clippings to livestock.

STORAGE AND DISPOSAL

Pesticide Storage and Disposal

Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment. Pesticide wastes are toxic. Improper disposal of unused pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, they must be disposed of according to federal, state, or local procedures. Contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

Container Disposal

Triple rinse (or equivalent) and offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or dispose of by incineration, or by open burning, if allowed by state and local authorities. If container is burned, keep out of smoke.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing.

First Aid

If on skin: Wash with plenty of soap and water. Get medical attention.

If in eyes: Flush eyes with plenty of water. Call a physician if irritation persists.

Personal Protective Equipment

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category C on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves (such as nitrile, butyl, neoprene, or barrier laminate).
- Shoes plus socks

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Environmental Hazards

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water. Do not apply when weather conditions favor drift from treated areas.

Novartis Crop Protection, Inc.
Turf and Ornamental Products
Greensboro, North Carolina 27419

NCP 937A-L1 0499

This booklet manufactured using post-consumer, recycled paper.

Primo® MAXX™

FOR TURF GROWTH MANAGEMENT

For managing growth, improving quality and stress tolerance, and edging of warm- and cool-season turfgrasses

Active Ingredient:	
Trinexapac-ethyl (CAS No. 95266-40-3)	11.3%
Other Ingredients:	88.7%
Total:	100.0%

Primo MAXX is a microemulsion concentrate.

See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS
Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-937
EPA Est. 1386-OH-1

Primo™ and MAXX® trademarks of Novartis
U.S. Patent No. 4,693,745

Novartis Crop Protection, Inc.
Turf and Ornamental Products
Greensboro, North Carolina 27419

NCP 937A-L1 0499

ONE GALLON
U.S. Standard Measure

KEEP OUT OF REACH OF CHILDREN.

CAUTION

Precautionary Statements

Hazards to Humans and Domestic Animals

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin or clothing.

First Aid

If on skin: Wash with plenty of soap and water. Get medical attention.

If in eyes: Flush eyes with plenty of water. Call a physician if irritation persists.

Note to Physician: If a large amount has been ingested, lavage stomach. An aqueous suspension of activated charcoal can be given to absorb remaining toxicant. Treat symptomatically.

Environmental Hazards

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water. Do not apply when weather conditions favor drift from treated areas.

NOVARTIS

syngenta

MATERIAL SAFETY DATA SHEET

In Case of Emergency, Call
1-800-888-8372

Syngenta Crop Protection, Inc
Post Office Box 18300
Greensboro, NC 27419

1. CHEMICAL IDENTIFICATION

Product Name: **PRIMO MAXX** Product No.: A11825A

EPA Signal Word: Caution

Active Ingredient(%): Trinexapac-ethyl (11.3%) CAS No.: 95266-40-3

Chemical Name: 4-(Cyclopropyl-a-hydroxymethylene)-3,5-dioxo-cyclohexanecarboxylic acid ethylester

Chemical Class: Cyclopropyl Derivative of Cyclohexenone Plant Growth Inhibitor

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Tetrahydrofurfuryl Alcohol	Not Established	Not Established	Not Established	No
Surfactant	Not Established	Not Established	Not Established	No
Trinexapac-ethyl (11.3%)	Not Established	Not Established	Not Established	No

3. HAZARDS IDENTIFICATION

Symptoms of Acute Exposure

Exposure may cause moderate irritation to eyes. Prolonged inhalation may cause headache, dizziness, blurred vision or nausea.

Hazardous Decomposition Products

None Known

Physical Properties

Appearance: Amber Liquid

Odor: Odorless

Unusual Fire, Explosion and Reactivity Hazards

This product is a NFPA Class IIIA Combustible Liquid.

4. FIRST AID MEASURES

If poisoning is suspected, immediately contact a physician, the nearest hospital, or the nearest Poison Control Center. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given.

Ingestion: DO NOT INDUCE VOMITING. If victim is fully conscious, give a large quantity of water to drink and get medical attention. Never give anything by mouth to an unconscious person.

Eye Contact: Immediately rinse eyes with a large amount of running water. Hold eye lids apart to rinse the entire surface of the eyes and lids. Do not apply any medicating agents except on the advice of a physician.

Skin Contact: Wash with plenty of soap and water, including hair and under fingernails. Do not apply any medicating agents

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except on the advice of a physician. Remove contaminated clothing and decontaminate prior to use.

Inhalation: Move victim from contaminated area to fresh air. Apply artificial respiration if necessary.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Do not induce emesis.

Medical Condition Likely to be Aggravated by Exposure

None Known

5. FIRE FIGHTING MEASURES

Fire and Explosion

Flash Point (Test Method):	170 °F
Flammable Limits (% in Air):	Lower: %; Upper: % Not Available
Autoignition Temperature:	Not Available
Flammability:	Not Applicable

Unusual Fire, Explosion and Reactivity Hazards

This product is a NFPA Class IIIA Combustible Liquid.

In Case of Fire

Use dry chemical, foam, or CO2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Wear chemical safety glasses with side shields or chemical goggles, rubber gloves, rubber boots, long-sleeved shirt, long pants, head covering, and a NIOSH-approved supplied-air respirator or a self-contained breathing apparatus (SCBA). For small spills, cover with an absorbent material such as pet litter. Sweep up and place in an approved chemical container. Wash the spill area with water containing a strong detergent, absorb with pet litter or other absorbent material, sweep up and place in a chemical container. Seal the container and handle in an approved manner. Flush the area with water to remove any residue. Do not allow wash water to contaminate water supplies.

7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of the reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco usage, and cosmetic application in areas where there is a potential for exposure to the material. Always wash thoroughly after handling.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THE PRODUCT.

FOR COMMERCIAL APPLICATIONS AND ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Ingestion:	Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Always wash thoroughly after handling.
Eye Contact:	To avoid eye contact, wear safety glasses with side shields or chemical goggles.
Skin Contact:	To avoid skin contact, wear rubber gloves, rubber boots, long-sleeved shirt, long pants and a head covering.
Inhalation:	To avoid breathing mist or vapors, wear a NIOSH-approved supplied-air respirator or a self-contained breathing apparatus (SCBA).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Amber Liquid
Odor:	Odorless
Melting Point:	Not Applicable
Boiling Point:	Not Available
Specific Gravity/Density:	1.07 g/cm3 @ 20° C
pH:	3.63(1% solution in H2O @ 25°C)

Solubility in H2O

Trinexapac-ethyl : 1100.000 mg/L @ 25°C

Vapor Pressure

Trinexapac-ethyl : 2.16E+00 mPA @ 25°C

10. STABILITY AND REACTIVITY

Reactivity

Stability:	Stable Under Standard Conditions
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid:	None Known

Hazardous Decomposition Products

None Known

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies

Ingestion:	Practically Non-Toxic	
	Oral LD50 (Rat) :	> 5,050 mg/kg body weight
Dermal:	Slightly Toxic	
	Dermal LD50 (Rabbit) :	> 2,020 mg/kg body weight
Inhalation:	Slightly Toxic	
	Inhalation LC50 (Rat) :	> 2.75 mg/l air - 4 hours
Eye Contact:	Moderately Irritating (Rabbit)	
Skin Contact:	Non-Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Mutagenic Potential

Trinexapac-ethyl: None observed

Reproductive Hazard Potential

Trinexapac-ethyl: None observed

Chronic/Subchronic Toxicity Studies

Trinexapac-ethyl: Liver, kidney and brain (dogs) effects at high doses (>5,000 ppm)

Carcinogenic Potential

Trinexapac-ethyl: Slight increase in stomach tumors in male mice at high doses (2,000 ppm)

Other Toxicity Information

Not Available

Toxicity of Other Components

Surfactant

Exposure can result in eye and skin irritation.

Tetrahydrofurfuryl Alcohol

Acute exposure causes slight iritation of the skin, Prolonged exposure may cause mild nervous system effects.

Target Organs

Active Ingredients

Trinexapac-ethyl : Liver, Kidney, and Brain

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Inert Ingredients

Surfactant	: Eyes and Skin
Tetrahydrofurfuryl Alcohol	: Skin and Central Nervous System

12. ECOLOGICAL INFORMATION

Summary of Effects

Trinexapac-ethyl:

Low toxicity to fish and wildlife

Eco-Acute Toxicity

Trinexapac-ethyl:

Rainbow Trout 96-hour LC50 68 mg/L
Bluegill Sunfish 96-hour LC50 >130.1 mg/L
Daphnia magna 48-hour LC50 EC=>142.5 mg/L
Bobwhite Oral LD50 >2,250 mg/kg
Mallard Oral LD50 >2,000 mg/kg
Bobwhite 8-day Dietary LC50 >5,620 ppm
Mallard 8-day Dietary LC50 >5,200 ppm

Eco-Chronic Toxicity

Trinexapac-ethyl:

Fish (Fathead minnow) Early Life Stage MATC >0.41 and <0.80 mg/L
Invertebrate (Daphnia Magna) Life Cycle MATC >2.4 and <5.1 mg/L
Mallard Reproduction NOEC 600 ppm
Bobwhite Reproduction NOEC 600 ppm

Environmental Fate

Trinexapac-ethyl:

No data available for the formulation. The information presented here is for the active ingredient, trinexapac-ethyl. A thorough review of environmental information is not possible in this document. For additional information call the toll free number listed in Section 16.

ENVIRONMENTAL PERSISTANCE/MOBILITY:

Stable in sterile water, in the dark at pH 5 and 7, degrades rapidly at pH 9 ($t_{1/2}$ = 8 d). Degrades more rapidly in the light at pH 7 ($t_{1/2}$ ~ < 4 d) than in the dark. In laboratory soil, degrades very rapidly in the both the dark and light under aerobic conditions ($t_{1/2}$ ~ < 1 d). Degrades more slowly under anaerobic conditions ($t_{1/2}$ ~ 13 to 22 d). High to low mobility with four soil textures (Koc = 59 to 629).

13. DISPOSAL CONSIDERATION

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification:

Containers < 119 gallons cap: Not Regulated
Containers > 119 gallons cap: Combustible liquid, n.o.s. (tetrahydrofurfuryl alcohol), NA1993, PGIII

B/L Freight Classification

Plant Growth Inhibitor, Modifier, or Regulator

International Transportation

Not Applicable

15. REGULATORY INFORMATION

SARA Title III Classification

Section 311/312: Acute Health Hazard
Chronic Health Hazard
Fire Hazard

Section 313 chemical(s): Not Applicable

Proposition 65

Not Applicable

CERCLA Reportable Quantity (RQ)

None

RCRA Classification

Not Applicable

TSCA Status

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings

Health:	1
Flammability:	2
Reactivity:	0

0	Least
1	Slight
2	Moderate
3	High
4	Severe

Questions concerning the safe handling of the product should be referred to:

1-800-334-9481

Issued Date: 10/6/1998
Revised Date: 7/5/2000 Supersedes:

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

RSVP# : SCP-955-00209B

APPENDIX E

THE AUDUBON COOPERATIVE SANCTUARY SYSTEM

fact sheet

Audubon International

CENTER FOR SUSTAINABLE RESOURCE MANAGEMENT

HEADQUARTERS: 46 Rarick Road • Selkirk, NY 12158 Voice: 518 767 9051 • Fax: 518-767-9076
Audubon International Web Page: http://www.audubonintl.org

FOR MORE INFORMATION CONTACT: Mary Colleen Liburdi, Communications Director
518-767-9051 or by e-mail: mcliburdi@audubonintl.org

Audubon International

The mission of Audubon International is to improve the quality of life and the environment through research, education, and conservation assistance.

Audubon International is a not-for-profit environmental organization that specializes in sustainable resource management. Audubon International was created to administer and unify programs with a national and international focus including the Audubon Cooperative Sanctuary System, the Audubon Signature Program, the Audubon Cooperative Sanctuary System of Canada, the Siena College-Audubon International Institute, and the Audubon Society of New York State, Inc.

Audubon International and its programs promote sustainable resource management throughout the United States and internationally. The focus of Audubon International is to:

- Protect and enhance the quality of the environment by encouraging responsible stewardship actions specific to wildlife and water stewardship and ecological restoration.
- Encourage, educate, and motivate individuals to take positive, constructive stewardship actions based on the Audubon guidance document, *Principles for Sustainable Resource Management.*
- Promote environmental planning and sustainable land management practices based on sound scientific research.
- Support and expand educational programs, research efforts, and training to achieve greater understanding and participation in the practice of sustainable resource management.

Audubon International accomplishes its mission by administering and coordinating education programs, providing conservation assistance, developing demonstration sites, and conducting scientific research.

The Audubon Movement is comprised of several hundred separate organizations. Audubon International does not speak for any other international, national, regional, state, or local Audubon organizations, nor do those organizations speak for Audubon International.

(over, please)

fact sheet

The Audubon Cooperative Sanctuary System

• The Audubon Cooperative Sanctuary System educates and encourages landowners and land managers to become actively involved in protecting and enhancing wildlife habitats and conserving and sustaining natural resources on their own properties. Programs designed for golf courses, schools, businesses, and backyards provide conservation assistance specific to the unique location, resources, and needs of each site.

The Audubon International Signature Program

• The Audubon Signature Program provides comprehensive environmental planning assistance to landowners with projects in the design and development stages. Audubon International staff work with owners, architects, consultants, and managers from the design stages through construction. By offering guidance and technical assistance, Audubon staff help to establish a management program that focuses on sustainable natural resource management. The Signature Program focuses on wildlife conservation and habitat enhancement, water quality management and conservation, waste reduction and management, energy efficiency, and Integrated Pest Management. There are three designations that a property can receive in this program: Bronze, Silver and Gold Signature. The primary difference between the three designations is based on the time at which the project becomes part of the program, whether only a portion of the property or the entire property is included in the project, and the level of Audubon International involvement in the planning, design and oversight of the project. Projects that receive either the Audubon International Bronze or Silver designation or Audubon International Gold Seal of Sustainability are considered internationally significant environmental demonstration sites for sustainable resource management.

The Siena College-Audubon International Institute

• The Siena College-Audubon International Institute is a unique partnership between Siena College and Audubon International. The Institute focuses on wildlife and habitat management issues encountered by increasingly rapid development. With teams of Siena College professors and their students, the Research Department currently conducts scientific research to provide a foundation for designing environmentally effective land management practices. In addition, because appropriate environmental planning will help ensure the environmental integrity of habitat and natural resources for future generations, the Planning Department provides biological and technical expertise and environmental planning services.

Audubon Society of New York State, Inc.

• The Audubon Society of New York State, Inc. (ASNY) concentrates on environmental policy and land ownership/management. ASNY is a state-based environmental advocacy organization with a major focus on environmental policies and regulations. In addition, ASNY coordinates the NYS Bald Eagle Program, the NYS Loon Conservation Project, and the ASNY Water Watch Program.

Audubon International Offices & Personnel

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REV. 10/98

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Audubon International
Center for Sustainable Resource Management
46 Rurick Road • Selkirk, New York 12158 • (518) 767-9051

HISTORY OF THE AUDUBON MOVEMENT

During the late 1880s, in response to the vast destruction of birds in the name of fashion, George Bird Grinnell, editor of *Forest and Stream Magazine*, began the first Audubon Society. The fanciful style of wearing bird feathers in hats and bird wings on coats nearly caused the extinction of several species. To change this fashion trend, Grinnelll used his magazine to organize a national bird protection organization. As a boy who was tutored by Lucy Audubon, widow of famed bird artist John James Audubon, Grinnell was greatly influenced by Audubon's passion for birds. Because he believed that Audubon "had done more to teach Americans about birds of their own land than any other who lived," Grinnelll thought that "Audubon" would be a fitting name for the movement.

Grinnell also felt the best way to create change was to encourage the collective action of individuals. He urged women to pressure the fashion industry by signing pledge cards that promised they would refrain from wearing bird feathers. Men promised to shoot birds only for consumption. In order to have the greatest impact and reach as many people as possible, he helped form small, grassroots groups dedicated to bird preservation throughout New York and other states.

During the next five years, thirty-five Audubon Societies were incorporated and later joined to form a loose coalition of independent state groups: The National Association of Audubon Societies. This organization, now known as the Audubon Alliance, is still comprised of independent state Societies including the Audubon Society of New York State.

As with most social and political movements, there were changes in direction, focus, and structure over the years. In the 1940s, a small group of individuals decided to form a separate organization that would focus on issues they felt were beyond the scope of state Audubon Societies. This organization became the National Audubon Society.

AUDUBON SOCIETIES TODAY

Today, there are more than 500 Audubon Societies in the United States. Each of these groups is independent and separately incorporated and each is free to establish its own goals, develop its own programs and take positions regarding environmental issues.

Audubon International as well as the state Audubon Societies of New York, Massachusetts, Maine, New Hampshire, New Jersey, Illinois, Rhode Island, Connecticut, as well as the Audubon Naturalist Society of the Mid-Atlantic States are not affiliated with the National Audubon Society. The diversity of Audubon Societies is not meant to confuse the public. Rather, it serves to broaden public involvement and increase the number of approaches taken to enhance and protect the environment.

Audubon International was created to help expand efforts for sustainable resource management throughout the United States and Internationally. The mission of Audubon International is to improve the quality of the enviroment through research, education, and conservation assistance.

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Environmental Report

Audubon International • 46 Rarick Road • Selkirk, New York 12158 • (518) 767-9051

Naturalizing the Golf Course

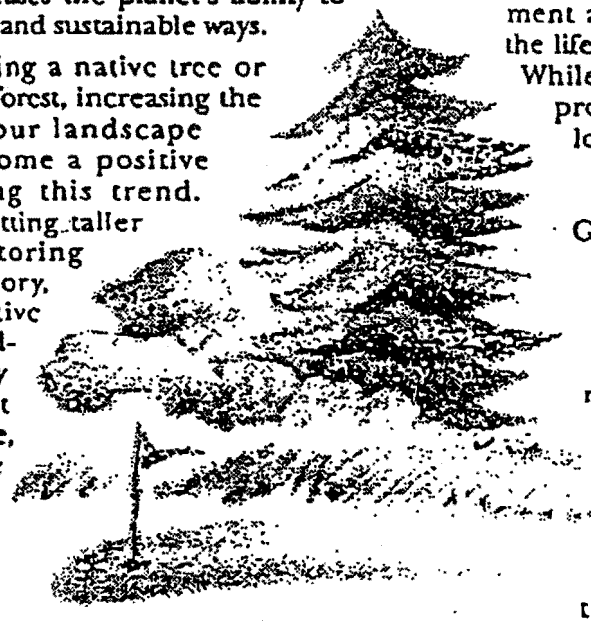
Naturalizing non-play areas on the golf course provides substantial economic and environmental benefits. Whether you have only a few hundred square feet or many acres, a tight budget or lots of money to invest, there are a variety of habitat enhancement projects to suit your site, budget, and maintenance needs. Begin to plan and naturalize now; you'll be surprised by the immediate and long-term positive results.

Why Naturalize?

Enhancing food and cover sources for wildlife will help you to attract and sustain the greatest diversity of wildlife species on your golf course. It's that simple.

But it's also complex. The earth's diversity of plants, insects, amphibians, birds, and in fact, whole ecosystems is diminishing due to human activities and population expansion. This loss of "biodiversity" decreases the planet's ability to function in healthy and sustainable ways.

Whether planting a native tree or planting an entire forest, increasing the naturalness of your landscape helps you to become a positive force in reversing this trend. Projects such as letting taller grasses grow, restoring woodland understory, and choosing native plants when landscaping not only increase the habitat value of your course, they also increase the overall acreage and diversity of wildlife habitat in general.



Maintenance Benefits

Naturalizing areas of the golf course can result in substantial financial and labor savings and a reduction in equipment wear and tear. Once established, natural areas require far fewer inputs such as water, fertilizer, and pesticides. And, since they are essentially maintenance free for most of the year, labor costs can be concentrated where it really matters: the playing surfaces. In addition, these areas reduce equipment and gasoline use which can extend the life of your equipment and save money. While some types of habitat restoration projects can be costly to initiate, the long-term savings become substantial after several seasons.

Golfing Benefits

By extending available habitat, naturalization adds distinctive contrast and natural beauty to maintained playing surfaces. A recent National Golf Foundation survey revealed that getting outdoors and reconnecting with nature were among the top reasons why people play golf. Golfers often report that seeing wildlife increases their enjoyment of the game. Most naturalization projects have immediate and noticeable wildlife results for golfers to enjoy.

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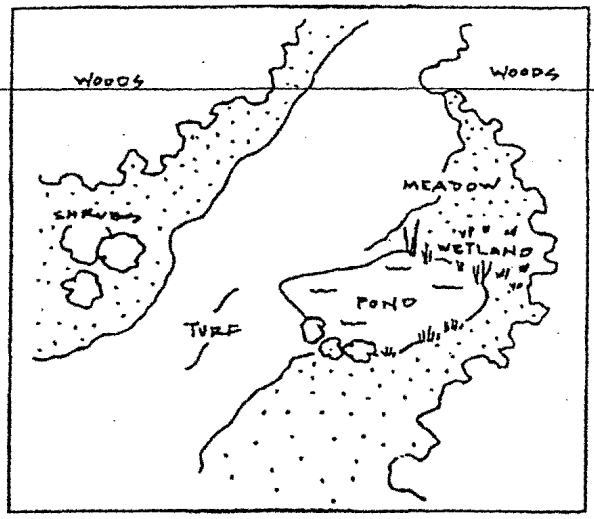
Facing Concerns

Golf course managers report a variety of concerns that often surface when they choose to naturalize. These must be carefully considered and dealt with if naturalization projects are to be successful. The key is finding a balance between the needs of golfers and the needs of wildlife and managing within those limits.

Slow Play–Slow play not only detracts greatly from the enjoyment of the game, but its economic drain also motivates overly-manicured conditions. Naturalized areas, such as long native grasses or shrubs, can be potential sources for slow play. However, if located properly and a well trained and persistent marshal staff is employed, this problem doesn't have to be an issue.

Conflicting Aesthetics–Some golfers perceive naturalized areas as being unkept and unsightly. While it's difficult to change ingrained attitudes and perceptions, most golfers are won over when they understand the many reasons and benefits of a naturalized landscape. It's critical to inform golfers that you are following a carefully thought out maintenance plan, not ignoring your duties. Education can help create an aesthetic appreciation for nature's beauty and diversity and increase support for your efforts.



Golfer Expectations–Televised golf has created unrealistic pressures and expectations for perfect conditions and highly manicured maintenance practices. As such, golf has deviated from its history as a game of interaction between skill and nature. Naturalization doesn't mean poor playing conditions. In fact, you may find that you have more time to devote to maintaining playing surfaces when you take non-play areas out of routine maintenance. Again, education is key to reconnecting people with the "nature" of the game.

Getting Started

Look at your course with an eye towards providing the basic requirements for wildlife survival: space, food, cover, and water. In addition, wildlife need reproductive sites–safe, relatively secluded areas in which to raise their young. Existing habitat may already provide some of these elements. Naturalization can extend, connect, and build upon existing assets.

Next, consider potential locations and types of projects you want to pursue. If you are new to naturalization, it may be wise to start slowly, learn from initial mistakes, and gain golfer approval prior to undertaking large scale enhancement or restoration projects.

Location–Location is the most important consideration in terms of plant selection, visual appeal, and acceptance by both the players and surrounding property owners. Developing naturalized areas near heavy play or against a neighbor's formalized landscape will be a constant source of problems.

Look for non-play areas that you currently maintain with mowed grass or that are visually unappealing and target these for naturalization. Areas between fairways, under small stands of trees, and along wooded edges may be suitable. These areas do not have to be large–you can start small and expand over time where possible.

Plant Selection–Take into account that most native species evolved to thrive under harsh yet specific conditions. Survey your course and learn more about the native plant communities in your area to determine which species will grow best on your site.

In addition, you can attract more wildlife species sooner by selecting plants which produce both food and cover. Locating plants near water sources will further extend their habitat potential.

Site Preparation and Plant Care–Another important point to consider is that while native species are extremely tough and hardy and will eventually thrive better without inputs at all, they do benefit and establish faster with some site preparation and post-planting care. Mulch, weed barriers, and supplemental irrigation will increase shrub survival rates. Seeding native grass just prior to or during the most likely time for precipitation usually will be enough to ensure good germination. Then by providing some form of mechanical weed control, and a great deal of patience, a naturalized wildlife habitat can be sustained for years.

Naturalization Projects

There are many ways to naturalize; some are easy and some quite involved. Choose as many as you can, recognizing your unique course conditions, maintenance needs, and budget.

• **Leave Dead Trees (Snags) Standing**–One of the simplest things you can do is to leave dead trees standing when they pose no safety hazard. The insects that help break down snags are a valuable food source for birds. Snags also provide nest sites for woodpeckers and other cavity nesting birds.

• **Leave Woodland Understory**–If you "clean up" your woods, you are eliminating valuable food and cover sources for many species. Whenever air circulation is not a concern, maintain diverse levels of growth–from understory plants and shrubs to small trees to canopy trees. Leaf litter, twigs, and downed limbs are also valuable components of a healthy woodland since they return nutrients to and build soil.

• **Designate "No Mow" Areas**–This is an easy way to eliminate maintenance and create habitat. Set aside non-play areas where you can stop mowing. Taller grasses and wildflowers will soon grow to replace the close-cropped turfgrass monoculture. When designating no-mow areas, look for places where taller grasses will complement existing habitat such as woodland edge or pond shoreline. You can also use tall grasses to create corridors that connect isolated habitat areas. This will increase the overall space that is available for wildlife. To keep natural succession from turning your no-mow area into a thicket, mow once a year or every other year.

• **Plant Wildflowers**–Meadow flowers will add beauty to your course that appeals to golfers, birds, and butterflies. There are several methods for establishing wildflowers and many seed sources. It's very important to carefully prepare your seed bed prior to planting to reduce weed competition and ensure the survival of your wildflower plants. Choose seed that is at least regionally adapted. Native wildflower seed mixes are more costly than generic mixes, but contain plants species that preserve our natural history and offer more wildlife value. You can also purchase wildflower plants and add them to no-mow areas or prepared beds. This method often results in greater plant survival and quicker establishment.

• **Create Wildlife Corridors**–As much as possible, connect isolated habitat areas. This will allow wildlife to safely travel throughout the course by minimizing their exposure to predators. It will also help to increase the number of available breeding sites. You can connect areas by extending trees or shrubs, or by leaving unmowed areas between stands of trees.

• **Choose Native Plants**–When making plant selections for trees, shrubs, and flowers, choose native plants that are high in wildlife value. Because native plants are well adapted to your local climate and soil, they will require less maintenance and help you preserve and showcase your area's unique natural heritage.

• **Adopt A Tree Management And Replacement Program**–Mature trees have many scenic and natural benefits on the golf course, yet few courses plan for their eventual demise. It's important to think about and plan for the loss of specimen trees and trees in general throughout the property. If you can start a tree nursery, you will save money and have a ready supply of trees. It may be worthwhile to conduct a tree inventory to help you evaluate the health of what you have and schedule appropriate tree planting each year. Again, choose native trees when making additions and replacements.

• **Add Aquatic and Shoreline Plants to Lakes and Ponds**–Though highly manicured pond edges are still the norm on golf courses, this maintenance approach does allow maximum wildlife benefit. Adding vegetation substantially increases wildlife food and cover sources and can even help to improve water quality. Look for shoreline areas where emergent vegetation, taller grasses, or shrubs can be added. Generally, this can be done in a balanced way that does not jeopardize the game of golf.

• **Undertake Restoration If Needed**–Restoration of wildlife habitat is often needed where habitat has been radically altered, damaged, or lost due to prior land use or development. If you plan to undertake habitat restoration, you will need to research the types of plants that make up the ecological community you want to restore and carefully plan your actions. Outside consultation is generally advised for restoration projects.

Conclusion

There are many benefits to dedicating expanses of the golf course to naturalized habitat. Naturalizing provides needed wildlife food and cover, reduces chemical inputs, and frees up labor dollars that can be spent on cultural management of greens, tees, and fairways. And the personal satisfaction, pride, and excitement gained from creating new habitat areas and watching the results really make it all worthwhile.

Environmental Report

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BATS ON THE GOLF COURSE

There are 40 species of bats in North America and none deserve their negative reputation for getting tangled in people's hair, drinking blood, or always carrying rabies. Less than 3% of the bats sampled for rabies are found to carry the virus. In fact, bats can be good neighbors and a vital resource for controlling pests and pollinating flowers.

What about bats?

Bats are furred, warm-blooded mammals with body lengths of three to six inches and wingspans varying from eight to 16 inches. Most bats hunt flying insects and navigate by emitting pulses of sound through the mouth. Their sensitive ears hear the echoes reflected from even tiny insects. This allows them to steer towards prey and avoid obstacles. Bats also have keen eyesight on which they rely for long-distance orientation.

When you are outside at dusk observe the sky for "birds" that flap their wings quickly, fly slowly and erratically and often swoop over water features. Bats may also be found flying around a building or parking lot lights looking for an evening meal.

What do bats eat?

Bats in North America eat primarily insects such as cut worms, corn borer moths, potato beetles, and mosquitoes. A single bat can consume between 500 to 1,000 mosquitos and insects in an hour depending on the species and the size of the bat. Given this appetite, you can easily see why bats are the most important natural controller of insect pests that fly at night. Having a population of bats on your golf course can be a welcome addition to your integrated pest management program.

Do all bats carry rabies?

If a random sample was taken of all bats in a given area, less than 1/2 of one percent would be found to be infected with the rabies virus. However, when bats are brought in to health departments for sampling for rabies, approximately 4% are found to carry the rabies virus. This finding is due to the number of sick bats that are easily brought in to be sampled.

Why is bat conservation important?

Unfortunately, nearly 40% of America's bats are on the Federal Endangered Species List or are candidates for it. Many factors have led to the decline of bat populations. When old buildings and barns are demolished, valuable bat roosting habitats are destroyed as well. The use of insecticides and pesticides are easily ingested by these insect-eating mammals. The popularity of spelunking or "caving" often puts people in bat caves just as young bats are maturing. Often if adult bats are disturbed by humans, they will abandon their young. Because bats usually raise only one pup each year, their populations do not increase quickly. Lastly, the myths about bats do not endear them to the general population.

How can we attract bats?

You can help to ensure the survival of bat species in your area by: 1) supporting bat

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conservation efforts to protect existing natural nest sites and, 2) mounting "bat boxes" to provide additional nesting and roosting sites. A bat box is a simple wooden structure, much like a bird nesting box. It can be placed in a variety of locations, but bats prefer sites that are within a quarter mile of streams, lakes, or wetlands. Bat houses are used for nursery colonies, bachelor colonies, and hibernation.

Is it safe to install bat houses on my golf course?

Yes. Bat houses are currently a part of habitat enhancement projects on state parks, golf courses, farms, schoolyards and backyards throughout the country. To allay any fears, be sure to educate golfers about the addition of bat houses on the course. Post bat house information or use your newsletter to explain this project. People generally welcome bats when they know that bats will be a valuable part of your pest management plan.

Refer to the attached bat house construction plans and instructions to successfully attract bats.

BUILDING A SUCCESSFUL BAT BOX

Like cavity-nesting birds, bats have specific requirements for house size and habitat conditions. Fortunately, it doesn't take years to attract bats. If bats are to take up residence, they generally do so in the first or second season after bat house placement. Follow these guidelines for the best results:

The Bat Box

Size- Larger houses seem to be far more likely to be occupied than small ones. Large houses may measure approximately 25" - 36" tall by 10" - 24" wide by 11" deep (see attached instructions).

Wood Type- Pine, cypress, cedar, and exterior plywood are all fine. Interestingly, old wood seems to attract bats sooner -- within the first season after mounting. However, boxes constructed of new wood placed in suitable conditions will work too.

Paint and Stain- Dark stain, black paint, or tar paper increases the absorption of solar heat and helps to keep boxes warm -- a condition northern bats prefer. In fact, temperature is a key factor in bat house use. In northern parts of North America (above 40° latitude), bats prefer temperatures in the 80° to 90° range. However, in southern areas (below 30° latitude), just the opposite seems to be true. White or unstained bat houses help to prevent overheating in the South.

Guano- Placing bat guano in or around the bat house doesn't appear to have a significant impact on whether bats take up residence. It may help to attract bats sooner, but proper house size and location are far more important in attracting bats.

Bat House Placement

Solar Radiation- Bat house exposure to sun is one of the most significant criteria for attracting bats. In Northern areas, make sure your box gets at least four hours of sun per day. In the South, your box should get less than four hours.

Mounting- Mount your box a minimum of 15' to 30' above the ground. Where solar exposure is important, mount your box on a pole for the best success. The side of a building or on a tree will also work, but be sure to look for hanging branches or other obstacles that block sunlight. In general, try to place bat houses in remote areas of the golf course and in places that do not receive high pesticide applications.

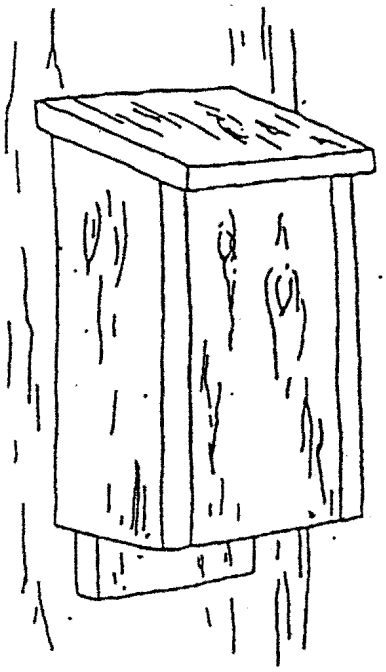
Water Source- If at all possible, place your bat house close to a water source. Bats show a strong preference for habitat that is in close proximity to water. Boxes placed within ¼ mile or less of a stream or river are most successful. Large lakes of three or more acres also attract bats.

Urban Area or Rural- Though they tend to prefer more open land, bats can be attracted to houses placed in both urban and rural areas.

Audubon International 1997

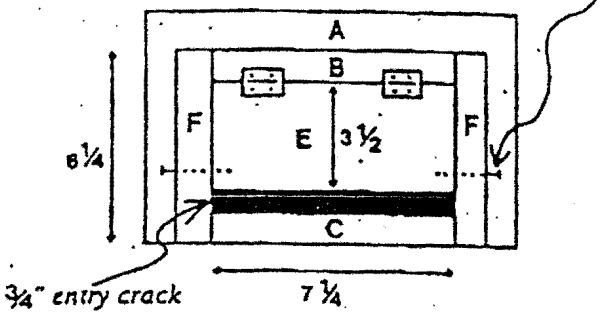
SMALL BAT HOUSE

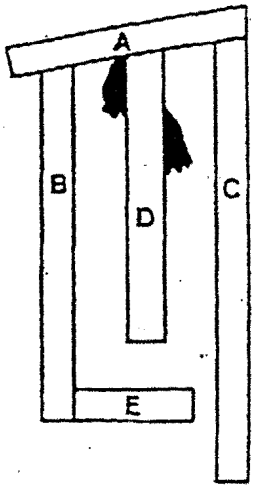
WILL ACCOMMODATE UP TO 30 BATS



BOTTOM VIEW

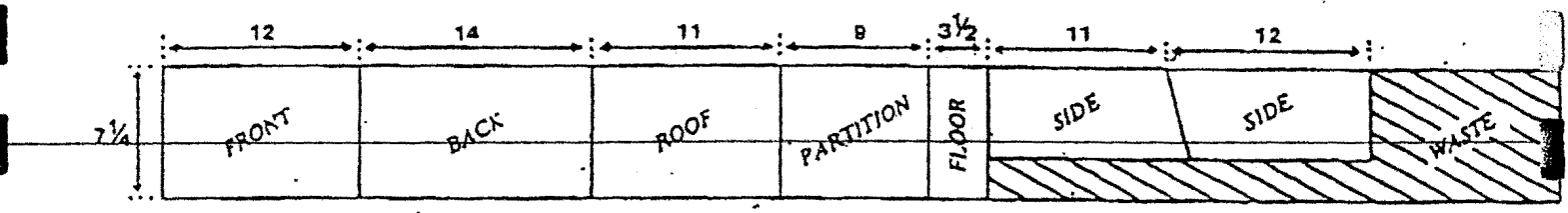
Hinges on floor allow for cleaning.
One nail on each side holds floor closed.





Small Bat House Dimensions

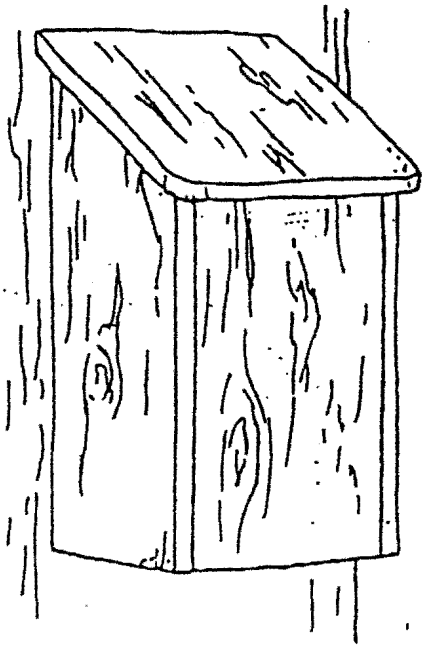
A Roof 7 1/4" x 11" wide
B Front 12" x 7 1/4"" wide
C Back 14" x 7 1/4" wide
D Partition 9" x 7 1/4" wide
E Floor 3 1/2" x 7 1/4" wide
F Sides 6 1/4" wide x 12" at back, 11" at front

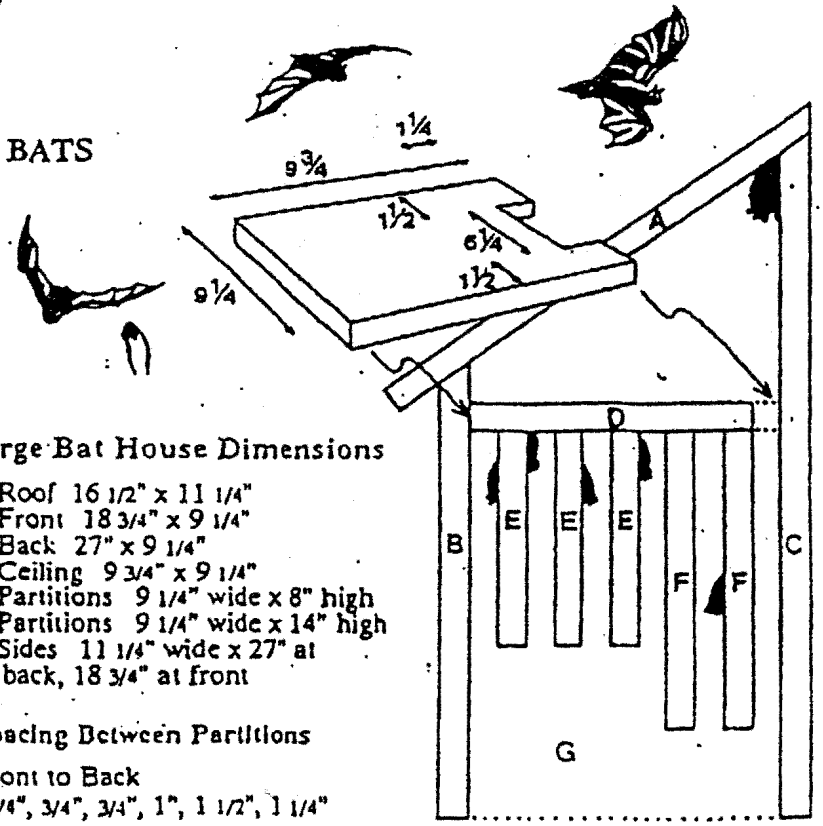


Lumber for Small Bat House: one 1" x 8" x 7'

LARGE BAT HOUSE

WILL ACCOMMODATE UP TO 100 BATS





Large Bat House Dimensions

A Roof 16 1/2" x 11 1/4"
B Front 18 3/4" x 9 1/4"
C Back 27" x 9 1/4"
D Ceiling 9 3/4" x 9 1/4"
E Partitions 9 1/4" wide x 8" high
F Partitions 9 1/4" wide x 14" high
G Sides 11 1/4" wide x 27" at back, 18 3/4" at front

Spacing Between Partitions

Front to Back
3/4", 3/4", 3/4", 1", 1 1/2", 1 1/4"

All dimensions in inches.
Wood should be untreated and interior should not be painted or stained.
Large bat house plans adapted from Bat Conservation International with permission.

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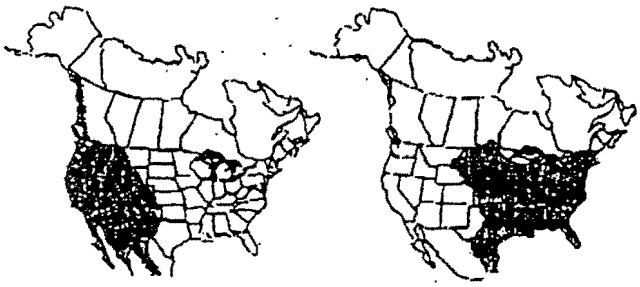
Eastern screech owl and young at nest.
Adult western and eastern screech owls look similar — small owls with yellow eyes and prominent ear tufts. Male and female look alike.

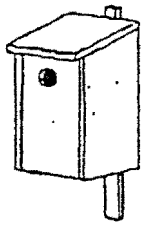


Quick Guide
Eastern Screech Owl
Western Screech Owl

Breeding period: March into July
Territory size: Just the area around the nest site
Nest materials: None
Eggs: 4–6, white
Incubation: 27–30 days, by female only
Nestling phase: About 4 weeks
Fledgling phase: 6–8 weeks
Broods: 1
Migration: Generally a year-round resident

Barn Owl Birdhouse

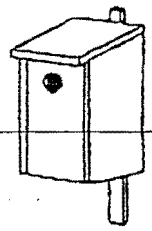
Dimensions
Entrance-hole diameter: 6"–8"
Height of hole above floor: 4"
Inside floor dimensions:
16" wide, 22" deep
Total height of box: 16"



Placement
Habitat: Open farmland
Height: 10'–20' up on a tree, a barn, or a shed

Barred Owl Birdhouse

Dimensions
Entrance-hole diameter: 6"–8"
Height of hole above floor:
14"–18"
Inside floor dimensions:
13" x 13" to 14" x 14"
Total height of box: 22"–28"



Placement
Habitat: Woods or swamps in suburban or rural areas
Height: 10'–20' up on a tree

Daily Schedule

The daytime program for owls is generally to sleep and stay still; some owls, however, are more "day owls" than "night owls." One of these is the barred owl, which you can hear hooting in the middle of a summer day. Barred owls do most of their hunting at night, as do the other owls, but they also make short flights around the nesting area during the day.

Activity for most owls starts when it begins to get dark. The birds stir, stretch, and often regurgitate pellets containing the indigestible fur and bones of animals they caught and ate the previous night. Then they usually go off to hunt, returning before dawn. If they are having trouble finding enough food at night, their hunting may continue into the dawn hours.

Quick Guide
Barn Owl

Breeding period: March into July
Territory size: Just the area around the nest site
Nest materials: Lined with leaves, rootlets, grasses, and other debris
Eggs: 4–5, white to pale buff
Incubation: 30–34 days, by male and female
Nestling phase: 52–56 days
Fledgling phase: 2–3 weeks
Broods: 1–2
Migration: Migrates slightly south from northern areas

Owl Diets

The two largest owls mentioned here, the barn and barred owls, eat meadow voles and other rodents almost exclusively. The three smaller owls have a more varied diet. Screech owls may feed on night-flying insects. When nesting in the city, they may frequent the areas under streetlights to which moths and other insects are attracted.

These smaller owls can also eat other small birds that may be roosting on branches at night. Because of this you may not want owl birdhouses right near those of your other birds.

Tree-Climbing Owls

Both barred and screech owls have the ability as nestlings and young fledglings to climb trees. This is a useful trait because they often leave the nest hole before they can fly. If they have been nesting in a tree hole, to get to a perch they just work their way up the trunk, basically crawling, using their beaks, talons, and wings.

This also means that if for some reason they fall out of a tree before they can fly, they will be able to get back up to the safety of the treetop. Barred owl fledglings can climb as high as 50 feet up a tree in 20 minutes.

Barn Owl.
Easily recognized by its white, heart-shaped face. Male and female look alike.

Competing for Nest Holes

Screech and saw-whet owls are so small that they may compete for some of the natural cavities and birdhouses that can be used by other birds. For example, screech owls and saw-whet owls commonly use old flicker nest holes, which are about 2½ inches in diameter. Other birds that might like to use these holes include the great crested and ash-throated flycatchers, American kestrel, purple martin, and red-bellied and red-headed woodpeckers. In fact, screech owls have been reported to nest in purple martin birdhouses.

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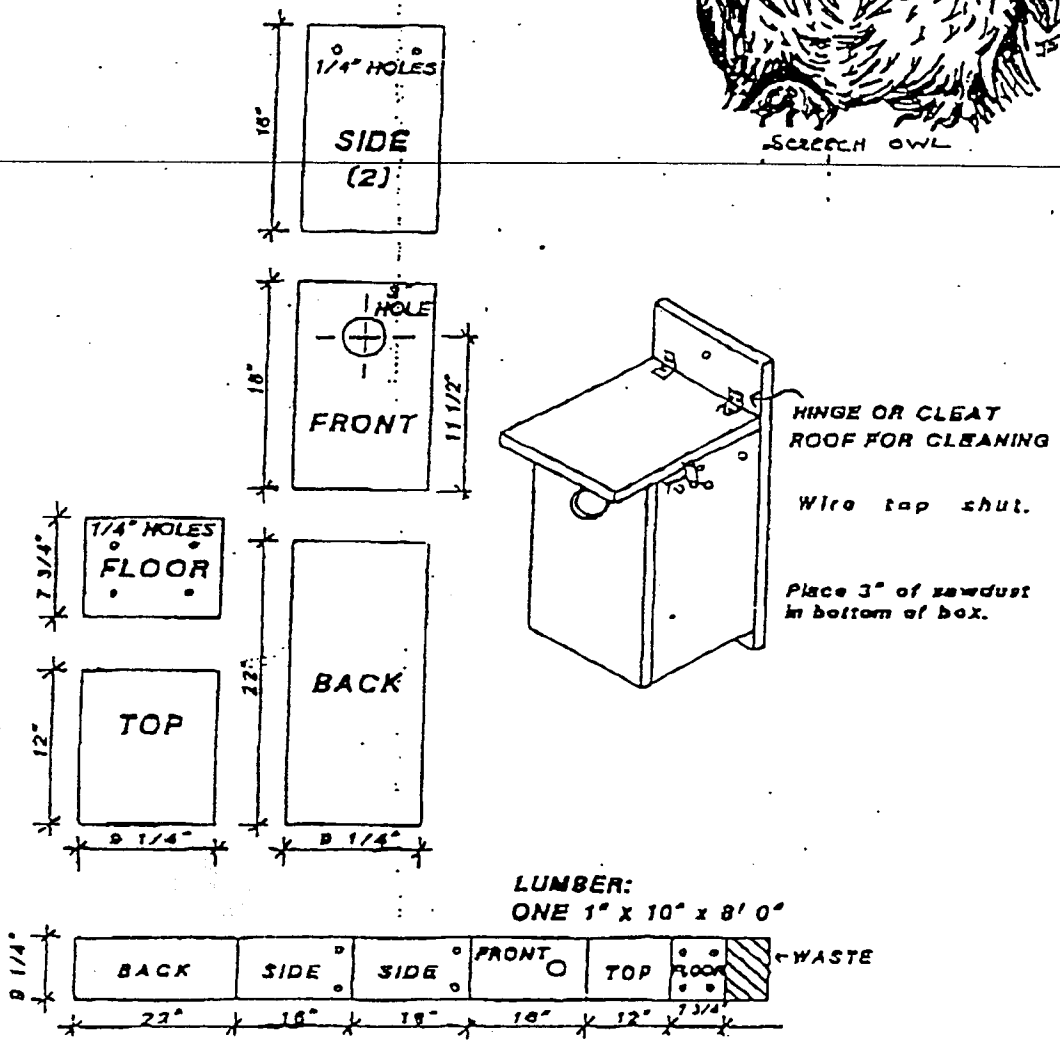
Northern Screech Owl

NEST BOX

Screech owl



Environmental Report

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AMERICAN KESTRELS

The American Kestrel (*Falco sparverius*), formerly known as the Sparrow Hawk, is North America's smallest falcon. About the size of a blue jay, kestrels can often be seen in farm fields and along open roadways, perched on a branch or wire scouting for prey. Both sexes have rusty-colored tails and backs with black barring. The wings of the female also have the rust and black color pattern, while the wings of the male are blue-grey.

Range and Habitat

American Kestrels live in North, Central and South America from the tree line boundary in Alaska and Canada south to Tierra del Fuego. Kestrels prefer open country, and will inhabit unforested mountainsides up to 1300 feet, grasslands, savannas, deserts, farmlands, and even suburban and urban environments.

Migration

Those in the northern parts of the breeding range migrate, while other populations are less migratory. Kestrel movements are not well understood, but information from the recovery of banded birds indicates the northernmost kestrels winter the farthest south (Central America to Panama).

Diet

Kestrels are generalist predators, feeding on large insects such as grasshoppers, small mammals such as voles, birds of sparrow size, and in some places, reptiles and amphibians. Kestrels often hover in flight before swooping to the ground to capture prey.

Breeding and Nest Site Selection

American Kestrels are monogamous. Pairing begins approximately four weeks prior to egg laying. The male establishes a nesting territory and is joined later by the female, who may move among several territorial males before choosing a mate. The male, or sometimes the female, will try to attract a potential mate's attention by exhibiting a series of power dives from high above the territory. When pairs form, courtship feeding where the male presents food to the female becomes frequent.

American Kestrels are almost exclusively cavity nesters and will use a natural hole in a tree, a woodpecker's hole, a nest box, a cavity in a bank or cliff, or an enclosed space in a building. On rare occasions, kestrels may use an old stick nest of another bird, especially the enclosed nests of magpies.

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Eggs, Incubation, and Raising Young

Kestrels lay four to five, white to reddish-brown spotted eggs each year. Incubation generally begins with the second to last egg laid, and lasts about one month. While the female incubates the eggs, the male provides her with food. When the young are born, they are tended by both parents until they are ready to leave the nest at 28 to 30 days old. Fledglings continue to be dependent on their parents for food for two to three more weeks.

Ensuring Kestrel Nesting Success

As open space in the United States becomes increasing developed, kestrel habitat and nest sites dwindle. Many cavity-nesting birds now compete heavily for available nest sites. You can help to ensure kestrel nesting success by mounting and monitoring a kestrel nest box in suitable habitat. Farm fields, parks, golf courses, open lots, and highways with grassy rights-of-way are all potential nest sites for kestrels.

The attached nest box design details the appropriate dimensions for American Kestrel Nest Boxes. White pine or cedar is recommended. If you choose to paint the box, use an earth-tone paint to allow boxes to blend in with the environment and only paint the outside of the box.

Attach the box to a post, tree, or side of a building, 10 to 30 feet above the ground. If you are putting up more than one box, space them about one mile from each other to meet kestrel territorial requirements.

Checking and Maintaining Nest Boxes

Nest boxes should be checked at least three or four times each year. The first visit should occur in late winter or early spring before the kestrels begin territory establishment. At this time, clean out the nest box and make any needed repairs. Place three to four inches of wood chips, wood shavings or straw in the bottom of each box for nesting material.

During the nesting season, visit the box two to three times. This will help you to identify whether the box is being used by kestrels. European starlings often nest in kestrel nest boxes. Starlings replace or cover wood chips with grass and other material and lay five, six or seven pale blue eggs. If starlings are found nesting, remove the nest and replace it with a new layer of wood chips.

The only time to avoid checking a kestrel nest box is during the first two weeks of their 30-day incubation period. Kestrels are especially sensitive to disturbance at this time.

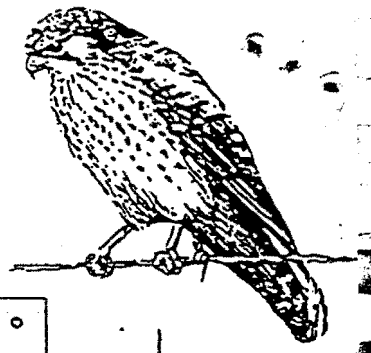
To determine whether the young kestrels have successfully left a nest box, one visit should occur within five days of their expected departure. The last visit should be made in late summer after nesting is complete. Remove old nesting material at this time.

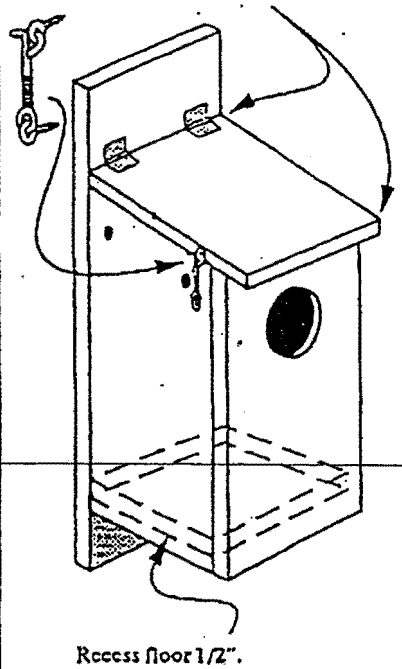
Keep records for each box you put up to help evaluate the success of individual nest boxes and your nest box program. New York Audubon conducts a yearly nest box survey and we appreciate hearing about your results. Look for more information about the survey in our newsletter, Field Notes.

Reference: This report has been adapted from the Iowa Department of Natural Resources Nongame Wildlife Program booklet entitled "Establishing a Nest Box Program for American Kestrels Along an Interstate Highway."

American Kestrel Nest Box

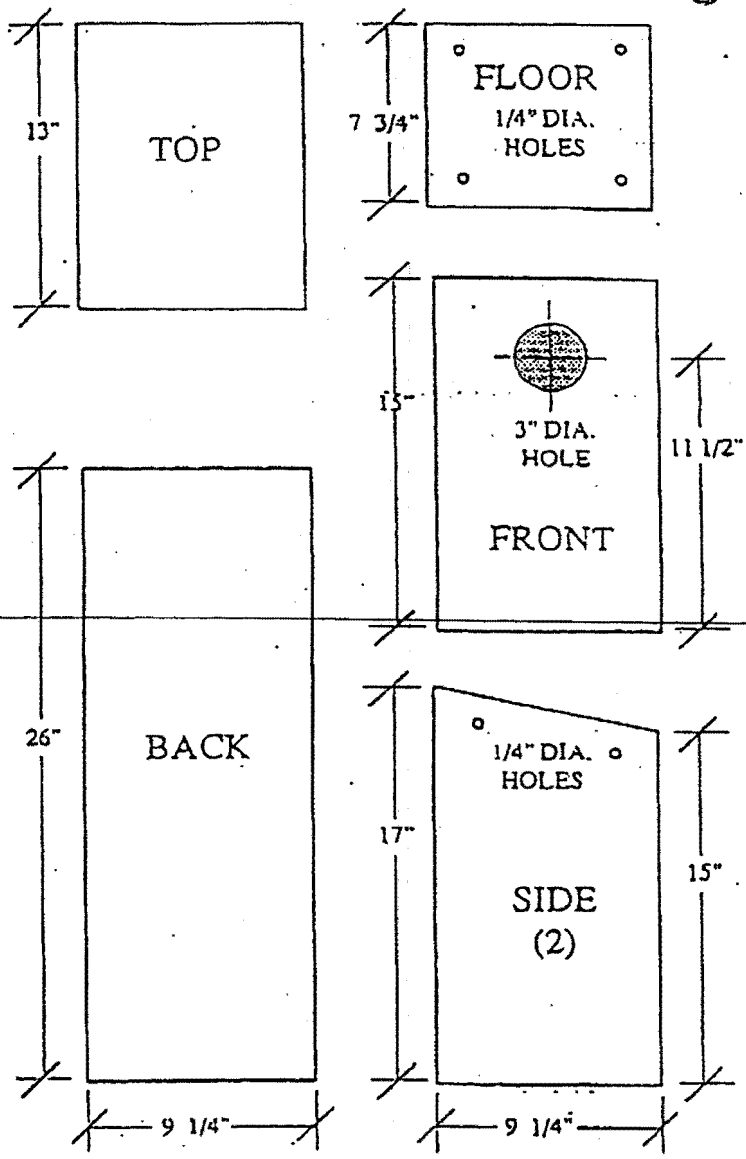
This plan modified from kestrel nest box plan featured in *Woodworking for Wildlife: Homes for Birds and Mammals* (Published by Minnesota DNR; Carrol Henderson, author)



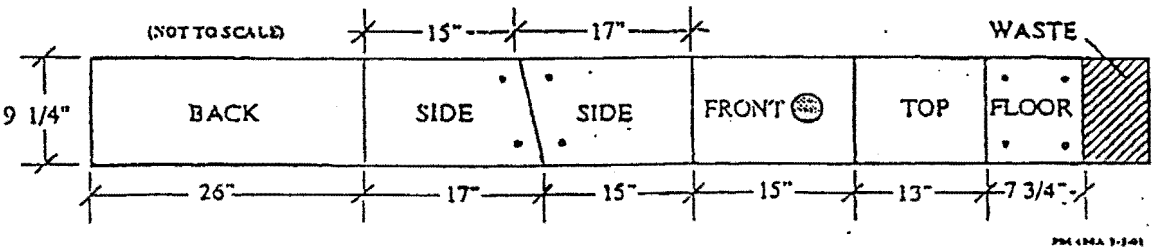


To hold the roof secure and allow for easy cleaning access, hinge the roof and use a spring-loaded safety hook.

Place 3" of wood chips, wood shavings, or straw in bottom of box.



LUMBER: One 1" x 10" x 8' 0", (#2 white pine recommend). Painting the box will increase its useful life.
HARDWARE: Twenty-two 1 1/2" wood screws (#6), two 2" hinges and one 2" spring-loaded safety hook.



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HABITAT CONSERVATION PLAN
DOS PUEBLOS GOLF LINKS
COUNTY OF SANTA BARBARA

Prepared for:

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EXHIBIT NO. 6
APPLICATION NO. LOP A-4-STB-93-154-CC-A2
ARCO Dos Pueblos Golf Links
Applicants' HCP (pocket maps not included)

JANUARY 2002

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EXECUTIVE ABSTRACT

CPH Dos Pueblos Associates, L.L.C. (CPH), and ARCO Environmental Remediation, L.L.C. (ARCO) have prepared this HCP in support of an application for two permits, pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (Act), from the U.S. Fish and Wildlife Service (Service) for the incidental take of two (2) listed animal species: California red-legged frog and tidewater goby. The proposed incidental taking would occur within the Dos Pueblos Golf Links project site, and the small area surrounding the water pipeline support structure on the east side of Eagle Canyon, in Santa Barbara County, California. In support of the application, CPH and ARCO propose to implement a Habitat Conservation Plan (HCP) to meet the requirements of law for Section 10(a)(1)(B) permits.

The HCP delineates the responsibilities of CPH, ARCO and the Service, and is intended to enable the Dos Pueblos Golf Links project within Santa Barbara County to be constructed, maintained, and operated in such a way as to conserve the project area's biological resources. This HCP is also intended to cover take related to soil remediation activities for which ARCO is responsible. CPH and ARCO would avoid impacts to listed species to the extent feasible during construction, operation, and maintenance of the project. This HCP includes 60 measures to avoid and minimize impacts to listed species, including:

- Service-approved biologists and/or trained monitors shall carry out monitoring, relocation of listed species, and education programs for the project.
- Construction and maintenance personnel shall receive environmental training regarding federally-listed species.
- Public access to the beach at the mouth of Eagle Canyon via the access trail shall be prohibited from 1 February to 31 May each year.
- Pets shall not be allowed on the site during construction, and horses are the only domesticated animals that shall be allowed on the public access trail during operations.
- Best Management Practices for erosion and sediment control shall be implemented and maintained during construction and until vegetation is established on bare soils.

- Work areas for construction shall be clearly marked and no disturbance, staging, or storage activities will be conducted outside the construction areas.

- Construction equipment shall be regularly inspected and maintained. Any leaks found shall be repaired immediately.

- Hazardous materials shall be stored in a containment area at least 100 feet from aquatic habitats during construction. Any hazardous materials spills shall be cleaned up immediately.

- Concrete trucks shall be washed out in designated areas where runoff cannot reach aquatic habitats.

- Any California red-legged frogs found in the work area shall be relocated by the Service-approved biologist and/or trained monitors.

- Construction areas where water or riparian vegetation is present shall be surveyed per Service protocol for California red-legged frogs by qualified biologists within three days prior to construction.

- Mowing of golf course roughs shall be limited to dry, sunny days.

- Aquatic weed control in the reclaimed water storage lake shall be by non-chemical methods.

- Mosquito control for the reclaimed water storage lake shall be by methods not toxic to amphibians; mosquitofish will not be used for mosquito control.

- A water quality testing program shall be implemented for Tomate Canyon, Drainage 4 north, Eagle Canyon, the vernal pool and the reclaimed water storage lake.

- A bullfrog monitoring and removal plan shall be implemented for the entire project site.

Executive Abstract

This HCP is designed to minimize and mitigate the impacts to two (2) listed animal species and their habitat. The HCP defines measures to ensure that the elements of the HCP are implemented in a timely manner. The HCP also discusses the possibility of changed and unforeseen circumstances occurring, and specifies actions to address such contingencies. Funding for the HCP and alternatives to the proposed project are discussed.

SECTION 1.0
INTRODUCTION

The purpose of this Habitat Conservation Plan (HCP) is to satisfy the requirements of obtaining two incidental take permits (one for ARCO and one for CPH). The HCP addresses the potential impacts to, and mitigation measures to avoid or offset such impacts to, the California red-legged frog (*Rana aurora draytonii*) and tidewater goby (*Eucyclogobius newberryi*) that could result from construction and operation of the Dos Pueblos Golf Links project, as well as soil remediation activities to be conducted by ARCO. The life of the project is anticipated to be 75 years or more, and the term of this HCP will be 25 years. The County has approved the project based on a 75-year design life. If take authorization is needed beyond 25 years, CPH will request to renew the permit before it expires following the renewal procedures (50 CFR 13.22). ARCO's remedial activities, conducted in accordance with the Remedial Action Plan (RAP), hereby incorporated into the HCP, are expected to be completed within 10 years. ARCO's Section 10(a)(1)(B) permit will have a term of 10 years. If take authorization is needed beyond 10 years, ARCO will request to renew the permit before it expires following the renewal procedures (50 CFR 13.22). The HCP is being prepared because:

- Take of the federally-listed California red-legged frog and the federally-listed tidewater goby, could occur due to implementation of ARCO's RAP, and/or construction and operation of the golf course project.

- Impacts to the California red-legged frog could occur in upland areas outside jurisdiction of the U.S. Army Corps of Engineers (Corps) and although the Corps has authorized both ARCO to use Nationwide Permit 38 and CPH to use Nationwide Permits 14, 26 and 33, the Corps has declined to initiate formal consultation with the Service for the project. Therefore, the project has no federal nexus to allow consultation under Section 7 of the Endangered Species Act (Act) for implementation of ARCO's RAP and/or construction and operation of the golf course project.

Three other federally-listed species present, or potentially present, in the project area would not be adversely affected by the project. These species and the reasons why no take would occur are discussed in *Section* 3 of this HCP.

Detailed discussions of the project setting, alternatives considered and analyzed, general impacts, and conceptual mitigation measures are provided in the Final Environmental Impact Report (FEIR) for the project (Fugro-McClelland 1993) and the biological resource reports

prepared by Interface (1992), DUDEK (1998), and SAIC (1999a,b,c). Information, as appropriate, has been summarized from these documents in this HCP.

1.1 Site Description

The proposed Dos Pueblos Golf Links project is located five miles west of Goleta in the County of Santa Barbara, California. The site encompasses 208 acres situated on the coastal terrace between U.S. Highway 101 and the Pacific Ocean (*Figures 1 and 2*). The project site was used for oil and gas development and production from 1928 through 1997. Natural vegetation is limited to drainages onsite, and the remainder of the site is composed of non-native grassland. After oil and gas operations halted in 1997, production facilities were dismantled pursuant to permit approvals granted for the project by the County of Santa Barbara and California Coastal Commission, and the pieces were hauled away by truck between December 1997 and January 1998. ARCO is still responsible for conducting soil remediation activities at eight locations (see attached *Site Plan*).

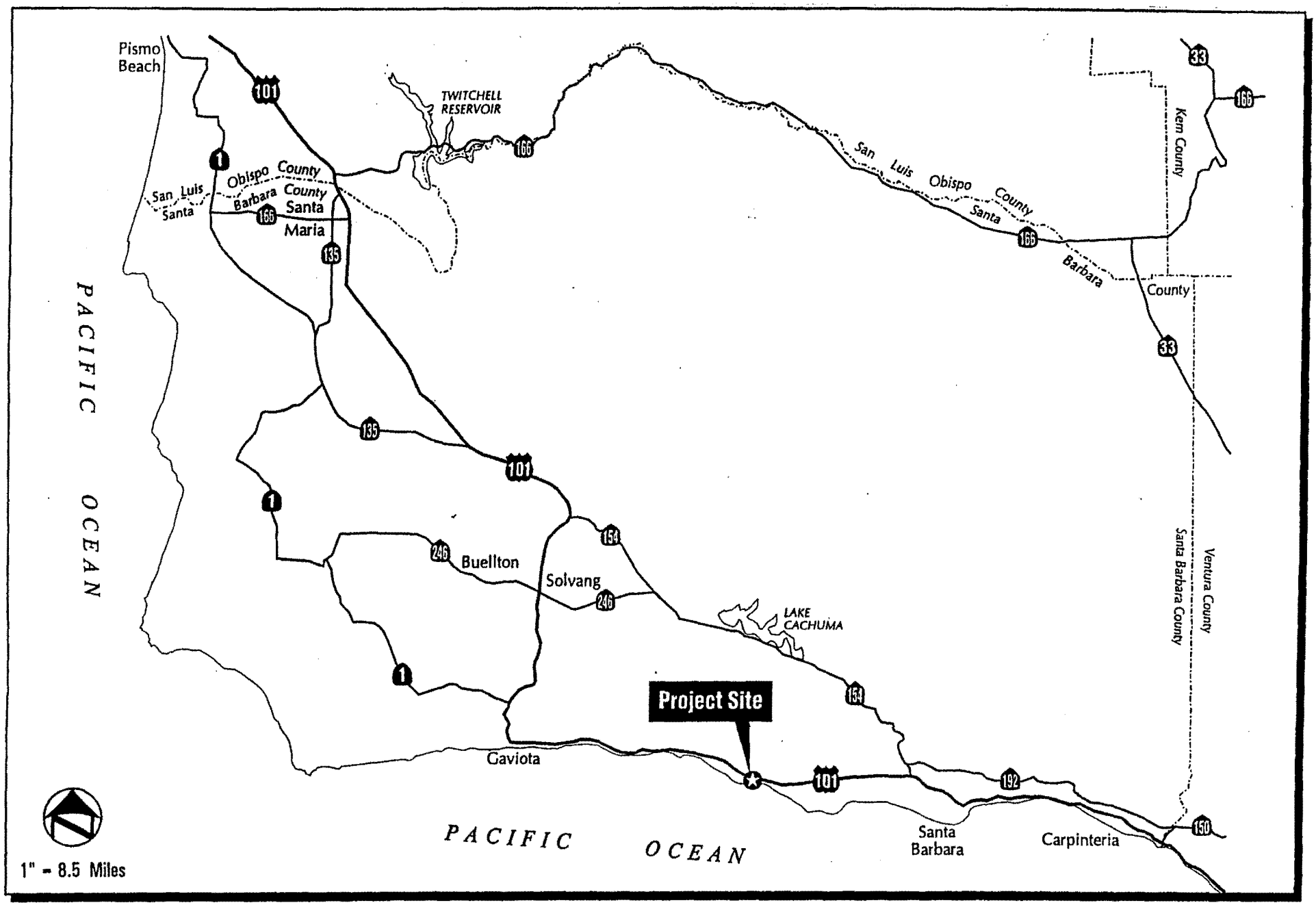
The coastal terrace in the project area slopes gently (less than 10 percent) toward the ocean and ends in a steep bluff that drops almost vertically to the beach. Soils onsite are dominated by Diablo clay that is characterized by slow permeability and high shrink-swell potential. Milpitas and Conception soils also occur onsite (Soil Conservation Service 1981). The terrace is cut by a number of moderately to deeply incised drainages. The largest of these is Eagle Canyon at the eastern edge of the site. Eagle Canyon Creek has perennial water flow in average to wet years. Tomate Canyon near the western edge of the site is also fairly large but has intermittent flow, even in wet years. The other minor drainages vary in size and have ephemeral flow.

1.2 HCP Boundaries

This HCP covers the area within the property boundaries (208 acres) and the small, offsite area surrounding the water pipeline support structure on the east side of Eagle Canyon (see *Figure 2*).

1.3 HCP Goals and Objectives

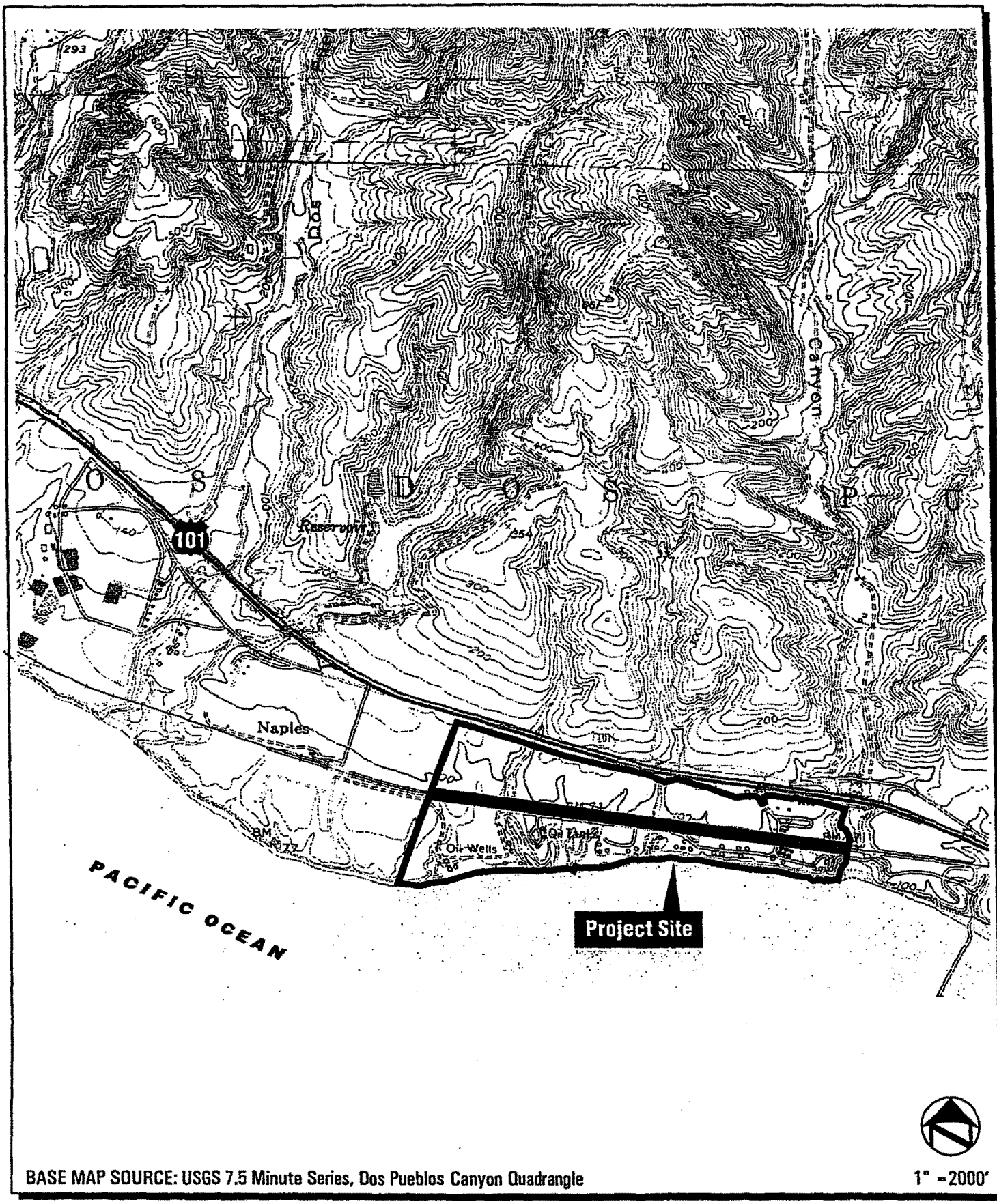
Due to the dynamic nature of the species to be covered and their habitat, maintaining a certain population size for either the tidewater goby or the California red-legged frog is not



Dos Pueblos Golf Links Environmental Assessment

Regional Map

FIGURE 1



BASE MAP SOURCE: USGS 7.5 Minute Series, Dos Pueblos Canyon Quadrangle

1" =2000'

Dos Pueblos Golf Links Environmental Assessment

Vicinity Map

FIGURE 2

feasible. Therefore, the following goals have been developed to minimize take and insure preservation of potential habitat for the two species. These goals and the objectives to be used to accomplish them are:

A. **To not degrade water quality at Eagle Canyon and Tomate Canyon during project construction.**

Objective A1: CPH will maintain water quality levels for turbidity below EPA aquatic life suspended solids and turbidity standards: the compensation point for photosynthesis should not be reduced by more than 10 percent of the seasonally established norm. If this level is exceeded, project construction shall cease until the turbidity is reduced below the threshold and the sediment and erosion plan will be modified in order to maintain turbidity levels below the thresholds.

B. **To not degrade water quality at Eagle Canyon, Tomate Canyon, Drainage 4 North, the vernal pool and the water storage lake or sediment quality in Eagle Canyon, Tomate Canyon or Drainage 4 North during project operation and maintenance activities.**

Objective B1: CPH will maintain water quality levels of dissolved oxygen, pH, nitrites, nitrates and phosphates below EPA levels at Eagle Canyon, Tomate Canyon, Drainage 4 North, the vernal pool and the water storage lake.

Objective B2: CPH will maintain no detectable input of chemicals (herbicides, pesticides and fertilizers) to waters and sediments of Eagle Canyon, Tomate Canyon and Drainage 4 North. Prior to construction, CPH will obtain baseline data for chemicals in surface water and sediments in these three drainages.

C. **To prevent colonization of exotic animal predators within the project site.**

Objective C1: CPH will maintain the potential bullfrog population onsite at zero.

Objective C2: CPH will maintain the potential crayfish population onsite at zero.

Objective C3: CPH will maintain the potential mosquitofish population onsite at zero.

Objective C4: CPH will remove the existing racoons onsite and maintain the population at zero if approved by the California Department of Fish and Game.

Objective C5: CPH will maintain the potential opossum population onsite at zero if approved by the California Department of Fish and Game.

D. **To maintain California red-legged frog and tidewater goby populations onsite by maintaining and improving the quality of California red-legged frog dispersing habitat throughout the project site and the California red-legged frog breeding habitat and tidewater goby habitat in Eagle Canyon.**

Objective D1: CPH will maintain 4.3 acres of riparian and wetland habitat onsite, including 1.15 acres of mitigation area (southern willow scrub and herbaceous wetlands) for dispersing California red-legged frogs.

Objective D2: CPH will maintain 0.5 acre of aquatic habitat in Eagle Canyon for resident California red-legged frogs and tidewater gobies and create 0.15 acre of riparian habitat and 0.12 acre of upland habitat in Eagle Canyon for resident California red-legged frogs.

Objective D3: CPH will ensure that, in accordance with the *Biological Enhancement/Landscape Plan* (BELP; attached as Appendix A), the wetlands mitigation areas and buffer areas will meet the following success criteria: 75 percent cover within two years and 80 percent cover within five years. If these success criteria are not met per the BELP monitoring schedule, additional treatments (*i.e.*, hydroseeding, planting, etc.) will be conducted. At such time as the success criteria are met (probably after three to five years), the annual monitoring will be discontinued.

Objective D4: CPH will endeavor to prevent people from leaving the public access trail system onsite and from entering the mouth of Eagle Canyon from the beach, using signs and fences.

Objective D5: CPH will ensure that Eagle Canyon contains zero trash through quarterly trash removal. (Trash removal in Eagle Canyon will be conducted within the 2.46-acres protected by a conservation easement as indicated on the attached Site Plan.)

SECTION 2.0
PROJECT DESCRIPTION

ARCO proposes to conduct soil remediation in accordance with the RAP prepared (ENSR 1998) for and approved by the County of Santa Barbara Protection Services Division (PSD) on June 18, 1998. The RAP, hereby incorporated into the HCP, describes the eight areas proposed for remedial excavation, the material to be excavated and the estimated volume of material to be removed. Implementation of the RAP, as required by the County, must be completed prior to construction of the proposed golf course project.

CPH proposes to construct an 18-hole links style golf course; a nine-hole par-three golf course; a driving range; a putting green; a turf farm; a clubhouse including a pro-shop, restrooms, administrative offices, a restaurant grill, and a meeting room; a cart barn; a maintenance and office building; a halfway house comprising restrooms, a snack bar, and a starter station; a remote restroom; pumphouse; reclaimed water storage lake; and 290 parking spaces. Soil remediation, at eight locations where previous oil activities resulted in soil contamination, is the responsibility of ARCO. The areas for the project components shown in *Table 1* are from the Coastal Development Permit (CDP) issued by the County of Santa Barbara (case number 98-CDP-274). The 1.15 acres of southern willow scrub and herbaceous wetlands revegetation areas will be preserved in perpetuity.

TABLE 1. PROJECT FEATURES AND ACREAGE

Project Feature	*Acres*
18-hole course	72.4
Par-three course	8.7
Putting green	0.3
Driving Range	5.4
Turf Farm	0.5
Clubhouse, parking, maintenance buildings	0.6
Reclaimed water storage lake	0.9
Wetlands revegetation areas	1.15
Native grassland revegetation areas	1.48
Undeveloped open space areas	116.6
TOTAL	208.0

Mitigation for biological impacts resulting from the ARCO RAP and the Dos Pueblos Golf Links project has been developed during pursuit of a Section 404 permit from the Corps, a Major Conditional Use Permit from the County of Santa Barbara (County), and a Coastal Development Permit from the California Coastal Commission and County.

Construction of the proposed golf links project would result in permanent impacts to 0.4 acre (17,402 square feet) of ephemeral or intermittent stream channel. The proposed project would also result in temporary impacts to 0.01 acre (434 square feet) of ephemeral or intermittent stream channel. The Corps authorized CPH to use Nationwide Permits 25, 26 and 33 for the proposed project impacts to stream channels. Mitigation for these impacts was approved by the Corps (Authorization to use Nationwide Permits 25, 26 and 33, dated December 15, 1998) and the County (Issuance of Substantial Conformity Determination, dated October 9, 1998; Issuance of Approval of 98-CDP-274, dated December 3, 1998). The Service reviewed the ACOE Pre-Construction Notification and did not comment.

Implementation of the RAP would result in temporary impacts to approximately 0.26 acre (7,560 square feet) of recently-created, isolated, disturbed wetlands. The Corps authorized ARCO to use Nationwide Permit 38 for the proposed RAP impacts. Mitigation for these impacts was approved by the Corps (Authorization to use Nationwide Permit 38, dated October 8, 1998), the Service (Approval of Wetlands Mitigation, dated November 2, 1998) and the County (Issuance of Substantial Conformity Determination, dated November 6, 1998; Issuance of Approval of 98-CDP-241, dated November 9, 1998).

Golf Course

The 18-hole golf course will occupy 72.4 acres and has been designed to fit into the existing natural topography in order to minimize grading (see attached *Site Plan*). The 18-hole course will be serviced by a standard concrete cart path. Six-inch, stand-up, concrete curbing will be constructed around all greens, tees, and other locations for maintenance and safety. Nine cart bridges and two foot bridges are proposed in association with the cart path. The bridges will be constructed of pre-manufactured steel with wooden decks and will have concrete abutments and wooden guard rails. The foot bridges will consist of concrete footings, located outside of drainage channels, and wooden walkways and handrails. The cart path system, in conjunction with turf surfaces and an existing service road located south of the railroad right-of way, will provide maintenance vehicle access to the entire property.

The routing of the 18-hole golf course will necessitate crossing the Union Pacific Railroad right-of-way three times. The crossings will be accommodated by an existing wooden bridge and two proposed tunnels. The tunnels under the railroad easement will be approximately 100 feet in length and 10 feet in height.

The nine-hole, par-three course will occupy approximately 8.7 acres in the eastern portion of the property. The par-three course consists of fairways of 150 yards or less and is designed to be walked. No cart path is proposed for the nine-hole course, and no golf carts will be allowed.

The clubhouse, parking lot, maintenance area, and cart barn will occupy approximately 0.6 acre and will be located at the original site of the ARCO production offices, storage yards, and warehouse. The clubhouse will consist of a pro shop, restaurant grill, meeting room, administrative office and restrooms. Food will be served for golfers during daylight hours only.

Because of the golf links design, golfers will not return to the clubhouse prior to completing a round of golf. Therefore, a halfway house will be constructed adjacent to the tee boxes for the tenth hole of the 18-hole course. The halfway house will include restrooms, a snack bar, and a starter station. In addition to the halfway house, one restroom will be located on the golf links.

Golf cart storage, maintenance, cleaning operations, and range operations will be enclosed within the cart barn located north of the clubhouse. The maintenance building will provide storage for the equipment and machinery needed to maintain the golf course, offices, and employee facilities. The maintenance building will be located east of the clubhouse, adjacent to the service yard. The service yard will be screened to the east by the maintenance building and to the west by a serpentine wall. Additional storage will be provided by an 800-square foot building on the north side of the service yard.

A putting green, driving range, and turf farm are also elements of the proposed project. The putting green will be located between the driving range, the clubhouse, and the first tee box. The driving range will be located west of the clubhouse. The turf farm will occupy 0.5 acre in the northwestern portion of the project site.

Fencing along the perimeter and railroad right-of-way will be constructed from rustic wood and/or cable. All existing on-site and proposed utilities will be placed underground.

Reclaimed Water Storage Lake and Pump House

The reclaimed water storage lake will provide reserves for 2.5 days of peak irrigation and 5 days of average irrigation needs. A pump house (approximately 700 square feet) will be constructed immediately south of the lake. The intake pump will be located near the bottom of the reclaimed water storage lake, approximately 15 feet below the water surface (when the storage lake is at capacity). The water intake pump will be covered with a 5 mm screen.

Because the proposed reclaimed water storage lake will experience an average daily drawdown of 2.5 feet, and a maximum drawdown of 11.5 feet, the lake will be constructed with a concrete liner to prevent the growth of rooted vegetation within the lake. This concrete liner will extend down the sides of the reclaimed water storage lake to a depth of six feet.

The reclaimed water storage lake will be supplied via a reclaimed water pipeline described below.

Public Access Trail

As a condition of the County of Santa Barbara Conditional Use Permit and California Coastal Commission Coastal Development Permit, CPH is required to construct and maintain a public coastal access trail, averaging 24 feet in width. The width of the lateral access trail was designed to accommodate a pedestrian walkway, an equestrian path, and a bike path. CPH is also required to provide vertical access to the beach near the western property boundary and at the eastern property boundary. The western vertical access will terminate at the beach immediately west of Tomate Canyon (see attached *Site Plan*). The eastern vertical access will terminate at the beach at the mouth of Eagle Canyon. The offers to dedicate this trail system have been recorded as part of the CDP compliance, and CPH and the County have executed an agreement which obligates CPH to construct, operate, and maintain the trail improvements. It should be noted, however, that the vertical access currently dedicated is that originally approved in the CDP (*i.e.*, the vertical access trail extending along the western boundary of Eagle Canyon Creek from the end of the lateral access trail to the ocean with a boardwalk crossing of the creek mouth). This design for the vertical access has been revised to minimize impacts to Eagle Canyon Creek by relocating the vertical access out of the creek area, to the beach at the mouth of Eagle Canyon.

As currently proposed in this HCP, the vertical access at the beach at the mouth of Eagle Canyon will consist of a wooden stairway with several wooden landings, terminating at a concrete platform on the beach at the mouth of Eagle Canyon, along the Pacific Ocean (*Figure* 3). The wooden stairway will originate from the lateral public access trail on the slope above Eagle Canyon. The entrance to the stairway will be located immediately adjacent to the view point located on the cliff side of the lateral public access trail.

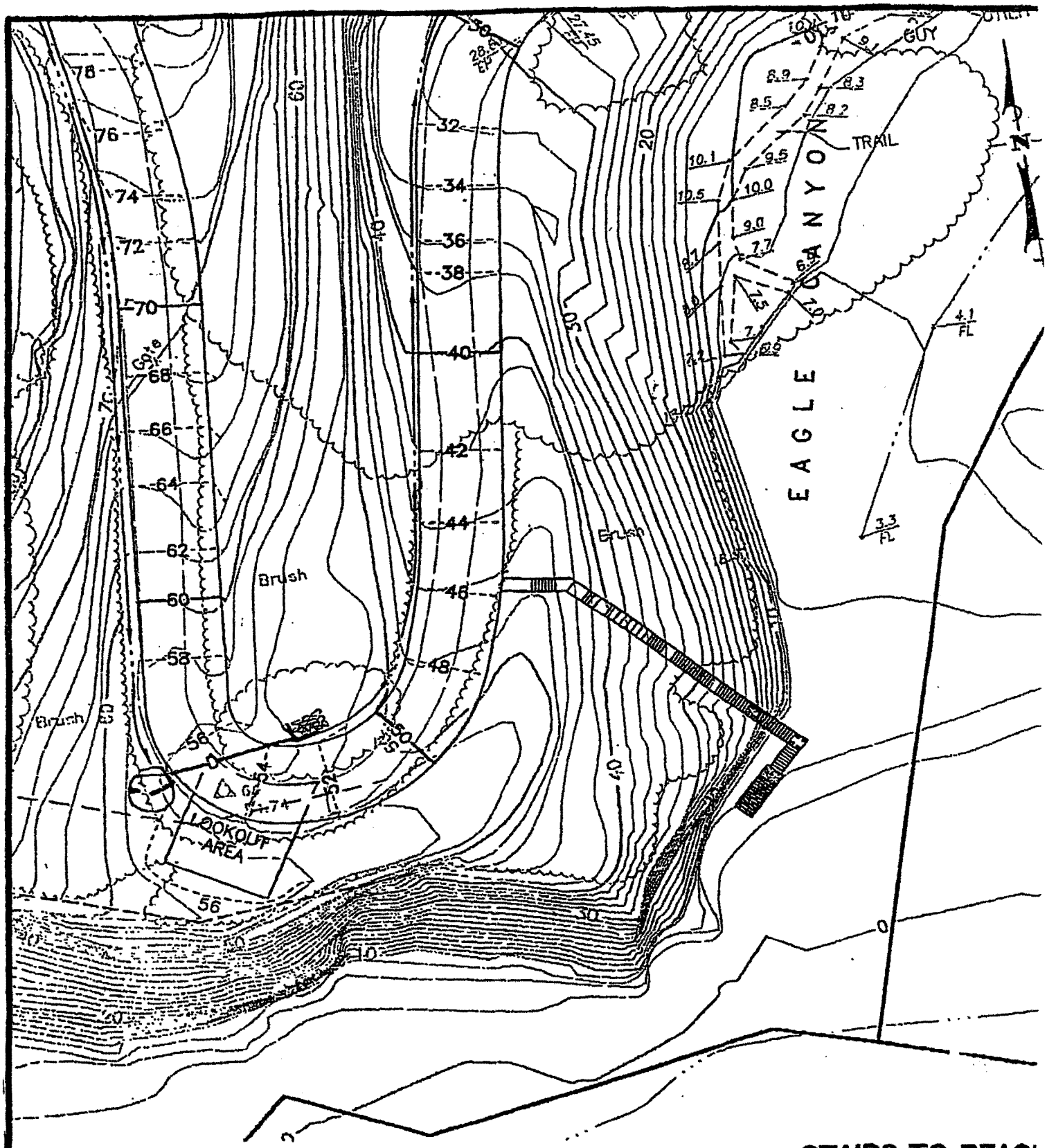
Due to the presence of a harbor seal rookery immediately east of Tomate Canyon, a Restrictive Access Implementation Plan (RAIP) was developed and approved by the National Marine Fisheries Service, California Department of Fish and Game, County, and California Coastal Commission. The RAIP, attached as Appendix B, requires that public access to the beach east of Tomate Canyon be restricted during the breeding/pupping season from February 1 to May 31 annually. While this vertical access will remain open, the area will be monitored to prevent the public from walking east along the shoreline during this period. The eastern terminus of the vertical public access trail (at the beach at the mouth of Eagle Canyon) will be closed from February 1 to May 31 annually. Locking gates will be installed at the top of the vertical access trail above Eagle Canyon in order to provide the necessary access control. The eastern terminus of the lateral access trail, although constructed to the eastern property boundary as required by the CDP, will be gated at a location just east of the top of the vertical access trail to prevent the public from entering Eagle Canyon Creek from the canyon. At such time as the lateral access trail is extended east from the project site, this gate will be removed.

In addition to the measures imposed in the RAIP, public access along the shoreline of the project site will be limited by the tide. During the calendar year 2000, between the hours of 5 AM and 9 PM, the tide extended above the elevation of the cliff base onsite for portions of a total of 205 days. From January 1 through 31, 2000, the beach was impassable for portions of 20 days. Between February 1 and May 31, 2000 (the season during which future public access will be limited in accordance with the RAIP), the beach was impassable for portions of 46 days. Between May 31 and December 31, 2000, the beach was impassable for portions of 139 days.

2.1 Implementation of the Remedial Action Plan

Remedial Action Plan

The RAP (ENSR 1998) was prepared for and approved by the County of Santa Barbara Protection Services Division (PSD) on June 18, 1998, for proposed remedial excavation of



STAIRS TO BEACH AT EAGLE CANYON DOS PUEBLOS GOLF LINKS

FIGURE 3

Penfield & Smith
ENGINEERS • SURVEYORS

12825.06 12825ex6 SCALE: 1"=40'

surficial petroleum hydrocarbon- and mercury-impacted soils. *Table 2* below depicts the areas to be remediated, the material to be excavated and the estimated volume of material to be removed. At each of the areas to be remediated, the vegetation will be cleared and the soils will be excavated using an excavator. The soils will be placed in a hauler truck and removed from the project site. All remediated soils will be disposed of at an approved disposal site. Excavated soils impacted with petroleum hydrocarbons will be disposed of at the ARCO Batch Plant, South Coles Levee Facility, Kern County. Excavated soils impacted with mercury will be disposed of at the McKittrick Waste Treatment Facility (Class II Landfill), 56533 Highway 58W, McKittrick, California.

TABLE 2. AREAS OF PROPOSED REMEDIAL ACTION

Areas of Remediation	*Materials to be Excavated*	*Estimated Volume of Material to be Removed*	*Estimated Square Feet of Material to be Removed*
Active (129/208) Tank Farm	Removal of petroleum-hydrocarbon impacted berms	100 to 400 cubic yards	4980 square feet
Former (208) Tank Farm	Stained surface soil	5 cubic yards	45 square feet
Meters (Mercury)	Removal of mercury-impacted soils from three areas	45 cubic yards	405 square feet
Warehouse Storage (Loading Dock)	Stained surface soil	7 cubic yards	63 square feet
Well 129-2 Staining	Stained surface soil	7 cubic yards	63 square feet
Former Gas Compressor	Stained surface soil	5 cubic yards	45 square feet
Mudpit Near 208-19 Well	Stained surface soil	50 cubic yards	450 square feet
Concrete abutment	Concrete abutment	10 cubic yards	90 square feet
TOTAL		229 to 529 cubic yards	6141 square feet

If the excavated soils have a total volume of approximately 229 cubic yards, it is estimated that two hauler truck trips will be required. If the excavated soils have a total volume of 529, it is estimated that four hauler truck trips will be required. Upon excavation of the petroleum hydrocarbon- and mercury-impacted soils, clean fill dirt will be used to replace the excavated soils.

Implementation of the RAP, as required by the County, must be completed prior to construction of the proposed golf course project. In addition, if any stained soils are uncovered during construction of the golf course, ARCO will be responsible for removing

these soils to a depth that will allow the placement of two feet of clean fill dirt over the stains. This may result in the additional removal of up to 5,000 cubic yards. The areas of proposed remediation (see *Table 2*) and the areas of potential remediation are included on the Site Plan in the attached map pocket. During implementation of the RAP, the applicant shall prevent sediment and other materials from entering the drainages (see EQAP). These include straw bale and silt fence barriers at the downslope side of all disturbed soil areas that are maintained throughout the rainy season.

2.2 Golf Links Project Construction

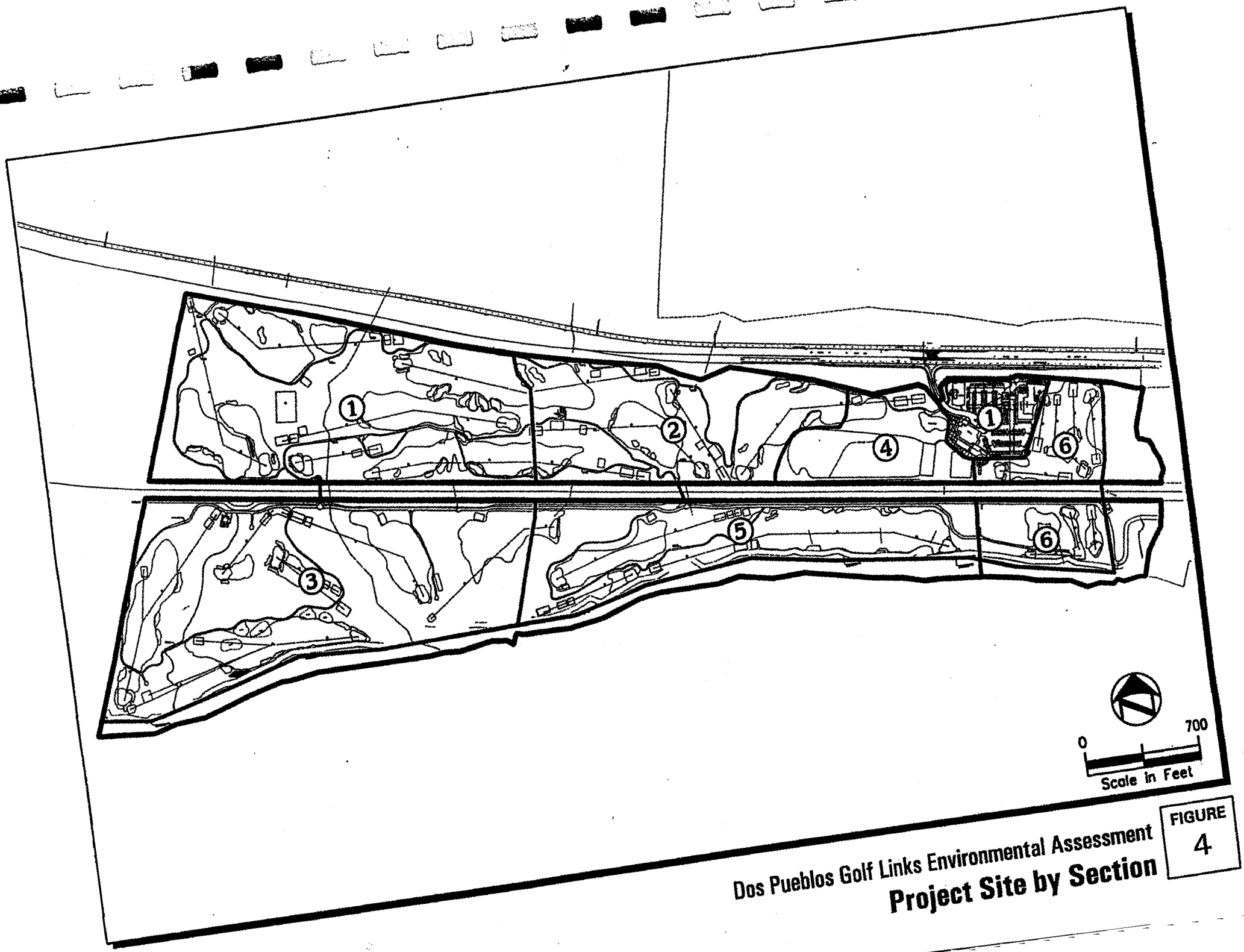
The proposed project will result in 154,470 cubic yards of cut and 154,570 cubic yards of fill, balanced onsite, including some off-site grading for construction of acceleration and deceleration lanes on Highway 101, and for installation of utility pipelines. In total, 115 acres of the 208-acre site will be disturbed during the grading phase. The proposed drainage plan includes construction of storm drains with energy dissipaters as well as three desiltation basins. The schedule for constructing the various project components is shown in Appendix C.

2.2.1 Golf Course Areas

Upon completion of the reclaimed water pipeline, construction of the golf course will commence. Construction will begin in the northwest corner of the property and progress eastward towards the clubhouse area. The second phase of construction will begin south of the railroad right-of-way in the southwest corner of the project site, moving eastward. Appendix C provides a table depicting the proposed schedule of construction activities. *Figure 4* depicts the project site by construction area section. These construction area sections, as labeled on *Figure 4*, indicate the order in which construction will occur and correspond to the schedule in Appendix C.

Erosion Control

Because some construction could occur during the rainy season, an erosion control plan has been designed and approved by the County as required by the CDP. In addition to the conditions of the erosion control plan, CPH proposes that grading and soil remediation will not be conducted south of the railroad right-of-way during the rainy season. Erosion control methods to be employed onsite include silt fencing, straw bale dikes, desilting facilities, rock berms, rock rip-rap, silt traps, and slope protection.



Dos Pueblos Golf Links Environmental Assessment

Project Site by Section

FIGURE 4

Silt fencing will be installed wherever water may potentially drain off construction areas of the project site as sheet flow. Silt fences will be inspected by the contractor immediately prior to and after each rainfall event and the accumulated sediment will be removed to an approved disposal site.

Straw bale dikes will be placed in small swales to aid in desiltation and reduce water velocity. The dikes will be inspected on a regular basis and accumulated sediment will be removed and transported off site to an approved disposal site.

A water sampling program will be implemented in Eagle Canyon, Drainage 4 North and Tomate Canyon during golf course construction, following each rain event. Impacts of erosion and sedimentation to water quality will be measured using turbidity. Sampling locations include Eagle Canyon at the northern property line, north of the railroad and in the lagoon at the mouth of Eagle Canyon; Drainage 4 North at the northern property line and north of the railroad; and Tomate Canyon at the northern property line, north of the railroad and at the mouth of the creek. CPH will maintain water quality levels for turbidity below EPA aquatic life suspended solids and turbidity standards: the compensation point for photosynthesis should not be reduced by more than 10 percent of the seasonally established norm. If this level is exceeded, project construction shall cease until the turbidity is reduced below the threshold and the sediment and erosion plan will be modified in order to maintain turbidity levels below the thresholds.

Desilting facilities, consisting of straw or gravel, will be placed around storm drain inlets to prevent entry of silt in the storm drain system and subsequently the on-site drainages. The desilting facilities will be inspected by the contractor immediately before and after each rainfall event. Accumulated sediment will be removed and transported off site to an approved disposal site.

Temporary rock berms will be constructed as needed within graded earth swales to reduce the velocity of storm water runoff and trap sediment. The rock berms will be inspected by the contractor immediately before and after each rainfall event. Accumulated sediment will be removed and transported off site to an approved disposal site.

Rock riprap will be placed at storm drain outlets to slow down and disperse the storm water flows. The riprap will be inspected by the contractor immediately before and after each rainfall event and, if a significant amount of rock has been displaced, the contractor will retrieve and restore the dislocated material where feasible and, if necessary, add rock of the appropriate size.

Temporary silt traps, local depressions used to slow down water and trap silt within a small graded area (5 acres or less), may be employed within the construction areas. The silt traps will be cleaned out on an as-needed basis.

Slope protection will consist of seeding with a fast-growing grass, six-week fescue (*Vulpia octoflora*), as soon as practicable in accordance with the Biological Enhancement Landscape Plan (BELP) (see *Section 2.2.4* below). The slope protection will be inspected by the contractor immediately before and after each rainfall event and, if gullying or excessive erosion have occurred, the areas will be repaired. Repairs may include reseeding, regrading, or application of an erosion control fabric (*e.g.*, jute netting, geotextile fabric, etc.). Additionally, within three weeks of final grading activities within each area, the graded areas will be revegetated (see description of revegetation below).

Prior to initial grading, a National Pollution Discharge Elimination System (NPDES) Construction Permit and Storm Water Pollution Prevention Plan (SWPPP) will be submitted to the Regional Water Quality Control Board (RWQCB). The SWPPP will outline in detail the responsible parties, maintenance procedures, and inspection procedures for erosion control.

Site Preparation

Before planting, annual weeds will be controlled by irrigating to allow germination, followed by cultivation or application of an approved contact herbicide, in accordance with the final *Agronomic Turf Management and Integrated Pest Management* (ATMIPM; attached as Appendix D). This process should be repeated two or three times to improve the chances of establishing a turf grass with a minimum of weed populations. This process may be implemented anywhere within the limits of grading for the golf course, turf farms, landscaped buffer areas and revegetation areas (see attached Site Plan).

2.2.2 Public Access Trail

Construction of the vertical access west of Tomate Canyon will involve installation of a concrete landing at the base of the cliff, wooden stairs attached to the cliff face, and a decomposed granite trail from the stairs to the cart path. Equipment for construction of the concrete landing and stairs will be staged from a temporary pad on the slope above (see attached Site Plan). A small "bobcat" type backhoe equipped with drilling auger will drill the

caissons. The same type of equipment will be used on the beach to excavate for the concrete landing. A crane, located at the staging area, will be used to ferry equipment and materials for the construction of the proposed improvements. Dewatering of the excavations, if necessary, is expected to be accomplished by using a portable sump pump(s) prior to concrete pouring. A temporary sand berm wrapped in filter fabric will be constructed on the beach side of the excavation for the landing to protect it from wave run-up on the beach at high tide. Concrete will be placed from trucks and/or pumping equipment located in the staging area above. Debris from the drilling operation will be cleaned up and hauled to an approved disposal site. At the completion of construction, the temporary staging area on the beach will be restored to pre-construction grade and the temporary staging area on the bluff top will be incorporated into the footprint of the golf course.

Construction of the lateral access trail will involve clearing of vegetation, some minor grading, and installation of an asphalt bike path. The pedestrian and equestrian portions of the trail will be earthen. That portion of the bike path within 200 feet of Eagle Canyon will be constructed from concrete to avoid impacts to water quality. Work will not be conducted between November and March during the rainy season. No runoff of sediments or cement to the creek is expected since the work will be conducted during the dry season and measures will be taken to prevent such runoff.

Construction of the vertical access to the beach at the mouth of Eagle Canyon will be similar to that for the access west of Tomate Canyon. A decomposed granite path will be installed along the bluff from the view point (beside the lateral access trail) to wooden stairs extending down the canyon wall. The stairs will be attached to the canyon wall and will end at a concrete landing on the beach at the mouth of the creek (*Figure 3*). Work will be staged from the view point on the slope above Eagle Canyon and from the beach at the mouth of Eagle Canyon. Installation of the vertical access will require clearing of Venturan sage scrub vegetation. This clearing, installation of the caissons and construction of the concrete foundations will be accomplished with no intrusion into the waters of Eagle Canyon Creek. Work will not be conducted between November and March. No runoff of sediments or cement to the creek is expected since the work will be conducted during the dry season and measures will be taken to prevent such runoff. A small "bobcat" type backhoe equipped with drilling auger will drill the caissons. The same type of equipment will be used on the beach to excavate for the concrete landing. A crane, located at the staging area on the beach, will be used to ferry equipment and materials for the construction of the proposed improvements. This crane will access the site from the Eagle Canyon Ranch property to the east.

Dewatering of the excavation, if necessary, is expected to be accomplished using a portable sump pump(s) prior to concrete pouring. A temporary sand berm wrapped in filter fabric will be constructed on the beach side of the excavation for the landing to protect it from wave run-up at high tide. Concrete will be placed from trucks and/or pumping equipment located on the beach adjacent to the crane. The wooden stairway and landings will be constructed on the slope above and installed with the crane. Debris from the drilling operation will be cleaned up and hauled to an approved disposal site. At the completion of construction, the temporary staging area on the beach will be restored to pre-construction grade, and the temporary staging area on the bluff top will be incorporated into a portion of the public access trail and view area.

2.2.3 Reclaimed and Potable Water Pipelines

An existing eight-inch reclaimed water pipeline and a ten-inch potable water pipeline will be extended from the western boundary of the Bacara (formerly Santa Barbara Club) Resort and Spa. The pipelines will then continue in a southwesterly direction for approximately 220 feet toward the Ellwood Pier. The pipelines will then be laid on existing oil and gas pipe racks (within an existing easement) across Eagle Canyon Ranch. At the Eagle Canyon Ranch pipe racks, ten-inch pipe will be used. Onsite, eight-inch pipes will be used for both pipelines. The existing pipe racks cross over two drainages: an unnamed drainage north of Ellwood Pier and Eagle Canyon. The old pipes will be removed by ARCO, the previous property-owner, and CPH will install the new water pipelines. The installation of the water pipelines will be conducted simultaneously with the removal of the oil and gas pipelines if feasible.

The new pipelines will be installed on the existing pipe rack by a light crane. All pipeline construction will be staged above the creek channel. At Eagle Canyon Creek, new pipe supports will be installed for suspension of the pipes over the creek. This will require drilling two 24-inch diameter caissons on each side of the creek to a depth of seven (7) feet below mean sea level (msl) with a truck- or crane-mounted drill rig. Steel reinforcement will be placed in the caissons, and the holes will be filled with concrete and capped with a footing that is eight (8) feet by three (3) feet. Steel columns will then be set on the concrete footings to support the cables. Anchors for the cables (two each side) will be drilled at a 30-degree angle into the ground (six [6] inches in diameter and 30 feet long). The support cables with connecting pipe will then be attached to the columns followed by installation of the pipelines. No entry into the creek (equipment or personnel) will occur. From Eagle Canyon, the pipelines will be placed under the existing access road for approximately 300 feet before

turning west at the top of the canyon. The reclaimed water pipeline will terminate at the reclaimed water storage lake. Approximately the last 650 feet of reclaimed pipeline will be located outside of the existing roadway. Where installed under existing roadways, the pipeline will be installed within approximately two (2) to three (3) feet of either side of the pavement centerline.

2.2.4 Landscape Buffers and Revegetation Areas

The County of Santa Barbara and California Coastal Commission approvals required the preparation of a BELP. The BELP was prepared and approved by the County prior to the issuance of the CDP. This plan addresses protection, restoration, revegetation, and landscaping of the disturbed graded areas onsite. The BELP includes procedures for seeding and planting, monitoring and maintenance, and revegetation success criteria for planted trees and shrubs as well as hydroseeded areas.

Approximately 2.6 acres of the project site will be revegetated as wetland mitigation sites and grassland mitigation sites. The grassland mitigation areas are depicted on the attached site plan and are listed under the habitat treatments legend as grassland plugs and native grassland (southwest corner of the project site). The wetland mitigation sites are depicted on the attached site plan and are listed under the habitat treatments legend as riparian revegetation treatments 1, 2 and 4. Preparation of areas to be revegetated with wetland species will consist of grading, removal of exotic vegetation, and weed eradication. After initial clearing and grubbing, the areas will be tilled to a depth of eight (8) inches and receive a "grow and kill" treatment. This treatment consists of thoroughly irrigating the areas and applying a glyphosate contact herbicide spray (Roundup in upland areas, Rodeo for use in aquatic areas) approximately two weeks after initiation of irrigation. A second round of irrigation, germination, and herbicide applications (and a third round, if necessary) will be conducted during the eradication period.

The native grassland revegetation area will receive a soil "greenhouse" procedure prior to revegetation efforts in order to grow-out and kill the existing soil seed bank. Clear or opaque plastic sheets will be laid on the soil and secured in place. The plastic will trap heat and moisture, causing seed in the soil to germinate and eventually suffocate under the plastic.

Weeds will be removed during site preparation, prior to installation of seeding and planting, and during plant establishment and long-term maintenance periods. During plant establishment and long-term maintenance periods, invasive, weedy, non-native species (see Section 6.0 of the BELP for a list of species to be removed) will be removed primarily by hand.

The contractor will remove weeds before the plants become too large to remove by hand. Mechanical methods such as weed whipping, mowing, and disking may occur in certain locations with approval of the County-approved biologist.

Following construction of the golf course, the landscape buffer areas will be hydroseeded as soon as possible in order to prevent erosion. The hydroseed mix will consist of fertilizer (Gro-Power-Plus), mulching fiber (Silva-Fiber or equal), tackifier (Ecology-M-Binder), microbial treatment (MAT-SCI), and a specific seed mix as outlined in Table A of the BELP. Temporary, automatic irrigation systems will be installed at the hydroseeded areas. Any hydroseeded slopes or disturbed areas that fail to meet success criteria for germination will be reseeded with the same hydroseed mix as originally specified, until success criteria are achieved as defined in the BELP.

2.3 Golf Links Operations and Maintenance

The golf course is expected to operate between 350 and 360 days per year. Approximately 20,000 rounds of golf will be played on the par-three course and between 50,000 and 60,000 rounds will be played on the 18-hole course. The proposed golf links project will be operated from dawn to dusk, and restaurant service will cease one-half hour after dusk. A maximum of two professional and/or amateur events will be held per year; these events will draw spectator galleries. A full-time golf course superintendent will direct a staff of approximately 31 full-time employees.

All golf course maintenance procedures and materials will be conducted and used in accordance with the County- and Service-approved ATMIPM program which has been developed as part of the CDP approval process. The draft ATMIPM is incorporated into this HCP as Appendix D; the Final ATMIPM will be submitted to the Service for review and approval prior to construction of the golf course. The HCP and Implementing Agreement (IA) are not providing coverage for take as a result of chemical usage onsite; however, avoidance and minimization measures developed with the Service are designed to avoid take through minimizing chemical use and conducting regular water quality and sediment testing to assure that deleterious effects to water quality are not occurring.

2.3.1 Mosquito Abatement

CPH has entered into an agreement with the Santa Barbara Coastal Vector Control District (District) for the ongoing abatement of mosquito infestation. The District will apply a micro-biological larvicide-derived bacteria. Currently, the District uses *Bacillus thuringiensis*

var. *israeliensis* (BTI) and/or *Bacillus sphaericus*. Mineral oils (*e.g.*, Golden Bear GB 1111 mosquito larvicidal oil) and insect growth regulators (*e.g.*, Methoprene) will not be used onsite, as these agents are known to negatively impact amphibians. Mosquitofish (*Gambusia affinis*) also will not be used because they may adversely affect amphibians.

2.3.2 Irrigation

Santa Barbara has a Mediterranean climate that is characterized by rainfall in winter and spring and very little rainfall in summer and fall (17 inches annually). In addition, temperatures are very mild year round with annual average lows in the 40s to high 50s (Fahrenheit) and annual average highs in the 60s and 70s. These climactic characteristics allow for the effective management of both warm and cool season turf grasses. Irrigation is needed for both cool and warm season turf grasses. It is very important to follow good irrigation practices, regardless of turf grass species used, so that optimum growth and development of turf grass is obtained. A rapidly growing, competitive turf grass sward will resist insect and weed invasion.

The project will be irrigated with reclaimed water through a computer-controlled irrigation system wh ich maximizes irrigation effectiveness. A uniform application of water is extremely important for maximum efficiency because it is important to avoid wet and dry spots within the sward. An on-site weather station will be installed for optimum data collection by the golf course superintendent. The daily monitoring of evapotranspiration, temperature, humidity, wind speed, and solar radiation levels allow for the most precise irrigation scheduling and reduction of water usage. Proper timing and an adequate amount of irrigation are necessary for optimum growth, maximum quality, and best appearance of the respective turf species.

Turf is weakened in wet spots because of poor soil aeration and root disease that can result in the invasion of shallow-rooted weeds such as crabgrass, annual bluegrass, and *Oxalis* sp. Also, runoff from over-irrigated areas is wasteful and results in accumulation of water in low parts of the sward. In contrast, dry sites are characterized by turf of poor color, density, and uniformity that allows the invasion of deep-rooted weeds such as Bermuda grass, dandelions, plantains, clover, knotweed, and yarrow.

In order to minimize water quality impacts associated with golf course irrigation, the irrigation will be conducted deeply but infrequently. Irrigation will be conducted late at night or early in the morning in order to achieve better distribution due to higher water pressure,

limited wind, and minimal water loss due to evapotranspiration. Runoff will be avoided by matching water application rates to soil infiltration rates.

A preventative irrigation system maintenance program will be instituted with periodic checks and adjustments as follows:

Irrigation Heads	Weekly
Pump Stations	Weekly
Central Controller	Daily
Scheduling	Daily
Injection System	Daily (if applicable)
Satellite Controller	Weekly
Pressure Relief/Release Valves	Bimonthly
Air Release Valves	Semiannually
Lake Circulation System	Monthly
Weather Station	Monthly

2.3.3 Mowing

Tees will be mowed to a height of 1/4 inch to 3/8 inch (depending on agronomic conditions) a minimum of three times per week. Tees will be hand-mowed or triplex-mowed depending on design contours and tee square footage. All tees will be cross-cut for aesthetic presentation and promotion of turf quality.

Fairways will be mowed a minimum of three times per week. Fairways will be mowed to a height of 3/8 inch to 5/8 inch (depending on turf conditions and playability) with lightweight mowing units to reduce compaction and promote healthy turf conditions. All fairways will be crosscut for aesthetic presentation and promotion of turf quality.

Greens will be hand-mowed and/or triplex-mowed daily. Standard green mowing height is 1/8 inch to 3/16 inch. All collars will be hand-mowed to a height of 3/8 inch, a minimum of three times per week. All greens will be crosscut for aesthetic presentation and promotion of turf quality.

Roughs will be mowed to a height of 1 to 4 inches twice per week. Roughs will be mowed with reel mowing units and may be crosscut for aesthetic presentation and promotion of turf quality.

Mowing within the golf course roughs will be limited to dry, sunny days in order to avoid impacts to any California red-legged frogs hidden by the grass. Because grass within the tees, fairways, and greens will only be 1/4 inch to 5/8 inch, it is not anticipated that restrictions to mowing these areas will be required.

Specialized Procedures

Aerification of the entire course will be done in stages with greens being done two to three times a year, and tees and fairways twice each year (fall and spring). A stand-alone unit or tractor-pulled unit will be used to implement aerification procedures after dew has evaporated in the morning and before dew sets in the evening.

Verticutting typically is implemented only on greens with varying degrees of frequency depending on turf growth rates, mowing heights, and amount of grooming implemented in the mowing program. Tees and fairways may require verticutting depending on turf varieties selected. Verticutting will be performed with the triplex mowers (with the blades vertical instead of horizontal).

Greens will be lightly topdressed with sand once or twice a month to minimize the accumulation of thatch and maximize the consistency of the putting surface. Topdressing of greens will be implemented by pulling a sanding meter-matic behind a turf utility vehicle. Tees and fairways are to be topdressed twice annually to coincide with aerification. Tees will be topdressed with sand or compost material. Fairways will be topdressed with compost materials to add organic matter.

2.3.4 Composting

Grass clippings, fallen leaves, and branches as well as various other plant materials such as weeds will be composted onsite at the turf farm. These materials will be piled in rows. Approximately every two weeks, the piles will be turned over, either by hand or with a tractor. Water may be sprinkled over the top during dry periods in order to maintain a high level of humidity within the piles. As the materials decompose, the organic humus will be used within the project site for topdressing of fairways and tees and as a nutrient source within ornamental landscape areas.

2.3.5 Bunker Maintenance

All bunker bases will be machine raked with bunker faces being hand raked. All bunker faces will be edged weekly or as agronomic conditions dictate. Depth of sand is adjusted as necessary to maintain uniform playing conditions (approximately 4 to 6 inches).

2.3.6 Maintenance Crew Training

Before maintenance work commences onsite, or before a new maintenance crew staff member begins working onsite, the Service-approved biologist will be directly responsible for educating and training maintenance crew members regarding the conditions associated with the HCP and Implementing Agreement, final ATMIPM program, the BELP, and the Dos Pueblos Golf Links conditions of approval. Before maintenance work commences onsite, or before a new maintenance crew staff member begins working onsite, maintenance crew staff members will be made aware of all restrictions specified in the plans and permits. The Service-approved biologist shall conduct meetings as warranted so he or she may cover any changes to instituted programs and evaluate past employee performance in this area.

2.3.7 Golf Ball Recovery

Designated maintenance crew members will enter the out-of-bounds areas on foot to retrieve errant balls on a quarterly basis. Out-of-bounds areas include wetlands, drainages, native restoration areas, and the harbor seal rookery. Golf ball retrieval will not be conducted at the harbor seal rookery during the harbor seal pupping/breeding season (February 1 through May 31). Golf ball retrieval at the reclaimed water storage lake will be conducted on an as-needed basis (not more than annually) during maximum lake drawdown. Golf balls will not be retrieved from Eagle Canyon.

2.3.8 Aquatic Weed Control

Reclaimed Water Storage Lake

Aquatic weed (algae, duckweed, etc.) control within the reclaimed water storage lake will follow a non-chemical strategy exclusively. This strategy will include one or more of the following: a circulation system to increase water movement, an aeration system to increase the oxygen levels, shading (approved non-toxic blue colorants such as Aquashade) to reduce

the potential for algae and other aquatic weeds, and removal of aquatic weeds by hand (*i.e.*, skimming the surface). Regular lake drawdown of between two and 10 feet, and the concrete liner to a depth of six feet, will limit the formation of rooted aquatic plants as well as reduce the potential for the development of bullfrog (*Rana catesbeiana*) habitat. Minimum oxygen levels are targeted at five parts per million (ppm).

To avoid and minimize adverse impacts to water quality at the reclaimed water storage lake, chemical spraying on turf areas adjacent to the lake will be prohibited within 25 feet of the lake edge. Only spot spraying with a wick applicator will take place within the 25-foot buffer; however, spot spraying will be prohibited within 10 feet of the lake edge.

Eagle Canyon

No aquatic weed control will be conducted in Eagle Canyon.

2.3.9 Pest Management

Pests will be controlled to a large extent through the proper selection of pest-resistant or pest-tolerant plants. During the grow-in period, careful consideration will be given to the types of turf and plant material selected in order to create an environment ill-suited for common pest proliferation.

All golf course maintenance procedures and materials will be conducted and used in accordance with the County-approved draft ATMIPM program which has been developed as part of the CDP approval process. The draft ATMIPM has been previously provided to the Service. The final ATMIPM will be submitted to the Service for review and approval prior to construction of the golf course. The HCP and Implementing Agreement (IA) are not providing coverage for take as a result of chemical usage onsite; however, avoidance and minimization measures developed with the Service are designed to avoid take through minimizing chemical use and conducting regular water quality testing to assure that deleterious effects to water quality are not occurring.

Bullfrogs

A bullfrog monitoring and removal program will be implemented for areas with year-round water: the reclaimed water storage lake (see Section 5.1.3) and Eagle Canyon (see Section 6.0). Any bullfrogs found on the site will be removed, including those found in other areas of the property.

2.3.10 Desiltation Basins

The three desiltation basins (see Site Plan), located within the fairway of the 12th hole, at the western end of the driving range and at the eastern end of the driving range, are designed to capture two-year storm events and then release the captured storm water over the next 24 to 36 hours. Storm flows greater than two-year events will overflow the basins via a pipe and/or spillway channel. Overflow pipes and spillways are designed to accommodate a peak 100-year storm event. Therefore, water is expected to pond within the basins for a period of 24 to 36 hours after a two-year or greater storm event. All flows exiting the desiltation basins will pass through an energy dissipater in order to minimize downstream erosion.

The desiltation basins and appurtenances will be cleaned and sediment removed on an as-needed basis. A small, rubber-tired backhoe or loader will be used within the sediment storage area to remove sediment to a minimum storage depth of one (1) foot. Excess sediment and trash will be transported from the site in a dump truck and will be disposed of in accordance with local regulations.

SECTION 3.0
PROPOSED CHEMICAL USES ONSITE

The permit is not providing coverage for take due to chemical (*i.e.*, fertilizers, herbicide and pesticide) use. The only way to ensure "zero take" from chemical use is to ensure that no detectable amounts of such chemicals reach those areas onsite that are known to be used by the tidewater goby and California red-legged frog or are believed to have a high potential for use by the California red-legged frog. Eagle Canyon is known habitat for both species. In conjunction with the Service, CPH has identified two additional drainages onsite that are considered to have a high potential for use by the California red-legged frog. The drainages identified are Drainage 4 North and Tomate Canyon. Based on topography, buffers have been established for each of the three drainages and are identified on the attached site plan. Use of certain chemicals within these buffers shall trigger testing to ensure that these chemicals are not reaching the drainages in these areas.

The draft ATMIPM program shall govern the application of fertilizers, herbicides and pesticides onsite. The final ATMIPM program shall be submitted to the Service, and the County of Santa Barbara for review and written approval 90 days prior to commencement of turf maintenance activities.

3.1 Chemical Use Plan

The draft ATMIPM will be revised to include provisions that will identify the buffer areas for Eagle Canyon, Tomate Canyon and Drainage 4 North as identified on the attached site plan. The final ATMIPM shall provide three groupings of chemicals that could possibly be used on Dos Pueblos. The first group will consist of those chemicals currently included in the draft ATMIPM that would be prohibited from usage upon the entire project site. The second group will consist of "preferred use" chemicals that have been identified as being less toxic to fish and amphibians. CPH will use these chemicals first over more toxic chemicals when addressing a specific problem. The third group shall consist of those chemicals, known to be more toxic to fish and amphibians than the second group, that can be used onsite only after a "preferred use" chemical has been used and proven ineffective. The use of both "preferred use" and the more toxic chemicals within the buffer areas identified on the attached Site Plan will trigger the chemical sampling outlined below in *Section 3.1.1*. Use of any of the more toxic chemicals will require a demonstration of need that a less toxic chemical (from the preferred use list) will not produce the required affect. Chemicals not included in the second and third groups may be proposed in the final ATMIPM without amending the HCP itself.

CPH, in coordination with the Service, shall assign each new chemical to the appropriate category at that time.

Chemicals that will not be included in the final ATMIPM:
Methyl bromide
Atrazine
Chlorpyrifos

"Preferred use" chemicals:
Mancozeb
Procopiconazole
Triadimefon
Thiophanate-Methomyl
Thiophanate-Methyl
Iprodione (Rovral)
Vinclozolin
Metalaxyl
Napropamide (Devrinol)
Bentazon (Basagran) 4 EC
Bentazon plus 2,4 D
Dicamba (Banavel 4-S)
Dicamba and 2,4 D (Trimec)
Glyophosate (Roundup)
Mecoprop (MCCP)
MSMA
2,4-D Water soluble Amines (Weedar 64)
2,4-D plus MCCP (MCPP)
2,4-D plus MCCP (MCPP) plus Dicamba
2,4-D plusTriclopyr

More toxic chemicals:
PCNB
Pendimethalin (Pre-M)
Captan
Benefin and Trifluralin (Team 2G)
Dithiopyr (Dimension)
Pronamide (Kerb) 50 WSP)

Acephate
Carbaryl (Chipco Sevin)
Cyfluthrin (Tempo)
Fluvalinate (Mavrik Auqaflow)
Trichlorfon (Dylox)
Myclobutanil
2,4-D low-volatile esters (Weedone LV4)
Chlorothalonil
Fenarimol
Nclozolin
Thiram
Fosetyl-al: (Fosetyl-aluminum)
Benefin (Balan)
Bensulide (Presan)
DCPA (Dacthal)
Isoxaben (Gallery)
Oryzalin (Surflan)
Oxadiazon (Ronstar)
DSMA (Methar)
Fluazifop (Fusalide)

3.1.1 Chemical Sampling

A water quality and sediment testing program will be implemented to ensure that no adverse water quality impacts within the golf course or downstream offsite result from irrigation and chemical use. Surface water and sediment testing will be implemented in accordance with the County- and Service-approved draft ATMIPM program, as specified in *Table 3*; additional sampling will be implemented when certain chemicals are used within specified buffer areas on site. Surface water and sediment testing will be conducted prior to use of any chemicals on the golf course and will be used as baseline data. These data will be supplied to the Service before golf course construction begins. Surface water and sediment sampling and testing will be conducted by a third-party designee. Surface water and sediment testing will be implemented by an EPA-approved laboratory and the samples will be collected and analyzed in accordance with approved EPA methodologies. Samples will be taken from locations designated by the Service and County of Santa Barbara Department of Planning and Development (P&D) (see Site Plan). Sampling locations include the vernal pool; water

storage lake; Eagle Canyon at the northern property line, north of the railroad and in the lagoon at the mouth of Eagle Canyon; Tomate Canyon at the northern property line, north of the railroad and at the mouth of the creek; and Drainage 4 North at the northern property line and north of the railroad.

TABLE 3. SURFACE WATER AND SEDIMENT SAMPLING SCHEDULE

Location	*Parameter*	*Species*	*Frequency*
Creeks of seasonal water flow (Tomate Canyon, Drainage 4 North)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Monthly (water quality) with most sensitive species until flow ceases. Sediment samples conducted quarterly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Twice annually at first creek flush and again approx. 90 days after first test.
	Nutrient (N, P), Dissolved Oxygen, pH		Monthly at first creek flush and until flow ceases.
Creeks of perennial water flow (Eagle Canyon)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
	Nutrient (N, P), Dissolved Oxygen, pH		Monthly.
On-site bodies of water (vernal pool and reclaimed water storage lake)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Quarterly.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity Nutrient (N, P) Dissolved Oxygen, pH	Algae, Vertebrate, Invertebrate	Quarterly Monthly

The parameters and frequency of water quality and sediment testing are depicted above in *Table 3*. Sediment sampling will be conducted quarterly and surface water quality monitoring will be conducted monthly for the first two years of golf course operation. For Tomate Canyon, Drainage 4 North and Eagle Canyon, if tests reveal that levels of nitrites, nitrates and phosphates are greater than the EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts per million (ppm), or if pH levels are less than 6.0 or greater than 9.0 (when water entering the property from the north is within acceptable liits for these parameters), operation of the golf course shall be modified in accordance with the final ATMIPM until testing shows no adverse impacts. For the vernal pool and the water storage lake, if tests reveal that levels of nitrites, nitrates and phosphates are greater than the EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts per million (ppm), or if pH levels are less than 6.0 or greater than 9.0, operation of the golf course shall be modified in accordance with the final ATMIPM until testing shows no adverse impacts. Surface water testing will be conducted monthly at first creek flush and until flow ceases (or for Eagle Canyon Creek, monthly whenever standing water is present); sediment testing will be conducted quarterly. Surface water quality sampling frequency may be reduced to a bi-monthly basis (once every two months) if after two years it is determined by CPH that no adverse impacts (*i.e.*, no evidence of background levels being exceeded) are occurring, and if approved in writing by the Service and P&D. Testing may be further reduced (less frequent than bi-monthly) if approved in writing by the Service and P&D. Sediment sampling frequency may be reduced to a semi-annual basis (twice every year) if after two years it is determined by CPH that no adverse impacts (*i.e.*, no evidence of background levels being exceeded) are occurring, and if approved in writing by the Service. Sampling may be further reduced if approved in writing by the Service. Sampling frequency may only be reduced if there are no changes in chemical application methods and amounts.

In addition to those parameters identified in *Table 3*, surface water and sediments in Eagle Canyon, Tomate Canyon and Drainage 4 North will also be tested for all chemicals used within the buffer areas and any additives (*e.g.*, surfactants, carrier oils, spreading agents) to be used within buffer areas. Testing will be conducted within 48 hours of checmical use in buffer areas. Standard EPA panels will be run for the chemicals. The water and sediment sampling results shall be provided to the Service, as described in Section 8.2.

3.1.2 Chemical Use Onsite

3.1.2.1 Fertilizers

Landscape Buffer and Revegetation Areas

Within the revegetation areas Gro-Power-Plus fertilizer will be mixed with the seed for germination, and Gro-Power fertilizer tablets will be planted with oak seedlings and trees. No additional applications of fertilizer are anticipated for the revegetation areas.

Golf Course Areas

Fertilizers will be applied to the golf course on an as-needed basis according to weather and turf conditions as approved by the Service and County in the final ATMIPM program. Fertilizers may be applied to the tees, fairways, and roughs via the irrigation system (*i.e.*, the fertilizer will be diluted prior to application). Diluted in this manner, only low concentrations of fertilizers will be present on the surface of the grass. The irrigation system is designed to provide just enough water for proper turf growth with no runoff. Granular fertilizers may also be applied using rotary-type spreaders. When granular fertilizers are used, they will be applied after the morning dew has evaporated and before the evening dew sets. Regular watering of the golf course would cause these fertilizers to soak into the soil and allow their use by plants. Neither liquid nor dry fertilizers will be applied within three (3) days of (before or after) forecast rainfall events.

Greens will be foliar-fed (*e.g.*, in crystal form) every two weeks and immediately watered in after the morning dew has evaporated and before the evening dew sets. Drains under the greens will not daylight but will terminate under the adjacent fairway surface. Thus, no runoff of fertilizers is anticipated.

3.1.2.2 Pest Management

Pests will be controlled to a large extent through the proper selection of pest-resistant or pest-tolerant plants. During the grow-in period, careful consideration will be given to the types of turf and plant material selected in order to create an environment ill-suited for common pest proliferation.

3.0 Proposed Chemical Uses Onsite

Application of herbicides and pesticides will be conducted in accordance with the Service- and County- and Service-approved final ATMIPM program at the minimum application rate necessary. Only those herbicides and pesticides approved by the Service will be used onsite. These chemicals would be applied only to specific locations, as needed, in accordance with label instructions, and during daylight hours, thereby reducing the possibility that California red-legged frogs could come in contact with these chemicals in concentrations that could have adverse effects on the species. Within the sensitive natural habitats, mitigation areas, and landscaped buffer areas, herbicides would be hand-applied to individual plants. Within the golf course areas (par-three course, 18-hole course, putting green, driving range, and turf farm), herbicides would be applied from a boom-sprayer (15 to 18 feet in width) attached to a 250-gallon tank on the back of a golf course utility truck.

The use of chemicals will be conducted in accordance with label instructions. It is important to note that on-site areas considered to be highly sensitive such as buffer zones, native areas, revegetation areas, and natural drainage areas will be minimally treated with chemicals as described above (*i.e.*, chemicals will be applied by hand during favorable conditions) and in the BELP. Those areas in which maintained turf and sensitive areas merge (a width of 25 feet) will be spot sprayed only when necessary in order to minimize the chemical effects to the area, if any. In all cases, spot treatment in these areas, if applicable, shall always be in compliance with the requirements of the BELP.

In order to reduce the possibility of exposing California red-legged frogs to pesticides and herbicides, the following restrictions will govern the application of these chemicals onsite and be incorporated into the final ATMIPM program:

- During the rainy season (November through April), no herbicides or pesticides will be applied within 24 hours prior to forecasted rain or within 24 hours after rainfall.
- Application of herbicides and pesticides will be administered after the morning dew has evaporated and before the evening dew has set.
- In no case shall any spraying of chemicals take place anywhere onsite when wind conditions exceed five (5) miles per hour (mph).
- Within the landscape buffer and revegetation areas, the herbicide will be hand-applied directly to individual plants, and only when winds do not exceed five (5) mph, no rain is expected for at least 24 hours, and standing water is not present. Only Karmex, Roundup, or Rodeo will be applied in these areas unless replaced by new materials.

Insects

A variety of insect pests may need to be controlled on the golf course. Because turf grasses have not yet been selected, it is impossible to identify potential treatments without knowledge of the specific environmental and agronomic factors present at the time of infestation. Once the turf grasses are selected the final ATMIPM program will be customized to be specific to the project and will be submitted to the Service and P&D for review and written approval at least 90 days prior to commencement of turf management activities.

Rodents

Prior to the use of rodenticides, traps will be placed to eradicate rodents on site. If the trapping efforts fail, rodenticides included in the Final ATMIPM will be applied to the golf course on an as-needed basis. Rodenticide materials will include zinc phosphide and aluminum phosphide. The golf course will be inspected daily for five days after rodenticides are used. Any rodent carcasses found will be removed immediately to sealed trash containers.

3.2 Modification of Operations

If, at any time, the levels of any chemical(s) in the surface water and sediment samples exceed background levels due to golf course operations, chemical application will cease and application rates and methods will be changed in accordance with adaptive management measures described below in *Section 8.1.3* to prevent future exceedence of background levels.

SECTION 4.0
BIOLOGICAL DATA

The area surrounding the project site is primarily rural. The Eagle Canyon Ranch is adjacent on the east and on the north across U.S. Highway 101, and the Morehart Land Company holdings are to the west. The Bacara (formerly Santa Barbara Club) Resort & Spa Hotel lies to the east of the Eagle Canyon Ranch and south of U.S. Highway 101. The area is characterized by a Mediterranean climate with an average annual rainfall of 17 inches. Biological resources of the site are described in detail in the FEIR (Fugro-McClelland 1993) and are summarized below along with information from recent surveys.

4.1 Project Site

4.1.1 Vegetation

Past land uses have greatly influenced the distribution and variety of habitats and vegetation onsite. Interface (1992) recorded a total of 133 plant species, of which 78 (59 percent) are native. Vegetation communities are described in accordance with Holland (1986). The predominant vegetation community is annual (non-native) grassland. The drainages are lined with Venturan coastal sage scrub, and several contain southern willow scrub and/or freshwater marsh as well, depending on the size of the watershed. Eagle Canyon has an overstory of eucalyptus trees both north and south of the railroad with southern willow scrub near U.S. Highway 101. Coastal brackish marsh occurs south of the railroad along the margin of the creek lagoon. A manmade vernal pool is located immediately south of the railroad under and immediately adjacent to a wooden bridge. Several small, artificially created, disturbed wetlands, dominated by non-native species, have recently developed within the bermed former tank farms. Small, isolated patches of native grassland are scattered over the property, occurring primarily within expanses of coastal sage scrub and annual (non-native) grassland. Specimen non-native trees, planted as windbreaks as part of the previous site development, are also scattered throughout the property. *Table 4* below describes the land cover present at the site, including developed lands associated with ARCO's oil drilling operations.

TABLE 4. LAND COVER BY ACREAGE

Land Cover	Acreage[1]
Grassland	127.3 acres
Venturan coastal sage scrub	35 acres
Southern willow scrub	1.3 acres
Freshwater marsh	0.2 acre
Man-made vernal pool	0.1 acre
Disturbed wetlands	2.2 acres
Coastal brackish marsh	0.05 acre
Developed lands	42 acres
Total	208 acres

[1] *Column does not total precisely due to rounding.*

The annual (non-native) grassland is the most common habitat type, occupying approximately 127 acres (61 percent). This vegetation community is dominated by wild slender oats (*Avena barbata*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), California brome (*Bromus carinatus* var. *carinatus*), Italian ryegrass (*Lolium multiflorum*), rattail fescue (*Vulpia* spp.), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), and hare barley (*Hordeum leporinum*). Other herbaceous species include verbena (*Verbena lasiostachys*), red-stemmed filaree (*Erodium cicutarium*), black mustard (*Brassica nigra*), California burclover (*Medicago polymorpha*), rose clover (*Trifolium hirtum*), and purple vetch (*Vicia benghalensis*).

The Venturan coastal sage scrub is the second most common vegetation community onsite, occupying approximately 35 acres (17 percent) of coastal bluffs and drainage corridors. This habitat is dominated by coyote brush (*Baccharis pilularis* ssp. *consanguinea*) and California sagebrush (*Artemisia californica*). Other species include coast goldenbush (*Isocoma veneta*), California figwort (*Scrophularia californica*), poison oak (*Toxicodendron diversilobum*), nightshade (*Solanum douglasii*), sawtooth goldenbush (*Hazardia squarrosa*), and giant wild rye (*Elymus condensatus*).

Southern willow scrub habitat comprises approximately 1.3 acres onsite and is dominated by arroyo willow (*Salix lasiolepis*). Other species include wild rose (*Rosa californica*), mulefat (*Baccharis salicifolia*), coyote brush, Mexican elderberry (*Sambucus mexicana*), poison oak, castor bean (*Ricinus communis*), toad rush (*Juncus bufonius*), hyssop loosestrife (*Lythrum hyssopifolium*), meadow barley (*Hordeum brachyantherum*), alternate-leaf flatsedge (*Cyperus alternifolius*), and scarlet pimpernel (*Anagallis arvensis*).

Freshwater marshes occupy approximately 0.2 acre at six locations onsite. Typical species include curly dock (*Rumex crispus*), broad-leaved cattail (*Typha latifolia*), alkali bulrush (*Scirpus robustus*), slender rush (*Juncus tenuis*), toad rush, hyssop loosestrife, Harding grass (*Phalaris aquatica*), annual rabbit's-foot grass (*Polypogon monspeliensis*), creeping spikerush (*Eleocharis macrostachya*), and poison hemlock (*Conium maculatum*).

A man-made vernal pool lies at the southern end of the bridge that passes over the railroad tracks. The vernal pool contains spikerush (*Eleocharis* spp.) and rushes (*Juncus* spp.) and is seasonally inundated. The vernal pool occupies 0.1 acre.

Five isolated, artificially created, disturbed wetlands, occupying approximately 1.1 acres, have developed within bermed areas previously utilized for oil field production activities. These areas contain Italian ryegrass (*Lolium multiflorum*), curly dock, Bermuda grass (*Cynodon dactylon*), soft chess, English plantain (*Plantago lanceolata*), bull thistle (*Cirsium vulgare*), California burclover, annual rabbit's-foot grass, brass buttons (*Cotula coronopifolia*), and Harding grass. In addition, approximately 1.1 acres of disturbed wetlands occur in Tomate Canyon. The vegetation is dominated by invasive, non-native species: black mustard, castor-bean, annual rabbit's foot grass, and bristly ox-tongue (*Picris echioides*) as well as the native cocklebur (*Xanthium strumarium*). This wetland appears to have suffered from prolonged disturbance.

One small area of coastal brackish marsh is located south of the railroad right-of-way, on the western side of Eagle Canyon Creek. Broad-leaved cattail and bulrush (*Scirpus* spp.) dominate the vegetation within the area inundated by the coastal lagoon. Coastal brackish marsh occupies 0.05 acre.

4.1.2 Wildlife

Thirty-five bird and 17 mammal species were directly observed or their presence was determined indirectly based on signs (*e.g.,* tracks, scat, bones, feathers, etc.). The bird species include a variety of upland birds, such as mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferu s*), black phoebe (*Sayornis n igricans*), western scrub jay (*Aphelocoma californica*), western meadowlark (*Sturnella neglecta*), house finch (*Carpodacus mexicanus*), and song sparrow (*Melospiza melodia*). Raptors include American kestrel (*Falco sparverius*), white-tailed kite (*Elanus caeruleus*), and red-tailed hawk (*Buteo jamaicensis*). Bird species observed in the vicinity of Eagle Canyon and the Pacific Ocean include California brown pelican (*Pelecanus occidentalis californicus*), mallard (*Anas platyrhynchos*), western gull (*Larus occidentalis*), spotted sandpiper (*Actitis macularia*), and great blue heron (*Ardea herodias*). Common mammals include striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), ground squirrel (*Spermophilus beechyi*), Botta's pocket gopher (*Thomomys bottae*), and brush rabbit (*Sylvilagus bachmani*). In addition, the California side-blotched lizard (*Uta stansburiana elegans*), western fence lizard (*Sceloporus occidentalis longipes*), Pacific treefrog (*Pseudacris regilla*), California red-legged frog, bobcat (*Lynx rufus*), and Monarch butterfly (*Danaus plexippus*) were observed.

A harbor seal (*Phoca vitulina*) haulout is located on the beach just west of Tomate Canyon. This species is protected under the Marine Mammal Protection Act of 1976. The ringtail (*Bassariscus astutus*) and white-tailed kite are Fully Protected under Section 4700 of the California Fish and Game Code. Although not observed onsite since 1991 (Interface 1991), ringtails frequent riparian habitats and may be resident in the more densely vegetated portions of Eagle Canyon; however, this species is mobile and nocturnal and, if present, will not be adversely impacted by implementation of the RAP or the proposed golf course project. White-tailed kites forage over the site and perch in trees onsite (SAIC 1999a). Neither implementation of the RAP nor the proposed golf course project shall limit the potential for white-tailed kites to forage over the project site. In accordance with the BELP, a qualified wildlife biologist shall evaluate any trees proposed for removal for use by sensitive bird species, including the white-tailed kite, prior to removal of the trees. In the event that these trees are used, or appear to have recently been used, as nesting sites by any sensitive bird species, including the white-tailed kite, the trees shall not be removed until the nests have been abandoned. Monarch butterflies (state Special Animal) winter along the coast between November and February, primarily in eucalyptus groves. This species has been observed to aggregate in eucalyptus trees north of the railroad crossing of Eagle Canyon. Habitat for the

butterflies and ringtail would not be affected by project construction and/or operation. In addition, no construction activities shall occur within 50 feet of the Monarch roosting trees, located north of the railroad in Eagle Canyon, between October 1 and January 31, in accordance with Condition 9 of the golf course CDP.

4.1.3 Threatened or Endangered Species

No state- or federally-listed plant species are known to occur onsite. Three federally-listed animal species have been observed on the project site, and two additional species could be present. These species are listed below.

Common Name	Scientific Name	Known Onsite
California brown pelican	*Pelecanus occidentalis californicus*	Yes
Western snowy plover	*Charadrius alexandrinus nivosus*	No
California red-legged frog	*Rana aurora draytonii*	Yes
Tidewater goby	*Eucyclogobius newberryi*	Yes
Steelhead trout	*Oncorhynchus mykiss*	No

California brown pelicans, state- and federally-listed as endangered, are a year-round resident along the California coast, but population levels fluctuate seasonally. They nest primarily in Baja California, but some nesting occurs on the Channel Islands (Lehman 1994; Small 1994). Brown pelicans forage over near shore waters in the project area and roost on the beach near Tomate Canyon. They are not known to use any upland habitats at the site, and no construction activities for the public access trail would occur on the beach where the pelicans roost. Increased human use of the beach has the potential to disturb California brown pelicans roosting, resting, or preening on the beach. The anticipated increase in public use of the beach over current use levels is not expected to be large and would not cause take of the brown pelican. Furthermore, closure of access to the beach from the west and via the Eagle Canyon vertical access from February through May would reduce the potential for disturbance even more.

The western snowy plover, federally-listed as threatened and a state Species of Species Concern (SSC), is a winter visitor to beaches in the region with no recent records of use in the project area. Western snowy plovers regularly winter near Devereux Creek and may

occasionally forage west to Bell Canyon (Bowland & Associates 1999), just over a mile east of the project site. This species could, therefore, be a transient winter visitor to local beaches. Snowy plovers forage for small crustaceans and worms along the surf line and adjacent moist sands; they also occasionally catch flying insects and beetles (Bent 1928). Foraging may occur at the surf line, in wet sand, and on the mud flats surrounding lakes, ponds, and estuaries. Nesting habitat is limited to depressions in the sand above the drift zone. Due to the presence of the cliffs, no such habitat occurs at the project site. No construction activities associated with the public access trail would occur on the beach during the winter when snowy plovers potentially could use the site for foraging. The low increase in public use of the beach that could result from the project is not expected to cause take of the snowy plover, if any are present.

Steelhead trout, federally-listed as endangered and a state-designated SSC, are known to use a number of streams in the region (Titus, *et al.* unpublished), at least in wetter years, but are not known to occur in Eagle Canyon Creek. The culvert under U.S. Highway 101 has a long sloping concrete section at the north end that may pose a barrier to steelhead trout migration upstream under some flow conditions. This species potentially could use Eagle Canyon Creek in wet years. The creek in the project area would provide passage for adults and juveniles during migration; no spawning habitat is present adjacent to the project. Eagle Canyon Creek would not be altered by construction activities, and increased public access to the beach is not expected to affect steelhead trout migration to or from the creek (if the species were to use this creek). Construction is anticipated to have no effects on steelhead trout because activities associated with installing the Eagle Canyon water pipelines would not occur in the creek and would be performed during the dry season when steelhead would not be present in the area. No barriers to steelhead trout would be introduced into the creek. Steelhead trout are under the jurisdiction of the National Marine Fisheries Service. Measures incorporated in the HCP for the California red-legged frog and tidewater goby will avoid impacts to and take of this species. Public access during the winter, when steelhead trout could enter the creek, is not expected to have any impacts on the trout because higher water flows necessary for breaching the bar at the creek mouth and trout migration would prevent human entry into the creek and would flush away any trash. The vertical access at the beach at the mouth of Eagle Canyon would be closed from February through May, thereby reducing the potential for any effects on steelhead even further.

The California brown pelican, western snowy plover, and steelhead trout would not be taken by implementation of the RAP nor construction or operation of the Dos Pueblos Golf Links

project as described above and thus will not be listed on the incidental take permit, as no take of these species will be authorized.

The California red-legged frog (state-designated SSC and federally-listed as threatened), and the tidewater goby (state-designated SSC and federally-listed as endangered) have been observed in Eagle Canyon Creek. California red-legged frog and tidewater goby are discussed in more detail below.

4.2 Listed Species

4.2.1 California Red-legged Frog

Species Description

The California red-legged frog was proposed for listing as endangered on 2 February 1994 (59 Federal Register [FR] 4888). The species was listed as threatened on 23 May 1996, and the final rule became effective on 24 June 1996. Critical habitat has been designated for the California red-legged frog (66 FR 14626). This species is a state-designated SSC. The following description was taken primarily from the Biological Opinion (1-8-96-F-16) for the Coastal Aqueduct (USFWS 1996a) and the final rule (61 FR 25813).

The California red-legged frog is one of two subspecies of the red-legged frog (*Rana aurora*) found on the Pacific coast. It is a fairly large frog with adults reaching five (5) inches (snout to vent length). The skin of the back is brown, gray, olive, red, or orange with dark flecks or spots. A prominent dorsolateral fold of skin extends from each eye to the hip. The underside is white, often with patches of bright red or orange on the abdomen and hind legs. The final rule states that the species occupies a fairly distinct habitat, combining both specific aquatic and riparian components. Adult breeding habitat generally consists of dense, shrubby or emergent riparian vegetation closely associated with deep (more than 0.7 m [two feet] in depth), still, or slowly moving water. The riparian vegetation that provides the preferred structural layers typically includes arroyo willow, although cattails and bulrushes are also considered important. Non-breeding habitat for the California red-legged frog may include ephemeral streams or ponds. Juvenile California red-legged frogs appear to prefer aquatic habitats that are open and shallow with dense submergent vegetation (Jennings and Hayes 1994). However, recent observations conveyed to the Service through a variety of sources indicate that California red-legged frogs will occur in a variety of habitat types where water

is present. Well-vegetated terrestrial areas within the riparian corridor may provide important sheltering habitat during winter.

California red-legged frogs breed from November to March, with the earlier breeding records occurring in southern localities. Eggs hatch in 8 to 14 days and larvae take 3.5 months or longer to metamorphose. California red-legged frogs may live 8 to 10 years. With the drying of creeks and ponds in summer, the frogs disperse upstream and downstream of breeding habitat within creek corridors or overland from ephemeral ponds (or ephemeral or intermittent creeks) to suitable summer habitats (*i.e.*, containing year-round water). Research data from the U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division indicate that adult California red-legged frogs travel, on average, approximately 25 meters (82 feet) from a breeding pond (Bulger 1999). They take cover in small mammal burrows and moist leaf litter (up to 30 m [100 feet] from water) in dense riparian vegetation, but will use other cover sites when traveling overland. After winter rains begin, California red-legged frogs may move away from aquatic habitats and can travel one mile from those habitats (USFWS 1997). Juveniles may also disperse away from their natal habitats shortly after metamorphosis in July-August. The survival rate of frogs that disperse overland, however, could be very low if no habitat suitable for their survival were present within about one mile.

The historical range of the California red-legged frog extended from the vicinity of Point Reyes National Seashore, Marin County, California on the coast and from the vicinity of Redding, Shasta County, California inland southward to northwestern Baja California, Mexico. The species has sustained a 70 percent reduction in its geographic range in California as a result of several factors acting singly or in combination. Habitat loss and alteration, combined with over-exploitation and introduction of exotic predators, were significant factors in its decline in the early to mid 1900s. California red-legged frogs were probably extirpated from the Central Valley in the 1960s. Remaining aggregations of California red-legged frogs in the Sierra Nevada foothills became fragmented and were later eliminated by reservoir construction, increased exotic predator populations, grazing, and drought. The pattern of disappearance of California red-legged frogs in southern California is similar to that seen in the Central Valley, except that urbanization and its associated roadways, large reservoirs, exotic predators, and stream channelization projects were the primary factors causing population declines.

As of 1996, California red-legged frogs were known to occur in 243 streams or drainages from 22 counties in central and southern California. Monterey, San Luis Obispo, and Santa

Barbara counties support the greatest amount of currently occupied habitat. In addition, some frogs still exist in the Sierra Nevada foothills.

Status in Project Area

The proposed project occurs within designated critical habitat for the California red-legged frog. Eagle Canyon contains the only suitable breeding habitat (*i.e.*, containing year-round water) on the project property for the California red-legged frog during normal to wet years. Surveys of the site conducted 11-12 January, 1999, were negative (SAIC 1999a). Subsequent surveys of the creek from U.S. Highway 101 to the ocean found three adult California red-legged frogs in the lagoon on 4 March, 1999; of the three frogs, two were found in amplexus, signifying that Eagle Canyon Creek is a breeding site (SAIC 1999b). However, only one was observed in the lagoon on 19 April, 1999 (SAIC 1999c) and on 25 May, 2000 (Rosie Thompson, SAIC, personal communication). Surveys of Tomate Canyon (12 January, 10 March, and 13, 19, and 22 April 1999) found no suitable habitat, and no individuals were observed in three day and two night surveys (SAIC 1999c). The smaller drainages onsite have no suitable habitat for this species.

California red-legged frogs, primarily juveniles, may disperse from Eagle Canyon, primarily in years when reproductive success is high. No data are available regarding the population size in the area or dispersal patterns, but the number of individuals moving to the west is likely to be low and only occur in some years. Survival of those moving westward from Eagle Canyon (south of U.S. Highway 101) is expected to be very low, however, due to the lack of suitable breeding (*i.e.*, ponded water for five months or longer) habitat between Eagle Canyon and Dos Pueblos Canyon, located about two miles in that direction.

California red-legged frogs are also known from Tecolote and Bell canyons approximately 4,000 and 5,500 feet to the east of Eagle Canyon, respectively, and east of the Bacara project hotel. Individuals (juveniles and adults) from each of the three canyons are likely to move to the other canyons in at least some years, providing genetic exchange and individuals to repopulate local extirpations during droughts.

4.2.2 Tidewater Goby

Species Description

The tidewater goby was federally-listed as endangered on 4 February 1994 (59 FR 5498) and is a state-designated SSC. A proposed rule to delist the species, except in Orange and San Diego counties, was published on 24 June 1999 (64 FR 33816).

Tidewater gobies are small (usually less than 2 inches long) with large pectoral fins and fused pelvic fins that form a sucker-like disk. This is the only goby species along the coast of California that is restricted to low salinity (less than 10 parts per thousand [ppt]) waters. All life stages are completed in these waters (*i.e.,* no marine life history phase occurs), although the fish can live in waters with a salinity of over 40 ppt (Swift et al. 1989). This limits the frequency of genetic exchange between populations and lowers the potential for recolonization of a habitat once a population has been lost. Recolonization, however, has been documented to occur at distances up to 20 km (12 miles) from a source population (Lafferty, *et al.* 1996). Tidewater gobies are benthic (living on the bottom substrate) and inhabit shallow waters (less than three feet deep) that are slow moving to still but not stagnant (Irwin and Soltz 1984). The coastal lagoons where these fish reside are typically closed off from the ocean by sand bars during summer. The substrate is generally sand and mud with abundant emergent and submerged vegetation (Moyle 1976). In addition to living in coastal lagoons, these fish can also move upstream at least five (5) miles as has been documented in San Antonio Creek, Santa Barbara County (Irwin and Soltz 1984).

Spawning in southern California takes place primarily from late April to July, when males dig a vertical burrow approximately 10 to 20 cm (4 to 8 inches) into clean coarse sand for nesting. The eggs are attached to the walls of the burrow by the female and are guarded by the male until they hatch in 9 to 10 days. Larval gobies are pelagic and found around vegetation for a short time and then become benthic (Swift, *et al.* 1989). The life span of a tidewater goby is generally only one (1) year, although individuals in the northern part of their range may live to three (3) years (Lee, *et al.* 1980).

This species formerly inhabited lower stream reaches and coastal lagoons from the Smith River in Del Norte County, California, to Agua Hedionda Lagoon in San Diego County (Lee et al. 1980). Its present distribution extends southward only to the mouth of San Onofre Creek in San Diego County. A reassessment of tidewater goby populations (USFWS 1999)

indicates that 85 of approximately 110 historical populations remain. The remaining tidewater gobies in Orange and San Diego counties are located on the U.S. Marine Corps Base, Camp Pendleton.

Status in Project Area

Eagle Canyon is the only potential tidewater goby habitat onsite. Visual surveys for tidewater gobies were conducted in January 1999, in the lagoon at the mouth of Eagle Canyon while slowly wading in the water (SAIC 1999a). No tidewater gobies were observed during these surveys. Visual surveys as well as dip netting and seining were conducted again on 25 May, 2000, and five tidewater gobies were observed at that time. Populations are also present in Tecolote and Bell Canyons, located approximately 4,000 and 5,500 feet, respectively, to the east of Eagle Canyon.

SECTION 5.0
IMPACTS

5.1 Implementation of Remedial Action Plan

Remediation activities associated with implementing the RAP have the potential to result in take of the California red-legged frog due to injury or death by being run over by construction equipment. Measures to avoid or minimize take of California red-legged frogs are briefly mentioned here and described in greater detail in *Section 6.1.*

Excavating (and refilling with clean fill dirt) the eight areas identified in *Table 2* and depicted on the attached site plan will take approximately two months. Work will be conducted during daylight hours. Juvenile and adult California red-legged frogs that attempt to disperse to the west from Eagle Canyon Creek could be injured or killed by earth-moving equipment or other project vehicles during remediation. The probability of take will be reduced through monitoring by a Service-approved biologist of the work areas prior to and during remediation to check for and relocate any California red-legged frogs found in the work area. Impacts to water quality will be avoided as soil remediation activities will not be conducted south of the railroad right-of-way during the rainy season.

Implementation of the RAP would result in temporary impacts to approximately 0.26 acre of recently-created, isolated, disturbed wetlands at the former (208) tank farm, active (129/208) tank farm and concrete abutment (see attached Site Plan). The Corps authorized ARCO to use Nationwide Permit 38 for the proposed RAP impacts. Mitigation for these impacts was approved by the Corps, the Service and the County. These temporary impacts to potential habitat are expected to have negligible effects on California red-legged frog dispersal and survival as none of the impacts are permanent and none of the impacts would block movement of the frogs across the site. These impacts will be mitigated through revegetation of these areas, as approved by the Corps, the Service and the County.

5.2 Golf Links Construction

Construction activities associated with developing the coastal access in Eagle Canyon, installing the water pipelines across Eagle Canyon Creek, and building the golf course on the coastal terrace have the potential to result in take of the California red-legged frog and tidewater goby. Measures to avoid or minimize take of California red-legged frogs and tidewater gobies are briefly mentioned here and described in greater detail in *Section 6.1.*

5.2.1 Golf Course

Clearing and grading for golf course construction will affect 115 acres (none of which is habitat for the tidewater goby or breeding habitat for the California red-legged frog) and will take approximately 12 months. Work would be conducted during daylight hours. Juvenile and adult California red-legged frogs that attempt to disperse to the west from Eagle Canyon Creek could be injured or killed by earth-moving equipment or other project vehicles during construction. The probability of take will be reduced through monitoring by a Service-approved biologist of the work areas prior to and during construction to check for and relocate any California red-legged frogs found in the work area.

Construction activities will permanently impact 0.18 acre of ephemeral stream channel, 0.03 acre of unvegetated intermittent stream channel, and 0.19 acre of vegetated intermittent stream channel (southern willow scrub) and will temporarily impact 0.001 acre of ephemeral stream channel, 0.005 acre of unvegetated intermittent stream channel, and 0.004 acre of vegetated intermittent stream channel (0.002 acre of southern willow scrub and 0.002 acre of freshwater marsh). (See attached Site Plan for locations of stream channel impacts; no impacts are proposed to Eagle Canyon Creek). The permanent impacts to intermittent stream channels (vegetated and unvegetated) are primarily associated with culvert crossings and bridge crossings for the golf cart paths and the lateral public access trail (the bridge crossings were considered permanent due to shading), as well as riprap protection against erosion at culvert outfalls. The permanent impacts to ephemeral stream channels are primarily associated with culvert crossings, riprap at culvert outfalls and altered topography associated with the golf course. Impacts to these small areas of potential habitat are expected to have negligible effects on California red-legged frog dispersal and survival as none of the impacts would block movement of the frogs across the site. These impacts will be mitigated, as approved by the Corps, the Service and the County, through stream habitat creation and enhancement within several unnamed, intermittent drainages onsite, and Tomate Canyon (see attached Site Plan). Furthermore, even if the project were not built, any frogs moving across the site would be unlikely to survive in the long term due to lack of suitable breeding habitat (*i.e.*, year-round water).

Construction of concrete cart paths would take 10 days and is scheduled for various times within each section. Any juvenile or adult California red-legged frogs moving westward at that time could come in contact with the wet cement during the short time between when it is poured and when it sets up (about 8 hours), resulting in injury to their skin that could

ultimately cause mortality. Monitoring will be conducted by the Service-approved biologist to ensure that no California red-legged frogs are near the wet cement.

Planting of the fairways, tees, and greens as well as restoration work in the rough will involve use of equipment during the day. Dispersing California red-legged frogs could be crushed by landscaping equipment or trampled by the landscape installers. The potential for these impacts will be minimized through the monitoring that will be conducted during these activities and general nocturnal movement of the frogs. Grassing will occur in one month installments each in *Sections 1 and 2, Sections 3, 4, and 5, and Section 6* (see *Figure 4*).

Construction activities can also have indirect effects on the California red-legged frog and the tidewater goby in Eagle Canyon through runoff of sediments and construction materials from the work area as well as from noise and vibration during earth-moving activities. Since construction work may occur during the rainy season, runoff from the site has the potential to carry sediments and construction materials off site. The area where the clubhouse, other buildings, parking, and six holes of the par-three course are to be constructed drains south to a drainage ditch along the railroad tracks and east to Eagle Canyon. The area south of the railroad tracks with the other three holes of the par-three course drains eastward to Eagle Canyon and into the project reclaimed water storage lake. Erosion and sediment control measures that are part of the project (see Environmental Quality Assurance Program [EQAP], hereby incorporated into the HCP) will avoid and minimize to the extent practicable the amount of sediment and other materials that could run off the work area to Eagle Canyon. In addition, vegetation on the slopes of the canyon would help filter the runoff before it reaches the creek. Thus, the potential for runoff from the site to adversely impact California red-legged frogs or tidewater gobies will be minimized. Since tidewater gobies generally move upstream during the winter and California red-legged frogs often take refuge in riparian vegetation during the rainy season, the potential for adverse impacts resulting from project construction will be further minimized by the animals' seasonal behavior. CPH will maintain water quality levels for turbidity below EPA aquatic life suspended solids and turbidity standards: the compensation point for photosynthesis should not be reduced by more than 10 percent of the seasonally established norm. If this level is exceeded, project construction shall cease until the turbidity is reduced below the threshold and the sediment and erosion plan will be modified in order to maintain turbidity levels below the thresholds.

Since earth work would occur within 200 feet of the top of Eagle Canyon, noise and vibrations during construction activities could cause California red-legged frogs dispersing

away from the creek during the wet season to move into less suitable habitats or increase their susceptibility to predation. The short duration of construction (one dispersal season for the frogs) and the general nocturnal behavior of the frogs minimize the potential for these activities to adversely affect the species.

5.2.2 Public Access Trail

Construction of the vertical coastal access to the beach west of Tomate Canyon is unlikely to result in take of California red-legged frogs due to the short duration of the work (approximately 6 weeks), and the low probability of any California red-legged frogs being present during the day when construction activities take place. Most activities related to installation of the vertical access would be staged from a pad at the top of the bluff and would not affect any potential California red-legged frog habitat. Construction of the trail connecting the vertical access to the cart path would involve cutting a level path into the side of the drainage canyon in an area that is currently coastal scrub. The bottom of the drainage would not be affected. Due to the distance from Eagle Canyon (the only suitable habitat for the tidewater goby onsite), construction of the vertical coastal access trail west of Tomate Canyon will not result in take of tidewater gobies.

Construction of the lateral access in Eagle Canyon, however, would occur adjacent to tidewater goby habitat and within California red-legged frog non-breeding habitat, and would terminate adjacent to the pipe racks over Eagle Canyon Creek. Approximately 652 linear feet of the existing paved road would be resurfaced within 200 feet of Eagle Canyon Creek for the lateral access trail. The pedestrian and equestrian paths will be earthen and the bike path will be concrete. Since the work may be conducted when California red-legged frogs could be in the work area, surveys will be conducted prior to the work, vegetation debris and understory plants will be cleared by hand, and the construction site will be monitored during the work period. These measures will minimize the potential for impacts to California red-legged frogs. Construction of the lateral access will not occur within Eagle Canyon Creek and so would not directly impact tidewater gobies. Erosion and sediment control measures (see *Section 6.1.1*) will minimize the potential for indirect impacts to both the tidewater goby and the California red-legged frog.

Construction of the vertical access to the beach at the mouth of Eagle Canyon will be staged from an upland area above and west of the creek mouth and from the beach below. Due to the nearly vertical cliff face adjacent to the creek, no California red-legged frogs are expected to be present on the ocean cliff face where the work will occur. Installation of the concrete

foundations on the beach will not encroach into the creek and thus would not affect California red-legged frog or tidewater goby habitat in the lagoon. Since work will not be conducted during the rainy season, no runoff of sediments or cement to the creek is expected. Installation of the wooden stairs and decomposed granite path from the stairs to the lateral access trail would not affect tidewater goby habitat or California red-legged frog breeding habitat. The use of a crane on the beach at the mouth of Eagle Canyon could result in take of the California red-legged frog. Measures described in *Section 6.1.1* will be implemented to avoid and minimize the potential for impacts to California red-legged frogs and tidewater gobies.

5.2.3 Water Pipelines

Installation of the new water lines will require clearing of the vegetation (primarily a few eucalyptus trees) that has grown up adjacent to the existing pipes on the south side of the railroad crossing. The existing pipes are to be removed by ARCO. This clearing, placement of the supports, and stringing the new pipes will be accomplished with no intrusion into the waters of Eagle Canyon Creek. Thus, no impacts to the tidewater goby are anticipated due to installation of the water pipelines. Work will not be conducted between November and March to avoid the rainy season. Because work may be conducted when California red-legged frogs could be aestivating in the work area, there is a potential for take of California red-legged frogs. In order to minimize the potential take, surveys will be conducted prior to the work, vegetation debris and understory plants will be cleared by hand, and the construction area will be monitored during the work period. No runoff of sediments or cement to the creek is expected because the work will be conducted during the dry season and measures will be taken to prevent such runoff, including revegetation of disturbed soils. The fill in the low areas (495 square feet on the west side and 233 square feet on the east side) will be compacted and seeded to stabilize the soils. Erosion and sediment control measures will be installed and maintained until the soils are stable as determined by monitoring.

5.3 Golf Links Operations and Maintenance

5.3.1 Golf Course

Operation and maintenance of the golf course would result in greater human presence near California red-legged frog and tidewater goby habitat and potential for take of the California red-legged frog and/or tidewater goby through (1) harassment or capture of California red-

legged frogs traversing the golf course, (2) mortality of one or more individual California red-legged frogs by golf cart traffic, (3) trampling of California red-legged frogs or tidewater gobies in Eagle Canyon, (4) California red-legged frog mortality from mowers, (5) draining of the water storage lake for maintenance, (6) periodic cleaning out of the desiltation basins, or (7) deleterious effects to water quality. The potential for such incidents, however, is very low due to the small amount of cart path relative to the total site area, and the fact that most adult California red-legged frog movement is during the night when no golfing activity would occur.

Mowing in the grassy areas of the rough could potentially result in take of California red-legged frogs. In order to minimize the potential for take, mowing will be restricted to the day under dry, sunny conditions. Mowing the greens, tees, and fairways is not expected to affect California red-legged frogs because grass (turf) height does not provide adequate cover for the frogs, and therefore, they will be visible to the mower operators and thus avoidable. Grass height will be maintained at approximately 1 to 4 inches in the rough, 5/8 inch in the fairways, and 1/4 inch on the greens. Approximately 87 acres of the 208-acre site would be mowed.

Watering and mowing the playing areas has the potential to improve movement corridors for California red-legged frogs to disperse westward by providing a moist environment (at least during watering) and removal of dense vegetation that could impede frog movement.

The reclaimed water storage lake in the southwest portion of the project site will be used to store reclaimed water for irrigation of the golf course and could attract California red-legged frogs. Bullfrogs could also colonize the lake. However, the concrete liner extending to a depth of six feet to prevent the growth of rooted aquatic vegetation and daily fluctuations in water level will prevent development of the preferred habitat conditions for both species. Lowering the lake level an average of 2.5 feet per night, and a maximum of 11.5 feet, during nighttime irrigation is expected to have no impacts on any California red-legged frogs using the lake. Water will be withdrawn from the bottom of the lake (approximately 15 feet below the maximum water surface elevation). California red-legged frogs could use the lake as temporary habitat but are unlikely to spawn there due to the concrete liner that will prevent growth of aquatic vegetation normally used for egg attachment. Thus, fluctuating water levels would not strand egg masses above water. Water quality testing, as described in *Section 3.1.1*, will ensure that the lake water quality will be tolerable to the California red-legged frog. Periodic draining of the lake for maintenance or repairs could result in take of California red-

legged frogs, if present; dispersing California red-legged frogs moving away from the storage lake may not find other suitable habitat and could die as a result. In order to avoid and minimize the potential for take, a Service-approved biologist would survey the water storage lake prior to or during draining and would relocate any California red-legged frogs to the lagoon at the mouth of Eagle Canyon. These measures are included in *Section 6.1.4*.

If bullfrogs were to become established in the lake, they could disperse to Eagle Canyon with the potential to adversely affect California red-legged frogs. Measures to monitor for and remove any bullfrogs found in the lake are included in *Section 6.1*.

Mosquito abatement measures are likely to be needed in the lake and have the potential to affect any California red-legged frogs present. Biological control measures that do not adversely affect amphibians will be used (see *Section 6.1.4*). This includes no use of mosquitofish.

Periodic cleaning out of the desiltation basins could result in take of California red-legged frogs. In order to avoid and minimize the potential for take, the cleanout work would be conducted during the dry season when no water would be present and a Service-approved biologist would monitor the desiltation basins prior to cleanout. Any California red-legged frogs present in the desiltation basins would be relocated to the lagoon at the mouth of Eagle Canyon prior to cleanout. These measures are included in *Section 6.1.4*.

5.3.2 Public Access Trail

Use of the coastal access through the project site west of Tomate Canyon is not expected to have any effects on California red-legged frogs because the probability of a frog being present on the access trail when it is being used by the public is very remote since few if any California red-legged frogs are likely to cross the path during the day (or night).

The coastal access at the beach at the mouth of Eagle Canyon would increase the potential for impacts to California red-legged frogs and tidewater gobies due to increased human use of the area. Impacts could occur through trampling or capture of frogs or tadpoles by people leaving the trail or beach and entering the stream or lagoon. Wading in the stream or lagoon by people could trample or injure tadpoles or tidewater gobies, dislodge California red-legged frog eggs from submerged vegetation, or collapse tidewater goby nesting burrows. The presence of the vertical access trail, however, could decrease disturbance to the lagoon habitats by providing more formal access that does not require wading through the creek as

is currently the case. The access would be closed (February through May) during the seal breeding/pupping season (see Appendix B), which would protect California red-legged frogs during their breeding season. If even one person using the eastern vertical access trail is observed leaving the trail or beach to enter Eagle Canyon (as described in *Section 8.1*), CPH will apply to the California Coastal Commission for an emergency permit to close the eastern vertical access from November 1 to May 1 instead of February 1 to May 1 as required by the RAIP. The California Coastal Commission has the authority to deny the emergency permit, however.

In order to discourage the public from entering the lagoon at the mouth of Eagle Canyon, CPH will install a picket and wire fence along the sand bar at the mouth of the lagoon. The fence will extend from the base of the eastern vertical public access at the western side of Eagle Canyon along the sand bar to the east side of Eagle Canyon on the Eagle Canyon Ranch property (see *Figure 3*). The picket and wire fence will be maintained by CPH and will be repaired and replaced as necessary.

In addition, tides will limit public access along the shoreline of the project site. For example, during the calendar year 2000, between the hours of 5 AM and 9 PM, the tide has extended or will extend above the elevation of the cliff base onsite for a portion of a total of 205 days. Human activities in or immediately adjacent to the creek could result in trampling of the habitat as well as California red-legged frogs and tidewater gobies, pollution of the habitat through disposal of trash or defecation, and capture of juvenile or adult California red-legged frogs that cross the trail during the day. The amount of pollutants that could enter the habitat from human activity is expected to be low since most people are unlikely to be taking items to the beach that would pollute the stream. The beach area is currently used by a number of people, primarily arriving from the east side of Eagle Canyon Creek, and little trash was observed in the canyon during several field visits in 1999 and 2000.

5.3.3 Water Pipelines

Operation of the reclaimed and potable water pipelines in Eagle Canyon is expected to have no impacts on California red-legged frogs or tidewater gobies in Eagle Canyon Creek. The pipelines will remain suspended above the creek, and maintenance activities (*e.g.,* periodic visual inspections of supports and pipes) will not involve any intrusion of people or equipment into the creek or the vegetation associated with the creek.

5.4 Anticipated Take

Incidental take, in terms of individuals of a species, is not possible to predict and quantify for project activities. The actual level of take for California red-legged frogs will be influenced by the seasonal variation of distribution and abundance as well as from year to year due to movement patterns, reproduction, and fluctuations in population size. For the tidewater goby, the actual level of take will be affected by seasonal variation of abundance depending on reproductive success and storm flows washing out the berm at the mouth of Eagle Canyon.

The permits associated with the HCP will not authorize take of California red-legged frogs or tidewater gobies due to water quality impacts because no take due to water quality impacts is anticipated.

5.4.1 California Red-legged Frog

5.4.1.1 Implementation of the RAP

Implementation of the RAP could result in take of all California red-legged frogs present in the RAP project footprint due to harassment and an unknown number of California red-legged frogs due to mortality, but take due to mortality is expected to be low. If one California red-legged frog is taken in the form of injury or mortality during implementation of the RAP, then ARCO will evaluate the cause of take, reevaluate implementation measures of the RAP, and determine if adaptive management measures are necessary. The potential for such take is low because the California red-legged frog population onsite is relatively small, the frogs would be visible to and avoidable by the construction equipment operators, environmental monitors would be checking for frogs and most movement of adult frogs is at night when no construction activities will be conducted.

5.4.1.2 Construction of the Golf Course, Revegetation Areas and Public Access Trail

Construction of the golf course, revegetation areas, and public access trail system could result in take of all California red-legged frogs present in the project footprint due to harassment and an unknown number of California red-legged frogs due to mortality, but take due to mortality is expected to be low. If one California red-legged frog is taken in the form of

injury or mortality during construction activities, then CPH will evaluate the cause of take, reevaluate implementation measures of the construction activities, and determine if adaptive management measures are necessary. The potential for such take is low because the California red-legged frog population onsite is relatively small, the frogs would be visible to and avoidable by the construction equipment operators, environmental monitors would be checking for frogs and most movement of adult frogs is at night when no construction activities will be conducted.

5.4.1.3 Operation of the Golf Course

Operation of the golf course could result in take of all California red-legged frogs onsite due to harassment and an unknown number of California red-legged frogs due to mortality, but take due to mortality is expected to be low. If one California red-legged frog is taken in the form of injury or mortality during operation of the golf course, then CPH will evaluate the cause of take, reevaluate operation measures of the golf course, and determine if adaptive management measures are necessary. The potential for such take is low based on the few individuals observed in Eagle Canyon, and because most movement of adult frogs is at night when no human activity occurs on the course, and the frogs would be visible to and avoidable by the golf cart and mower operators during the day.

5.4.1.4 Operation of the Lateral and Vertical Public Access Trails

Public access to the beach at the mouth of Eagle Canyon could result in take of all California red-legged frogs onsite due to harassment and an unknown number of California red-legged frogs due to mortality, but take due to mortality is expected to be low. If one California red-legged frog is taken in the form of injury or mortality during operation of the public access trail, then CPH will evaluate the cause of take, reevaluate implementation measures of the RAP, and determine if adaptive management measures are necessary.

The golf course project would not adversely change conditions related to survival of California red-legged frogs dispersing across upland areas to the west of Eagle Canyon. It is anticipated that the low level of take resulting from the golf course construction and operation and public access would not adversely affect the California red-legged frog population in the project area.

5.4.2 Tidewater Goby

5.4.2.1 Implementation of the RAP

Implementation of the RAP is not expected to result in take of the tidewater goby because none of these activities will occur within tidewater goby habitat.

5.4.2.2 Construction of the Golf Course, Revegetation Areas and Public Access Trail

Construction of the golf course, revegetation areas, and public access trail system are not expected to result in take of the tidewater goby because none of these activities will occur within tidewater goby habitat.

5.4.2.3 Operation of the Golf Course

Operation of the proposed golf course project, including chemical use, is not expected to result in take of the tidewater goby because none of these activities will occur within tidewater goby habitat.

Regarding chemical use onsite, all golf course maintenance procedures and materials will be conducted and used in accordance with the County- and Service-approved final ATMIPM program which has been developed as part of the CDP approval process. The draft ATMIPM has been previously provided to the Service. The HCP and IA are not providing coverage for take as a result of chemical usage onsite; however, avoidance and minimization measures developed with the Service will avoid take through minimizing chemical use and conducting regular water quality testing to assure that deleterious effects to water quality are not occurring.

5.4.2.4 Operation of the Lateral and Vertical Public Access Trails

Public access to the beach at the mouth of Eagle Canyon could result in take of all tidewater gobies onsite due to harassment and an unknown number of tidewater gobies due to mortality, but take due to mortality is expected to be low. If one tidewater goby is taken in the form of injury or mortality during operation of the public access trail, then CPH will evaluate the cause of take, reevaluate operation measures of the access trail, and determine

if adaptive management measures are necessary. The number of tidewater gobies taken by human use of Eagle Canyon Creek is expected to be low because the fish are secretive and difficult to capture by hand and habitat disturbance (including trampling) is not likely to increase from pre-project levels. It is not anticipated that the low level of take resulting from public access would adversely affect the tidewater goby population in the project area.

5.5 Cumulative Impacts

The following discussion of cumulative impacts is largely from the FEIR (Fugro-McClelland 1993). It provides an overview of related projects in the project vicinity that would contribute to the cumulative regional loss of biological resources.

The Bacara (formerly Santa Barbara Club) Resort & Spa Hotel (opened Fall 2000) is located immediately east of the proposed project site. The hotel project resulted in temporary impacts to California red-legged frogs and tidewater gobies in Tecolote and Bell canyons during construction of the access road and permanent impacts through conversion of upland habitat to structures and landscaping plus increased human presence in the area. No other projects are known to be proposed or approved within the immediate vicinity of Tecolote and Bell canyons, nor within the vicinity of upper Eagle Canyon (County of Santa Barbara 1998). Development on the Morehart holdings to the west of the project site is likely to be proposed at some time in the future. Cumulative impacts to aquatic habitats from the known projects in the area appear to be minimal and primarily temporary. Permanent impacts to upland habitats would occur from the hotel and golf course projects; however, the golf course project would not pose a barrier to California red-legged frog movement.

SECTION 6.0
MINIMIZATION OF IMPACTS

6.1 Measures to Avoid and Minimize Impacts

6.1.1 Eagle Canyon Coastal Access & Water Pipeline Construction

1. In order to avoid and minimize the take of California red-legged frogs, either directly or through alteration of their habitat during construction, worker education programs and well-defined operational procedures shall be implemented. These include:

   a. At least fifteen (15) days prior to the beginning of construction, the applicant shall submit to the Service the qualifications of the biologist(s) who will carry out monitoring, relocation, and education programs for the project for review and approval. The applicant will also submit the names and qualifications of those persons (designated monitors) trained by the Service-approved biologist(s) who may also implement the California red-legged frog protection requirements in this HCP. Work will not begin until CPH receives Service approval of qualified biologists.

   b. A Service-approved biologist shall conduct a training session for all construction personnel prior to any construction activities within the project footprint. At a minimum, the training shall include a discussion on the presence of the California red-legged frog and tidewater goby at the Dos Pueblos Golf Links project site, the general provisions of the Endangered Species Act (Act), the necessity for adhering to the provisions of the Act, the penalties associated with violating the provisions of the Act, the specific measures that are being implemented to conserve California red-legged frogs and tidewater gobies as they relate to the project, and the boundaries within which the project may be accomplished.

   c. Upon completion of construction of the coastal access trail, signs will be posted at the beginning of the access trail and at the mouth of Eagle Canyon C reek deta iling th e presence of th e ti dewater goby a nd th e California red-legged frog in Eagle Canyon Creek listing potential threats to these species. These signs shall also describe the penalties associated

with violation of the Act. All signs shall be approved by all appropriate agencies, including the Service. A wire and picket fence shall be installed and maintained at the mouth of Eagle Canyon Creek to prevent entry into the drainage by recreational users along the coast.

d. The Service-approved biologist(s) or designated monitor shall visit the Eagle Canyon construction site each work day throughout the construction phase in Eagle Canyon to ensure that all applicable measures described herein are being employed to avoid incidental disturbance of wetland and stream habitats, individual California red-legged frogs and tidewater gobies, and California red-legged frog and tidewater goby habitat. The biologist(s) or designated monitor shall coordinate scheduling with the construction contractor regarding compliance with biological mitigation requirements. The biologist(s) shall monitor the construction zone and suitable habitat within the project vicinity and shall be empowered to halt construction if necessary to avoid direct harm of individual California red-legged frogs or tidewater gobies.

e. Dogs and other pets shall be prohibited at the Eagle Canyon construction site, and contractors and their employees shall not be allowed to bring pets onto the Dos Pueblos Golf Links project site. This prohibition includes dogs kept either inside or outside of employee vehicles.

f. To discourage predators from the construction sites, all food-related trash materials (*e.g.,* leftovers, wrappers, and containers) shall be properly disposed of and be removed from the site each day, and areas shall be maintained litter-free.

g. During constructi on, th e a pplicant sh all prev ent sediment and other materials from entering Eagle Canyon Creek (see EQAP). These include straw bale and silt fence barriers at the downslope side of all disturbed soil areas that are maintained throughout the rainy season. In addition, a Stormwater Pollution Prevention Plan (SWPPP) must be prepared in compliance with the National Pollution Discharge Elimination System (NPDES) General Permit CAS000002 and submitted to the RWQCB prior to any grading activities onsite.

h. Temporary erosion and sedimentation control features shall be maintained until revegetation is sufficient (75 percent cover or greater) to prevent erosion of disturbed construction and restoration sites.

i. Daily inspections during construction shall be conducted by the CPH project superintendent to ensure condition and adequacy of erosion and sedimentation control features.

j. Any water removed from the concrete stair excavation or the water pipeline support bore holes by construction contractors will be discharged such that it does not cause any erosion or flow of turbid water into Eagle Canyon Creek.

k. No water that has come in contact with wet cement will be allowed to enter Eagle Canyon Creek unless the pH is within the range of 6.0 to 8.0 units.

2. In order to reduce the potential for take of California red-legged frogs either directly or through alteration of their habitat, clearly-defined work areas shall be established. This avoidance and minimization measure includes:

a. The number of access routes (1 or 2), size of the staging area, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Prior to excavation or construction activities, the boundaries of the project area shall be clearly delineated by flagging or other means to prevent workers or equipment from inadvertently straying from the project area. All construction personnel, equipment, and vehicle movement shall be confined to designated construction areas and connecting roadways. Movement of construction and personal vehicles shall be prohibited outside of designated construction areas and off of established roadways. The limits of the project area shall be reviewed by the Service-approved biologist prior to the commencement of work.

b. All equipment shall be regularly maintained to avoid fluid leaks (*e.g.*, gasoline, diesel fuel, oil, hydraulic fluid, etc.). Equipment will not be operated in Eagle Canyon Creek; however, equipment operated on the beach at the mouth of Eagle Canyon shall be inspected prior to the onset

of construction for fuel, lubricant, and hydraulic fluid leaks, and shall be checked daily for leaks. Any leaks found shall be repaired immediately.

c. Hazardous materials (*i.e.,* fuels, lubricants, etc.) shall be stored in a designated location, surrounded by a temporary earthen berm and lined with plastic, at least 100 feet from Eagle Canyon. Refueling of equipment shall occur at least 100 feet from Eagle Canyon.

d. Before work is initiated in Eagle Canyon, a plan shall be prepared for immediate containment and clean-up of any hazardous material spills within or adjacent to the site as part of the construction SWPPP. The plan shall include a list of containment and cleanup equipment to be kept onsite and training of all construction personnel in their use.

e. Contractors shall wash out concrete trucks onsite only within the designated concrete-washout area, located in the vicinity of the proposed clubhouse. The bermed washout location is such that runoff cannot reach riparian vegetation or enter a stream channel.

f. Vegetation within the clearly demarcated project boundaries within Eagle Canyon that would be disturbed by construction of the access or water pipelines shall be removed by hand, while a Service-approved biologist is present, prior to construction activities at the work site. Hand-clearing activities are less likely to result in injury and mortality to California red-legged frogs, and the removal of vegetation will assist in locating any California red-legged frogs present in dense vegetation prior to construction activities.

g. Construction activities within Eagle Canyon shall be scheduled for the late spring to fall (April through October) to avoid working adjacent to the creek during the winter rains and the breeding season for the California red-legged frog.

h. The spread or introduction of exotic plant species shall be avoided to the maximum extent possible by minimizing disturbance to areas with established native vegetation during project activities, by restoring areas disturbed by the project activities (*i.e.*, along the proposed lateral access,

eastern vertical access and pipe rack) with native species, and by post-project monitoring and control of exotic species (see BELP and attached Site Plan).

i. Bluff vegetation removal during construction shall be minimized at the eastern vertical access trail at Eagle Canyon.

3. Take of California red-legged frogs found within the proposed project area shall be minimized through the relocation of these animals to suitable adjacent habitat prior to and during the construction and habitat restoration periods. This minimization measure includes:

a. If California red-legged frogs are found in or immediately adjacent to the work areas (*i.e.*, along the proposed lateral access, eastern vertical access and pipe rack) during pre-construction surveys within Eagle Canyon, they shall be relocated to the lagoon at the mouth of Eagle Canyon and released. After construction begins, the work area shall be checked for California red-legged frogs daily prior to the start of each day's work by a Service-approved biologist. Any individuals found shall be relocated to the lagoon at the mouth of Eagle Canyon and released.

b. Only biologist(s) approved by the Service or designated monitor(s) under the supervision of the biologist(s) shall be authorized to handle California red-legged frogs for translocation. Prior to handling any California red-legged frog, these individuals shall be trained to handle the species by a qualified h erpetologist familiar with ranids. Only under exceptional circumstances and with the approval of the Service shall anyone other than the Service-approved biologist(s) or designated monitor(s) relocate California red-legged frogs from the path of danger to outside the construction zone. Anyone other than the Service-approved biologist(s) who may have the occasion to relocate California red-legged frogs shall be trained by the Service-approved biologist in the proper handling and reporting procedures.

c. Any California red-legged frog detected within the Eagle Canyon construction areas or within 200 feet of the areas (outside of Eagle Canyon Creek) shall be reported immediately to either the Service-approved

biologist(s), or designated monitor. Any individuals detected within the construction area shall be captured and relocated to the lagoon at the mouth of Eagle Canyon Creek by a Service-approved biologist. Any individuals observed outside of the construction area, but within 200 feet, shall be monitored closely to ensure they do not enter the construction area.

6.1.2 Implementation of the Remediation Action Plan

The following measures apply to soil remediation of the following areas: active (129/208) tank farm, former (208) tank farm, meters (mercury), warehouse storage (loading dock), well 129-2 staining, former gas compressor, mudpit near 208-19 well, and concrete abutment (see attached Site Plan).

1. In order to avoid and minimize the take of California red-legged frogs during implementation of the RAP, worker education programs and well-defined operational procedures shall be implemented. These include:

   a. At least fifteen (15) days prior to the beginning of construction, the applicant shall submit to the Service the qualifications of the biologist(s) who will carry out or supervise monitoring, relocation, and education programs for the project for the Service's review and approval.

   b. A Service-approved biologist shall conduct a training session for all construction personnel prior to any remediation activities within the project footprint and to any new construction personnel added to the project thereafter. At a minimum, the training shall include a discussion on the presence of the California red-legged frog and tidewater goby at the Dos Pueblos Golf Links project site, the general provisions of the Act, the necessity for adhering to the provisions of the Act, the penalties associated with violating the provisions of the Act, the specific measures that are being implemented to conserve California red-legged frogs as they relate to the project, and the boundaries within which the project may be accomplished.

c. Dogs and other pets shall be prohibited at the construction site, and contractors and their employees shall not be allowed to bring pets onto the Dos Pueblos Golf Links project site. This prohibition specifically includes dogs kept either inside or outside of employee vehicles.

d. To discourage predators, all food-related trash materials (*e.g.,* leftovers, wrappers and containers) shall be properly disposed of, trash shall be removed from the site each day, and areas shall be maintained litter-free.

e. During implementation of the RAP, the applicant shall prevent sediment and other materials from entering the drainages (see EQAP). These include straw bale and silt fence barriers at the downslope side of all disturbed soil areas that are maintained throughout the rainy season. In addition, a SWPPP must be prepared in accordance with NPDES General Permit CAS000002 and submitted to the RWQCB prior to any grading activities onsite.

f. Temporary erosion and sediment control features shall be maintained until revegetation is sufficient to prevent erosion of disturbed construction and restoration sites as determined by monitoring and adaptive management until success criteria are met.

g. Immediately prior to and after each rainfall event, monitoring inspections of sediment and erosion control measures (see EQAP) shall be conducted for the duration of the construction phase and until temporary protection features have been removed.

h. In order to avoid the spread of soil contaminants, soil remediation activities will not be conducted south of the railroad right-of-way during the rainy season.

2. In order to reduce the potential for take of California red-legged frogs, clearly-defined work areas shall be established. This avoidance and minimization measure includes:

a. All construction personnel, equipment, and vehicle movement shall be confined to designated construction areas and connecting roadways. Movement of construction and personal vehicles shall be prohibited outside of designated construction areas and off of established roadways.

b. All equipment shall be regularly maintained to avoid fluid leaks. Equipment shall be inspected prior to the onset of construction for fuel, lubricant, and hydraulic fluid leaks, and shall be checked daily for leaks. Any leaks found shall be repaired immediately.

c. Hazardous materials shall be stored in a designated location with plastic lining at least 100 feet from aquatic habitats. Refueling of equipment shall occur at least 50 feet from aquatic habitats. Before work is initiated, a plan shall be prepared for immediate containment and clean-up of any hazardous material spills within the project site as part of the remediation SWPPP. The plan shall include a list of containment and cleanup equipment to be kept onsite and training of all construction personnel in their use.

3. Incidental take of California red-legged frogs found within the proposed project area shall be minimized through relocating these animals to suitable adjacent habitat prior to and during the construction and habitat restoration periods. This avoidance and minimization measure includes:

a. The remediation areas shall be searched once immediately prior to the onset of remediation.

b. If California red-legged frogs are found during pre-remediation surveys, they shall be relocated to the lagoon at the mouth of Eagle Canyon and released. After remediation begins, the work area shall be checked for California red-legged frogs daily prior to the start of the day's work. Any individuals found shall be relocated to the lagoon at the mouth of Eagle Canyon Creek and released.

c. If repeated surveys do not detect any California red-legged frogs moving into the work area during remediation for five (5) consecutive days, the

surveys shall be conducted a minimum of twice a week prior to the start of the day's work. If a California red-legged frog is detected during these twice-weekly surveys or if rainfall occurs, then daily surveys shall be reinitiated until no frogs are found for 5 consecutive days.

d. When all surveys for California red-legged frogs and training of workers have been completed, the contractor or applicant shall designate a person or persons to monitor on-site compliance. The Service-approved biologist shall ensure that this individual receives the training specified under the minimization measure described above and is competent in the identification of California red-legged frogs. The Service-approved biologist(s) and the monitor(s) shall have the authority to halt construction if necessary to avoid direct harm to California red-legged frogs.

e. Only the Service-approved biologist(s) or designated monitor shall be authorized to handle California red-legged frogs for translocation. Prior to handling any California red-legged frog, these individuals shall be trained to handle the species by the Service-approved biologist(s).

f. Any California red-legged frog detected within the remediation area or within 200 feet of the area shall be reported immediately to either the Service-approved biologist(s), or designated monitor(s). Any individuals detected within the construction area shall be captured and relocated to a predetermined location by a Service- biologist or designated monitor. Any individuals observed outside of the construction area but within 200 feet shall be monitored closely to ensure they do not enter the construction area.

6.1.3 Golf Course and Public Access Trail Construction

The following measures apply to construction of golf course facilities outside of Eagle Canyon. These include the clubhouse, parking, reclaimed water storage lake, fairways, greens, tees, cart paths, and storm drains.

1. In order to avoid and minimize the take of California red-legged frogs during construction of golf course facilities outside Eagle Canyon, worker education

programs and well-defined operational procedures shall be implemented. These include:

a. At least fifteen (15) days prior to the beginning of construction, the applicant shall submit to the Service the qualifications of the biologist(s) who will carry out or supervise monitoring, relocation, and education programs for the project for review and approval by the Service.

b. A Service-approved biologist shall conduct a training session for all construction personnel prior to any construction activities within the project footprint and to any new construction personnel added to the project thereafter. At a minimum, the training shall include a discussion on the presence of the California red-legged frog and tidewater goby at the Dos Pueblos Golf Links project site, the general provisions of the Act, the necessity for adhering to the provisions of the Act, the penalties associated with violating the provisions of the Act, the specific measures that are being implemented to conserve California red-legged frogs and tidewater gobies as they relate to the project, and the boundaries within which the project may be accomplished.

c. Dogs and other pets shall be prohibited at the construction site, and contractors and their employees shall not be allowed to bring pets onto the Dos Pueblos Golf Links project site. This prohibition specifically includes dogs kept either inside or outside of employee vehicles.

d. To discourage predators, all food-related trash materials (*e.g.,* leftovers, wrappers and containers) shall be properly disposed of, trash shall be removed from the site each day, and areas shall be maintained litter-free.

e. During constructi on, th e a pplicant sh all preven t sediment and other materials from entering the drainages (see EQAP). These include straw bale and silt fence barriers at the downslope side of all disturbed soil areas that are maintained throughout the rainy season. In addition, a SWPPP must be prepared in compliance with NPDES General Permit CAS000002 and submitted to the RWQCB prior to any grading activities onsite.

f. Temporary erosion and sediment control features shall be maintained until revegetation is sufficient to prevent erosion of disturbed construction and

restoration sites as determined by monitoring and adaptive management until success criteria are met.

g. Immediately prior to and after each rainfall event, monitoring inspections of sediment and erosion control measures (see EQAP) shall be conducted for the duration of the construction phase and until temporary protection features have been removed.

h. A water sampling program will be implemented in Eagle Canyon, Drainage 4 North and Tomate Canyon during golf course construction. Impacts of erosion and sedimentation to water quality will be measured using turbidity. CPH will maintain water quality levels for turbidity below EPA aquatic life suspended solids and turbidity standards: the compensation point for photosynthesis should not be reduced by more than 10 percent of the seasonally established norm.

If tests reveal that the turbidity thresholds are exceeded, project construction shall cease until the turbidity is reduced below the thresholds and th e sedi ment a nd erosi on pla n wi ll be modi fied (*e.g.*, a dditional sandbags, silt fencing, straw bales) in order to maintain turbidity levels below the thresholds.

i. Grading activities will not be conducted south of the railroad right-of-way during the rainy season.

2. In order to reduce the potential for take of California red-legged frogs, clearly-defined work areas shall be established. This avoidance and minimization measure includes:

a. Road improvements shall be confined to locations identified in the Pre-Construction Notification, which specifies locations of permanent erosion and sedimentation control features including drainage swales, drop inlets, and culverts.

b. At all stream crossings, the number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Prior to excavation or construction activities, the boundaries of the stream crossings shall be

clearly delineated by flagging or other means to prevent workers or equipment from inadvertently straying from the project area.

c. All construction personnel, equipment, and vehicle movement shall be confined to designated construction areas and connecting roadways. Movement of construction and personal vehicles shall be prohibited outside of designated construction areas and off of established roadways.

d. All equipment shall be regularly maintained to avoid fluid leaks. Equipment working in stream beds shall be inspected prior to the onset of construction for fuel, lubricant, and hydraulic fluid leaks, and shall be checked daily for leaks. Any leaks found shall be repaired immediately.

e. Hazardous materials shall be stored in a designated location with plastic lining at least 100 feet from aquatic habitats. Refueling of equipment shall occur at least 50 feet from aquatic habitats. Before work is initiated, a plan shall be prepared for immediate containment and clean-up of any hazardous material spills within the project site as part of the construction SWPPP. The plan shall include a list of containment and cleanup equipment to be kept onsite and training of all construction personnel in their use.

f. Contractors shall wash out concrete trucks onsite only within the designated concrete-washout area, located in the vicinity of the proposed clubhouse. The bermed washout location is such that runoff cannot reach riparian vegetation or enter a stream channel.

g. From 1 November through 1 May, when California red-legged frogs are more likely to move further from water, work shall not be conducted within 200 feet of potential California red-legged frog breeding habitat in Eagle Canyon.

h. Bluff vegetation removal during construction shall be minimized at the western vertical access trail at Tomate Canyon and erosion control measures shall be used at the proposed vertical trail earth cut at Tomate Canyon.

3. Incidental take of California red-legged frogs found within the proposed project area shall be minimized through relocating these animals to suitable adjacent habitat prior to and during the construction and habitat restoration periods. This avoidance and minimization measure includes:

   a. In drainages where water or riparian vegetation is present, the work area and the length of creek 60 feet upstream and downstream of the work area shall be surveyed for California red-legged frogs twice at night and twice in daylight hours within three days of the onset of construction. The second night survey shall be conducted within 24 hours of the onset of construction and the second day survey shall be conducted on the morning construction begins.

   b. In drainages where water and riparian vegetation are absent, the work area and the length of creek 30 feet upstream and downstream of the work area shall be searched for California red-legged frogs once within three days of the onset of construction.

   c. If California red-legged frogs are found during pre-construction surveys, they shall be relocated to the lagoon at the mouth of Eagle Canyon Creek and released. After construction begins, the work area shall be checked for California red-legged frogs daily prior to the start of the day's work. Any individuals found shall be relocated to the lagoon at the mouth of Eagle Canyon Creek and released.

   d. If repeated surveys do not detect any California red-legged frogs moving into the work area during construction for five (5) consecutive days, the surveys shall be conducted a minimum of twice a week prior to the start of the day's work. If a California red-legged frog is detected during these twice-weekly surveys or if rainfall occurs, then daily surveys shall be reinitiated until no frogs are found for 5 consecutive days.

   e. When all surveys for California red-legged frogs and training of workers have been completed, the contractor or applicant shall designate a person or persons to monitor on-site compliance with the terms of this HCP. The Service-approved biologist shall ensure that this individual receives the

training specified under the minimization measure described above and is competent in the identification of California red-legged frogs. The Service-approved biologist(s) and the monitor(s) shall have the authority to halt construction if necessary to avoid direct harm to California red-legged frogs.

f. A night survey for California red-legged frogs shall be conducted immediately after cement is poured for the cart paths. Any found will be relocated outside the work area.

g. Only the Service-approved biologist(s) or designated monitor shall be authorized to handle California red-legged frogs for translocation. Prior to handling any California red-legged frog, these individuals shall be trained to handle the species by a qualified herpetologist familiar with ranids.

h. Any California red-legged frog detected within the construction area or within 200 feet of the area shall be reported immediately to either the Service-approved biologist(s), or designated monitor(s). Any individuals detected within the construction area shall be captured and relocated to the lagoon at the mouth of Eagle Canyon Creek by an authorized qualified biologist or designated monitor. Any individuals observed outside of the construction area but within 200 feet shall be monitored closely to ensure they do not enter the construction area.

6.1.4 Operation of the Golf Course

Take of California red-legged frogs as a result of long-term maintenance and operation of the golf course shall be minimized through the following measures:

a. Mowing within the golf course roughs shall be limited to dry, sunny days in order to avoid impacts to any California red-legged frogs hiding in the grass. Because grass within the tees, fairways, and greens would only be 1/4 inch to 5/8 inch in height, frogs are unlikely to use these areas and mowing restrictions will not be implemented. Maintenance personnel conducting the mowing will be trained in identification of California red-legged frogs and the importance of avoiding any observed during mowing.

b. The following trash and garbage maintenance plan shall be implemented in order to avoid attracting known predators of the California red-legged frog (*e.g.,* raccoons and opossums). All trash cans on the site shall be kept covered with tight fitting lids and shall be emptied daily into a dumpster(s) stored in an enclosed area. The enclosure shall be of wire fencing or solid material (sides and top) with a gate that will prevent entry of animals the size of a small cat. Any raccoons or opossums found onsite will be removed as allowed by local and state authorities.

c. A bullfrog monitoring and removal plan shall be implemented for the reclaimed water storage lake. This plan will include two night surveys in the fall (September to November) each year for bullfrogs and California red-legged frogs by a qualified biologist. If any bullfrogs are found, the lake will be drained, and the bullfrogs (all life stages) will be removed. Any California red-legged frogs (all life stages) found will be relocated to suitable habitat in Eagle Canyon.

d. A water quality testing program (see Table 3) will be implemented in Eagle Canyon, Tomate Canyon, Drainage 4 North, the vernal pool and the reclaimed water storage lake on a regular basis to ensure that no adverse water quality impacts result from irrigation and chemical use within the golf course. For Tomate Canyon, Drainage 4 North and Eagle Canyon, if water quality levels of nitrites, nitrates and phosphates exceed EPA levels, if dissolved oxygen levels are less than 5 ppm, or if pH levels are less than 6.0 or greater than 9.0, operation of the golf course shall be modified in accordance with the final ATMIPM until testing shows no adverse impacts to water quality. For the vernal pool and the water storage lake, if tests reveal that levels of nitrites, nitrates and phosphates exceed EPA levels, if dissolved oxygen levels are less than 5 ppm, or if pH levels are less than 6.0 or greater than 9.0, operation of the golf course shall be modified in accordance with the final ATMIPM until testing shows no adverse impacts.

e. The pump intake at the proposed reclaimed water storage lake shall be screened with a wire mesh not larger than five millimeters in order to prevent take of California red-legged frogs.

f. Because the proposed reclaimed water storage lake shall experience an average daily drawdown of 2.5 feet, and a maximum drawdown of 11.5 feet, the lake shall be constructed with a concrete liner in order to prevent the growth of rooted vegetation within the lake that could attract California red-legged frogs and provide breeding habitat. This concrete liner will extend down the sides of the reclaimed water storage lake to a depth of about six feet. This measure should avoid take of California red-legged frog eggs (through desiccation) because there will be nothing to which the California red-legged frogs can attach their eggs.

g. Aquatic weed control within the reclaimed water storage lake shall follow a non-chemical strategy exclusively. This strategy shall include one or more of the following: a circulation system to increase water movement, an aeration system to increase the oxygen levels, and shading (approved non-toxic blue colorants such as Aquashade®, thereby reducing the potential for algae and other aquatic weeds, and removal of aquatic weeds by hand (*i.e.*, skimming the surface).

h. Mosquito control in the lake shall be by use of *Bacillus thuringiensis* var. *israeliensis* (BTI), *Bacillus sphaericus*, or other equivalent means that are shown to be non-toxic to amphibians. Mosquitofish shall not be used.

i. To reduce the likelihood of chemical migration into the reclaimed water storage lake, spraying of chemicals onto turf areas adjacent to the lake (if needed) shall not occur within 25 feet of the lake edge. Only spot spraying with a wick applicator shall take place within the 25-foot buffer. No chemicals will be applied within 10 feet of the lake edge.

j. In order to minimize water quality impacts associated with golf course irrigation, the irrigation shall be conducted deeply but infrequently. During the dry summer months, the period of highest demand, the greens will be irrigated three to four times per week for a period of 20 to 30 minutes and the fairways will be irrigated two to three times per week for a period of 15 to 20 minutes. Irrigation shall be conducted late at night or early in the morning in order to achieve better distribution due to higher water pressure and limited wind. Runoff shall be avoided by matching water application

rates to soil infiltration rates using information from the on-site weather station and soil percolation rate data.

6.1.5 Operation of the Public Access Trails

1. Take of California red-legged frogs and tidewater gobies as a result of long-term operation of the eastern lateral and vertical public access in Eagle Canyon shall be minimized through the following measures:

   a. Pets shall not be allowed on the site and horses are the only domesticated animals allowed within Eagle Canyon on the lateral public access trail. Signs to that effect will be posted at the parking lot and at the top of Eagle Canyon. The signs shall be approved by all appropriate agencies, including the Service, prior to posting. Horses shall be allowed on the equestrian trail (an element of the lateral access trail), which continues off site to the east and west. No domesticated animals, including horses, shall be allowed on the vertical access trail.

   b. Signs will be posted at the parking lot, describing the sensitive nature of the project site as habitat for federally-protected species, and directing individuals to stay on the designated trails and stairway. The signs shall be approved by all appropriate agencies, including the Service, prior to posting.

   c. Signs will be posted at the top of Eagle Canyon, describing the sensitive nature of the drainage as habitat for federally-protected species, and directing individuals to stay on the designated trails and stairway. The signs shall be approved by all appropriate agencies, including the Service, prior to posting.

   d. Signs will be posted at the mouth of Eagle Canyon directing individuals to stay out of the canyon to protect federally-listed species and their habitat. The signs shall be approved by all appropriate agencies, including the Service, prior to posting.

   e. In accordance with the RAIP, a gate will be installed at the entrance to the vertical access trail from the lateral access trail. This gate will be locked from February 1 through May 31 to prevent the public from using the

vertical access trail at Eagle Canyon. The Service shall approve these signs prior to posting.

f. A gate will be installed just east of the view point. It will be kept locked until the eastward continuation of the lateral access trail is completed.

g. CPH will hold a public education meeting prior to the opening of the golf links project, regarding the sensitive species (including the California red-legged frog and tidewater goby) that could be affected by the public.

2. Take of California red-legged frogs and tidewater gobies as a result of long-term operation of the remaining lateral and western vertical public access shall be minimized through the following measure:

a. Signs will be posted at the parking lot, describing the sensitive nature of the project site as habitat for federally-protected species, directing individuals to stay on the designated trails and stairways. The signs shall be approved by all appropriate agencies, including the Service, prior to posting.

b. CPH will hold a public education meeting prior to the opening of the golf links project, regarding the sensitive species (including the California red-legged frog and tidewater gobi) that could be affected by the public.

SECTION 7.0
MITIGATION MEASURES

To mitigate potential impacts to California red-legged frogs that may result from implementation of the RAP and construction and operation of the Dos Pueblos Golf Links project and public access trails, CPH will implement a habitat enhancement plan for several intermittent drainages, including Tomate Canyon, and Eagle Canyon within the project property. This plan includes surveys for, and eradication of, exotic aquatic species in Eagle Canyon; enhancement of Eagle Canyon through revegetation and trash removal; and wetlands creation along several intermittent stream channels, including Tomate Canyon. To mitigate potential impacts to tidewater gobies that may result from operation of the eastern vertical public access trail in Eagle Canyon, CPH will implement a habitat enhancement plan in Eagle Canyon. This plan includes surveys for, and eradication of, exotic aquatic species and trash removal. The habitat enhancement plan will be prepared and submitted to the Service for review and written approval prior to construction activities.

The habitat enhancement plan will describe how CPH will create 1.15 acres of southern willow scrub in several intermittent drainages onsite, including Tomate Canyon (see attached Site Plan). The habitat enhancement plan will describe how the 1.15 acres of southern willow scrub will be installed in accordance with the BELP no later than the fall immediately following implementation of the RAP and completion of golf course construction. The 1.15 acres of southern willow scrub cannot be constructed prior to implementation of the RAP and construction of the golf course because the required grading must be phased with golf course construction activities. The creation, installation, monitoring and success criteria are described in the BELP and are approved by the Corps, the Service and the County. The eradication of exotic plant species from Eagle Canyon will be conducted in accordance with the BELP.

The habitat enhancement measures described below will improve the tidewater goby habitat in Eagle Canyon and the California red-legged frog habitat throughout the proposed golf course. These enhancement measures will allow for better frog dispersal conditions across the proposed project site as compared to existing conditions so that implementation of the proposed project will result in increased chances for California red-legged frog population expansion and dispersal. More chances for dispersal and an increase in habitat will improve chances for genetic interchange with other California red-legged frogs in project area drainages, enhancing local and regional population viability and long-term survival of the species. In addition, the habitat enhancement measures will help to maintain a viable tidewater goby population onsite by stabilizing soils adjacent to Eagle Canyon Creek and by

controlling non-native species that can prey upon or compete with the tidewater gobies onsite, allowing for tidewater goby population increases which will be better able to withstand periodic bouts of unfavorable conditions (*i.e.*, flood conditions resulting in a wash-out of the berm at the mouth of Eagle Canyon). This, in turn, will improve the long-term viability of the local (onsite) and will also add to the regional viability of this species by maintaining a source of individuals that can recolonize nearby habitats if their populations are lost (tidewater gobies can migrate east along the coast when the berm at the mouth of Eagle Canyon is washed-out annually during winter storms).

Non-Native Species Surveys

A survey will be conducted in the summer of each year to determine the extent and type of non-native vegetation (excluding eucalyptus trees) present in Eagle Canyon between the railroad and the ocean (non-native species surveys will be conducted in Eagle Canyon within the limits of the conservation easement (2.46 acres) on as indicated on the attached Site Plan). Non-native species currently present in Eagle Canyon include German ivy (*Senecio mikanioides*), wild fennel (*Foeniculum vulgare*), horseweed (*Conyza canadensis*) and castor-bean (*Ricinus communis*). Non-native species in Eagle Canyon currently dominate a portion of the western slope of Eagle Canyon south of the railroad bridge, occupying approximately 0.3 acre. During the surveys, the approximate area containing the non-native species and their density will be estimated. The frequency of these surveys will be reduced to every other year if no patches of non-native species are found for four consecutive years.

Surveys for non-native aquatic species (*e.g.*, bullfrogs, crayfish, mosquitofish, and snapping turtles) known to be detrimental to California red-legged frog and tidewater goby populations will be conducted annually in the summer or fall. These may be combined with the California red-legged frog monitoring surveys.

Non-Native Species Eradication

Non-native, invasive plant species found during the annual surveys will be removed using methods that will not harm California red-legged frogs or cause pollutants to enter the creek. Eradication will be accomplished using hand tools or pulling individual plants by hand. For many annual species this will likely involve cutting the plants (one or more times) before they set seed.

Removal of non-native aquatic species found during the surveys will be accomplished with methods currently approved by the Service that minimize the potential for take of California red-legged frogs and tidewater gobies. Potential methods include traps, seine, dip net, hand, and spear/gig. Removal will be by biologists that can distinguish the non-native species (including egg and tadpole stages) from the native species to be protected. Eradication shall not be conducted when California red-legged frog eggs are present.

The first annual surveys and plant eradication will occur prior to construction of the golf course. Prior to the implementation of the RAP or construction of the golf course, 0.15 acre of riparian scrub and 0.12 acre of Venturan coastal sage scrub will be created in Eagle Canyon (see attached Site Plan).

Raccoons and Opossums

Surveys for raccoons and opossums will be conducted annually in the summer or fall. These species will be trapped and removed as allowed by local and state authorities.

Revegetation

The riparian seed mix, as described in the BELP, will be used in those areas of Eagle Canyon where non-native species were removed. The installation, monitoring and success criteria for these areas will be conducted in accordance with the BELP.

Trash Removal

Eagle Canyon will be monitored on a quarterly basis for the presence of trash, which currently gets washed down Eagle Canyon during storm events from upstream properties. All trash will be removed by hand from Eagle Canyon during the quarterly surveys.

Wetlands Creation Onsite

In order to mitigate for implementation of the RAP impacts to 0.26 acre of recently-created, isolated, manmade wetlands and for project construction impacts to 0.4 acre of ephemeral and intermittent stream channels onsite (as permitted by the Corps and County), considered

potential dispersal habitat for the California red-legged frog, CPH will create 1.15 acres of southern willow scrub in several intermittent drainages onsite, including Tomate Canyon (see attached Site Plan). The 1.15 acres of southern willow scrub will be installed in accordance with the BELP no later than the fall immediately following implementation of the RAP and completion of golf course construction. The creation, installation, monitoring and success criteria are described in the BELP and are approved by the Corps, the Service and the County. CPH has assured funding of this mitigation, as described in *Section 10.0*, in the amount of $180,941.20 which includes costs associated with monitoring the wetlands creation. Costs associated with the construction, installation and maintenance of the wetlands creation are included in *Tables 8, 9 and 10*. CPH will place conservation easements preserving in perpetuity 0.83 acre in the vernal pool area, 3.03 acres in several intermittent drainages, including Tomate Canyon, north of the railroad, 1.21 acres in Drainage 4 North, and 2.46 acres in Eagle Canyon south of the railroad, as provided on the Site Plan. Prior to initiation of the RAP or any construction on the golf course, the conservation easements, including the designated easement holder, a Management Plan, and endowment providing for protection and management in perpetuity shall be approved in writing by the Service and recorded.

SECTION 8.0
ADAPTIVE MANAGEMENT AND MONITORING MEASURES

Measures have been included in the HCP to avoid and minimize project impacts to the extent feasible, but some modifications to the measures or addition of other measures (such as newly developed methods to protect species) may be necessary to ensure maximum protection of listed species. Consequently, CPH and ARCO will perform regular checks during and after implementation of those measures to determine their effectiveness and the actual extent of project impacts. Monitoring and reporting are described below in *Sections 8.1 and 8.2.* Funding assurances for monitoring and management responsibilities described in this Section are set forth in *Section 10.*

8.1 Adaptive Management and Monitoring

Monitoring will be necessary to (1) ensure that the avoidance, minimization and mitigation measures are implemented and (2) determine the effectiveness of the measures. Field monitoring for this HCP is required primarily during and immediately following project construction in order to insure that no take occurs. This includes monitoring by the Service-approved biologist of remediation areas and construction areas prior to and during remediation and construction activities (*i.e.*, monitoring of construction activities in Eagle Canyon associated with installation of the water pipelines and public access trail [lateral and vertical access]); relocating any California red-legged frogs found in the work area; monitoring by the Service-approved biologist of sediment and erosion control measures prior to and after storm events; monitoring by golf course personnel immediately prior to and during mowing of the roughs; monitoring by a qualified biologist of wetlands mitigation and revegetation areas until revegetation success criteria are met; and monitoring by a qualified biologist of disturbed areas for vegetation growth and erosion until revegetation success criteria are met. The duties and responsibilities of the monitors are described in more detail below.

8.1.1 Implementation of the RAP

All observations of California red-legged frogs, including any take, made during remediation activities will include (at a minimum) number of individuals, location, size (approximate), date and time, and behavior. The information will be summarized and provided to the Service in the final monitoring report (see *Section 8.2*). Survey results will include the number of California red-legged frogs relocated and the location where each was released. If a California red-legged frog is taken, ARCO will evaluate the cause of take and respond with

adaptive management measures such as doubling the number of monitors, altering the time of day that work is initiated, holding additional worker education training sessions and removing vegetation by hand.

8.1.2 Golf Course Construction

All observations of California red-legged frogs and tidewater gobies, including any take, made during construction will include (at a minimum) number of individuals, location, size (approximate), date and time, and behavior. The information will be summarized and provided to the Service in the final monitoring report (see *Section 8.2*). Survey results for tidewater goby will be included as well as the number of California red-legged frogs relocated and the location where each was released. If take of a California red-legged frog occurs, CPH will evaluate the cause of take and respond with adaptive management measures such as doubling the number of monitors, altering the time of day that work is initiated, holding additional worker education training sessions and removing vegetation by hand.

A water sampling program will be implemented in Eagle Canyon, Drainage 4 North and Tomate Canyon during golf course construction, following each rain event. Impacts of erosion and sedimentation to water quality will be measured using turbidity. Sampling locations include Eagle Canyon at the northern property line, north of the railroad and in the lagoon at the mouth of Eagle Canyon; Drainage 4 North at the northern property line and north of the railroad; and Tomate Canyon at the northern property line, north of the railroad and at the mouth of the creek. CPH will maintain water quality levels for turbidity below EPA aquatic life suspended solids and turbidity standards: the compensation point for photosynthesis should not be reduced by more than 10 percent of the seasonally established norm.

If tests reveal that the turbidity threshold is exceeded, project construction shall cease until the turbidity is reduced below the thresholds and the sediment and erosion plan will be modified (*e.g.*, additional sandbags, silt fencing, straw bales) in order to maintain turbidity levels below the thresholds.

In accordance with the BELP (Table C), the wetlands revegetation areas (see attached Site Plan) will be monitored annually to determine if the areas are meeting the success criteria (*i.e.*, 75 percent or greater cover within two years and 80 percent or greater cover within five years) required by the County. If the success criteria are not met in any given year, additional treatments (*i.e.*, hydroseeding, planting, etc.) will be conducted. At such time as the success

criteria are met (probably after three to five years), the annual monitoring will be discontinued.

8.1.3 Golf Course Operation

During project operations, monitoring will entail daily (when maintenance activities involving equipment are to occur) checks for California red-legged frogs in the playing areas of the golf course to insure that no take occurs. These checks will be conducted in the morning by maintenance personnel trained in identification of California red-legged frogs and will be part of their regular checks for trash and grass health, and mowing. If any California red-legged frogs are found, a Service-approved biologist or trained designated employee (whose name and qualifications have been submitted to the Service) will be called in immediately to verify that the animal is a California red-legged frog and to relocate the frog. All sightings of California red-legged frogs on the golf course, including any incidents where take occurs, will be recorded in a permanent log for the project. If a California red-legged frog is taken as a result of golf course operations, then CPH will evaluate the cause of take and respond with adaptive management measures such as holding additional training sessions for golf course maintenance staff, implementing additional restrictions on mowing and other maintenance activity frequency and time of day, installing a wall around the water storage lake, posting signs along the golf cart paths regarding the presence of the California red-legged frog and installing speed bumps along cart paths.

Surveys will be conducted in the fall (September and October) of each year to determine the number of California red-legged frogs present in Eagle Canyon between the railroad tracks and the ocean. These surveys will use a standardized format of searching the habitat for one hour at night (this will be sufficient time based on the size of the area). The surveys will be conducted on four different nights at least three days apart for the California red-legged frogs. Surveys will be conducted for tidewater gobies in Eagle Canyon in the fall (September through November) after the main part of the breeding season is over and before the winter rains begin. The surveys will include a visual search by wading from the creek mouth to the railroad culvert followed by two seine hauls near the creek mouth and two hauls at the head of the lagoon using a 10-foot long minnow seine with 1/8-inch mesh. The fish captured will be counted and released. The approximate proportion of adults and juveniles (young-of-the-year) captured will be recorded as well for the tidewater goby. This monitoring will verify whether California red-legged frogs and tidewater gobies continue to use this habitat and will be used to identify trends in use that may help in evaluating the importance of this habitat

for the species. These data will also be evaluated to determine if changes in abundance of California red-legged frog and tidewater goby have occurred, and if so, to determine if changed circumstances (as described below in *Section 9.1*) have occurred.

To insure that surface water quality is not degraded, a water quality testing program (see *Section 3.1.1 and Table 3*) will be implemented in Eagle Canyon, Tomate Canyon, Drainage 4 North, the vernal pool and the reclaimed water storage lake on a regular basis to ensure that no adverse water quality impacts result from irrigation and chemical use within the golf course. Water quality testing data will be entered into a database to be kept onsite, summarized at the end of each rainy season, and compared to previous years' data. Surface water sampling and testing will be conducted by a third-party designee, in accordance with the terms of the draft ATMIPM. Samples will be taken from locations designated by the Service and County of Santa Barbara Department of Planning and Development (P&D) (see attached Site Plan). Surface water quality monitoring will be performed for the first two years of golf course operation. For Tomate Canyon, Drainage 4 North and Eagle Canyon, if tests reveal that levels of nitrites, nitrates and phosphates are greater than the EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts ppm, or if pH levels are less than 6.0 or greater than 9.0 operation of the golf course shall be modified in accordance with the draft ATMIPM until testing shows no adverse impacts. EPA standards for aquatic life for nitrite nitrogen is 5 mg/L and for nitrate nitrogen is 90 mg/L. For the vernal pool and the water storage lake, if tests reveal that levels of nitrites, nitrates and phosphates are greater than the EPA standards for aquatic life, if dissolved oxygen levels are less than 5 ppm, or if pH levels are less than 6.0 or greater than 9.0, operation of the golf course shall be modified in accordance with the draft ATMIPM until testing shows no adverse impacts. Testing will be conducted monthly at first creek flush and until flow ceases; sediment testing will be conducted quarterly. Surface water quality sampling frequency may be reduced to a bi-monthly basis (once every two months) if after two years it is determined by CPH that no adverse impacts (*i.e.*, no evidence of background levels being exceeded) are occurring, and if approved by the Service and P&D. Testing may be further reduced (less frequent than bi-monthly) if approved in writing by the Service and P&D. Sediment sampling frequency may be reduced to a semi-annual basis (twice a year) if after two years it is determined by CPH that no adverse impacts (*i.e.*, no evidence of background levels being exceeded) are occurring, and if approved in writing by the Service. Sampling frequency may be further reduced if approved in writing by the Service. Sampling frequency may only be reduced if there are no changes in chemical application methods and amounts.

In addition, CPH will implement an exotic species removal program, including implementing a bullfrog monitoring and removal program for the reclaimed water storage lake (see *Section 6.1.4*). Any bullfrogs found on the site will be removed. Any mosquitofish or other exotic aquatic species detrimental to California red-legged frogs will be removed from the water storage lake.

8.1.4 Eastern Lateral and Vertical Public Access Operation in Eagle Canyon

In order to insure that riparian habitat is preserved in Eagle Canyon, quarterly surveys (of two days each) will be conducted to see if people are staying on designated trails and if trail closures are being obeyed for the first two years after the project begins operation. The surveys will be conducted on clear days with no rain or fog. If people are not staying on the trails, the amount of habitat trampling will be recorded. This monitoring will be reduced to once a year if people appear to be staying on trails and obeying closures. This monitoring may be further reduced upon written approval by the Service. If one person using the eastern vertical access trail is observed leaving the trail or beach to enter Eagle Canyon, CPH will apply to the California Coastal Commission for an emergency permit to close the eastern vertical access from November 1 to May 1 instead of February 1 to May 1 as required by the RAIP. The California Coastal Commission may, however, deny the emergency permit at the Commission's discretion. CPH will also double the number of signs along the public access trail and at the mouth of Eagle Canyon.

In addition, CPH will implement an exotic species removal program, including implementing a bullfrog monitoring and removal program for Eagle Canyon (see *Section 7.0*). Any bullfrogs found on the site will be removed. Any mosquitofish or other exotic aquatic species detrimental to California red-legged frogs or tidewater gobies observed in Eagle Canyon will be removed. CPH will also implement a removal plan for exotic plant species in Eagle Canyon.

8.1.5 General Adaptive Management

In addition to the specific monitoring programs and adaptive management responses described above, adaptive management will also be conducted as a general, ongoing response to monitoring results and additional scientific information relevant to the covered species.

Records, monitoring and reports described in *Section 8.1* will be reviewed each year to determine if the project goals are being met.

Based on these evaluations, CPH may revise the avoidance and minimization measures related to operation of the golf course to improve their effectiveness, and new measures or procedures may be added as appropriate. This monitoring, evaluation and refinement will continue over the life of the project to ensure that the protection measures are working as planned. The adaptive management measures described in this section involve revisions of the ongoing management plan, and costs of revised or new measures are limited to a contingency fund provided by CPH and described in *Section 10.*

8.2 Reporting

Dead or Injured Listed Species

Upon discovery of any dead or injured listed species within the project boundaries, the following procedures will be followed:

- Notification by telephone or FAX to the Service within 24 hours of the discovery. If injured animals are found, directions on how to handle the animals and what to do with them will be obtained from the Service.

- Provide a written report to the Service within three (3) working days that describes

  - Location of injured or dead individual
  - Species and number of individuals
  - Apparent cause of injury or death
  - Circumstances of injury or death, if known
  - Nature of injuries and status of the individuals
  - Disposition of any remains (obtain from the Service information on how and where to dispose of dead animal remains).

Construction Monitoring Reports

During construction, reports summarizing the measures implemented for protection of the species covered in this HCP, describing the effectiveness of these measures, and documenting

all observations of those species will be prepared from the daily environmental monitoring logs and field notes of the qualified biologist(s) and/or designated monitor(s). These reports will be submitted to the Service at approximately monthly intervals or at the end of specific construction activities in or near Eagle Canyon that take less than two months to complete. As noted above, any dead or injured listed species will be reported to the Service immediately. A final construction monitoring report will be prepared within six months after construction is complete. This report will summarize the monitoring activities performed, discuss the effectiveness of the required environmental protection measures, and give recommendations on how to improve the protection measures.

Annual Reports

Annual reports will be prepared and submitted to the Service by 1 January each year to evaluate compliance with the HCP and to determine if the goals and objectives of the HCP are being met. These reports will include:

- Objectives of the monitoring program
- Effects of the HCP on covered species and/or habitats
- Location of sampling/monitoring sites (*e.g.,* project work sites)
- Data collection methods
- Timing (dates), duration, and frequency of observations
- Results of the water and sediment sampling
- Data analysis (as appropriate) and by whom
- Evaluation of progress in meeting the goals and objectives of the HCP as well as terms and conditions of the Permits

Recommendations to Improve Compliance

If, after 10 years, the goals and objectives are being met, reporting can be decreased to every five years, with approval from the Service. Any changes in circumstances that increase the

potential for take of listed species will be evaluated (see Section 8) and the monitoring adjusted as needed to ensure compliance with the HCP.

Water and Sediment Sampling Monitoring Reports

The water and sediment sampling results shall be provided to the Service in the Annual Report. However, if testing shows that background chemical levels have been exceeded, the Service shall be notified by fax and by telephone within five days after CPH receives the results.

SECTION 9.0
CHANGED/UNFORESEEN CIRCUMSTANCES

Section 10 regulations [50 CFR 17.22 (b)(2)(iii)] require that an HCP specify the procedures to be used for dealing with changed and unforeseen circumstances that may arise during the implementation of the HCP. In addition, the Habitat Conservation Plan Assurances (No Surprises) Rule [50 CFR 17.22 (b)(5) and (6): 63 FR 8859] defines changed and unforeseen circumstances and describes the obligations of the Permittee and the Service. The purpose of the Assurances Rule is to provide assurances to non-Federal landowners participating in habitat conservation planning under the Act that no additional land or water restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the Permittee.

9.1 Changed Circumstances

Changed circumstances are defined as changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the Service and that can be planned for (*e.g.*, the listing of a new species, or a fire, or other natural catastrophic event in areas prone to such an event). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were provided for in the plan's operating conservation program (*e.g.*, the conservation management activities or mitigation measures expressly agreed to in the HCP or IA), then the Permittee will implement those measures as specified in the plan. However, if additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, the Service will not require these additional measures absent the consent of the Permittee, provided that the HCP is being "properly implemented" (properly implemented means the commitments and the provisions of the HCP and the IA have been or are being fully implemented).

Other changed circumstances include natural disasters (*e.g.,* floods, fire, and drought), accidents not related to the project, changes in land use within the watershed of Eagle Canyon and substantial changes in the abundance of the species covered in this HCP. Examples of accidents not related to the project are fires or spills of hazardous materials. Although location and frequency of such events cannot be predicted, those that have a

reasonable probability to occur in the project area are listed in *Table 5* with measures to address their effects on species covered by this HCP. Additional information on two of the changed circumstances, newly listed species and accidents, is provided in the paragraphs below. In order to fund the responses to potential, anticipated changed circumstances, CPH will submit a letter of credit for $77,330. This will be renewed in the amount of $77,330, adjusted for inflation each year during the permit terms, even if portions of that amount were spent that year. Should a changed circumstance occur that costs more than was estimated in the table below, the applicant will provide the additional funds to respond to the changed circumstance as described.

TABLE 5. ANTICIPATED CHANGED CIRCUMSTANCES

Event	*Location*	*Occurrence*	*Impacts*	*Response*	*Cost*
Fire	Shrublands, grasslands, and woodlands (especially eucalyptus groves): 29 acres of site	10-50 year intervals	Temporary loss of vegetative cover -- <1 yr in grassland, 3-10 yr in shrublands and woodlands; temporary effects on California red-legged frogs and tidewater goby through increased runoff of sediments to Eagle Canyon Creek.	Evaluate burned areas for erosion potential; seed with those native species present before fire as necessary. Implement measures to prevent sedimentation from entering stream channels onsite.	$50,530 ($0.04 per square foot, up to 29 acres).
Drought & Flood	Eagle Canyon Creek	Possibly at 5-10 year intervals	Reduced water in Eagle Canyon Creek in droughts; erosion from high runoff in floods. Changes in distribution and abundance of species such as California red-legged frog and tidewater goby.	Droughts and floods are elements of the dynamic nature of stream channels and tidewater goby and California red-legged frog habitat. No action feasible for droughts; repair erosion on project property caused by floods, with appropriate permits.	$10,000 for erosion repair and permits.
Hazardous Materials Spills	Highway 101 at Eagle Canyon crossing	Potential for 1 or more spills	Pollution of Eagle Canyon Creek could affect California red-legged frog and tidewater goby in lagoon.	Provide access for cleanup crews and assist in cleanup activities.	No additional costs.
Land Use Changes (that could affect species on project site)	Primarily grazing and agricultural lands	Potential for land north of Highway 101, east and west of site	Change of grazing lands to more intensive agriculture, or conversion of grazing or agricultural lands to urban areas could cause loss of habitat for California red-legged frogs in Eagle Canyon.	Provide any notices of such land use changes under the County Zoning Ordinances to the Service.	No additional costs.
Listing of New Species	On or adjacent to the project site	Unknown	Potential impacts resulting from human presence or golf course activities.	Develop avoidance, minimization and mitigation measures as necessary to avoid take.	$12,000 (100 hours at $120 per hour).
Substantial Change in Abundance of Species in HCP	Off site or onsite	Unknown	Potential for project to cause greater impact to species, thereby threatening survival.	Work with the Service to aid species by additional protection measures onsite.	$4,800 (40 hours at $120 per hour).
TOTAL					**$77,330**

If a new species that is not covered by the HCP but that may be affected by activities covered by the HCP is listed under the Act during the term of the Section 10 permits, the Section 10 permits will be re-evaluated by the Service and the HCP covered activities may be modified, as necessary, to insure that the activities covered under the HCP are not likely to result in take of any newly-listed species. In addition, if any currently-listed species that is not covered by the HCP but is discovered to be at risk of taking by project activities covered by the HCP, the Section 10 permits will be re-evaluated by the Service and the HCP covered activities may be modified, as necessary, to insure that the activities covered under the HCP are not likely to result in take of any currently-listed species. The Permittee shall implement the modifications to the HCP-covered activities identified by the Service as necessary to avoid the likelihood of take of the newly-listed species. The Permittee shall continue to implement such modifications until such time as the Permittee has applied for and the Service has approved an amendment of the Section 10 permits, in accordance with applicable statutory and regulatory requirements, to cover the newly-listed species or until the Service notifies the Permittee in writing that the modifications to the HCP-covered activities are no longer required to avoid the likelihood of take of the newly-listed species.

Project-Related Accidents

Accidents that could occur during construction include failure of erosion and sediment control measures during storm runoff events. Failure of sediment control measures could allow sediments to enter Eagle Canyon. Since this would be during storm events and construction would be at least 200 feet from the creek in Eagle Canyon, impacts to any California red-legged frogs or tidewater gobies would be minimal because the amount of sediment would only be a fraction of that being carried in the stream and because the high creek flow would flush the sediment out of the creek to the ocean.

Monitoring Associated with Project-Related Accidents

Whenever an accident occurs as a result of construction or operation of the project that has the potential to affect listed species, the Service shall be notified immediately (within 12 hours) by phone or FAX. This initial contact will include discussion of apparent impact and acceptable measures to prevent further impact while the problem is being addressed. Within three (3) days of the accident, CPH shall submit a written report describing the accident and effects on species or their habitat, measures taken to prevent further impact, cleanup measures implemented, and planned or proposed mitigation measures to repair or offset habitat damage. Any plans for remediation or repair work in listed species habitat shall be

submitted to the Service for approval prior to performing the work. After the cleanup, pipeline repair, and any other repair work in the species habitat is completed, a report shall be submitted within three (3) weeks to the Service describing what was accomplished and the effectiveness of all protection measures used.

9.2 Unforeseen Circumstances

Unforeseen circumstances are events or changes in circumstances affecting a species or geographical area covered by an HCP that cannot be reasonably anticipated and that result in a substantial and adverse change in the status of the covered species. All reasonably foreseeable changes or events are addressed in Section 8.1; all other changes or events are unforeseen circumstances. In the event that such unforeseen circumstances occur during implementation of the HCP, ARCO or CPH shall immediately notify the Service staff who have functioned as the principal contacts for the proposed action. In determining whether such an event constitutes an unforeseen circumstance, the Service shall consider, but not be limited to, the following factors: size of the current range of the affected species; percentage of range adversely affected by the HCP; percentage of range conserved by the HCP; ecological significance of that portion of the range affected by the HCP; level of knowledge about the affected species and the degree of specificity of the species' conservation program under the HCP; and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

If the Service determines that additional conservation and mitigation measures are necessary to respond to the unforeseen circumstance where the HCP is being properly implemented, the additional measures required of the Permittee must be as close as possible to the terms of the original HCP and must be limited to modifications within any conserved habitat area or to adjustments within lands or waters that are already set-aside in the HCP's operating conservation program. Additional conservation and mitigation measures shall involve the commitment of additional land or financial compensation or restrictions on the use of land or other natural resources otherwise available for development or use under the original terms of the HCP only with the consent of the Permittee.

9.3 Amendment Procedures

9.3.1 Amendments to the Permit

During the specified permit period, amendment of the Section 10(a)(1)(B) permits would be required for any of the following changes:

- Significant revision of the permit area boundary;
- The listing under the Act of a new species not currently addressed in this HCP that may be taken by project activities;
- Modification of any important project action or mitigation component under the HCP, including funding, that may significantly affect authorized take levels, effects of the project, or the nature or scope of the mitigation program; or
- Any other modification of the project likely to result in significant adverse effects to the California red-legged frog or tidewater goby not addressed in the original HCP and permit application.

9.3.2 Amendments to the HCP

This HCP may, under certain circumstances, be amended without amending its associated permit, provided that such amendments are of a minor or technical nature and that the effect on the species involved and the levels of take resulting from the amendment does not exceed that described in the original HCP.

To amend the HCP without amending the permit, the Permittee must submit to the Service in writing a description of the proposed amendment, an explanation of why the amendment is necessary or desirable, and an explanation of why the effects of the proposed amendment are believed not to be significantly different from those described in the original HCP. If the Service concurs with the amendment proposal, it shall authorize the HCP amendment in writing, and the amendment shall be considered effective upon the date of the Service's written authorization.

9.3.3 Permit Renewal

Upon expiration, the ARCO and CPH Section 10 (a)(1)(B) permits may be renewed, if necessary, and that biological circumstances and other pertinent factors affecting the California red-legged frog or tidewater goby at the site are not significantly different than those described in the original HCP. At least thirty (30) days prior to the expiration of either permit, ARCO or CPH shall submit to the Service, in writing:

- A request to renew the permit;
- Reference to the original permit number;
- Certification that all statements and information provided in the original HCP and permit application, together with any approved HCP amendments, are still true and correct, or inclusion of a list of changes.
- A description of what take has occurred under the existing permit; and
- A description of what portions of the project are still to be completed, if applicable, or what activities under the original permit the renewal is intended to cover.

SECTION 10.0
FUNDING

10.1 Implementation of the RAP

In order to fund the biological monitoring proposed as elements of this CPH during implementation of the RAP, ARCO will post a bond for $4,080. *Table 6* below provides additional detail regarding biological monitoring.

TABLE 6. IMPLEMENTATION OF THE RAP COSTS FOR MONITORING

Activity	*Frequency*	*Person-hours*	*Cost*
Training for construction personnel	Once	4	$480
California red-legged frog surveys prior to remediation	Once	8	$960
California red-legged frog surveys during remediation	Daily for two weeks	20	$2,400
Reporting	Once	2	$240
TOTAL		34	$4,080

10.2 Implementation of the Golf Course

CPH is required by the County to post bonds for erosion control measures prior to issuance of a grading permit. CPH is also financially responsible for implementing the County's EQAP. The County selected a consultant, Storrer Environmental Services, Inc., to implement the EQAP for a fee of $180,941.20. As required by the County, CPH has paid one-fourth ($45,235.30) of the estimated fee. Upon implementation of the proposed project, the balance of the fee will be paid in semi-annual installments (every six months). The installation costs associated with the creation of 1.15 acres of wetlands monitoring until the wetlands meet the success criteria as described in the BELP, have been calculated and are included in the $180,941.20 EQAP fee. The EQAP fee will also provide for most of the monitoring in accordance with the above avoidance and mitigation measures in *Sections 6.1.1 and 6.1.3*, with the exception of monthly reporting, training for construction personnel, night surveys for California red-legged frogs during golf cart path construction, day and night surveys for each stream crossing during construction, and water quality testing for turbidity due to erosion and sediment. The cost for these additional requirements is estimated to be $18,960. CPH

will post a bond for this amount prior to construction. *Table 7* below provides additional detail regarding construction monitoring not covered by the EQAP.

TABLE 7. CONSTRUCTION COSTS FOR MONITORING

Activity	*Frequency*	*Person-hours*	*Cost*
Training for construction personnel	Once	4	$480
Night California red-legged frog surveys during golf cart path construction	Nightly for two weeks	40	$4,800
Day and night California red-legged frog surveys for each stream crossing	Two days and two nights for each stream crossing	60	$7,200
Water quality testing for turbidity due to erosion and sediment	After each rain event	30	$3,600
Monthly Reporting	Monthly	24	$2,880
Total			$18,960

In order to fund the biological monitoring proposed as elements of this HCP after project construction (*Sections 6.1.4 and 6.1.5*), CPH will post a bond for $313,822 prior to construction to cover monitoring costs for years 1 through 5 (*Tables 8, 9 and 10*), the amount to be adjusted annually for inflation per the Consumer Price Index (CPI) for urban, wage earners and clerical workers, Los Angeles-Riverside-Orange County, published by the Bureau of Labor Statistics, U.S. Department of Labor, or its successor. For years 6 through 25, CPH will provide a letter of credit for $58,862 prior to construction. This letter of credit will remain in effect for the permit term and will include language that will ensure that the letter of credit remains in effect should the permit be abandoned or revoked during the pendency of the permit term. This amount is based upon a determination by the Service of the items in *Table 11* which it considers imperative to be performed if CPH is no longer operating the golf course and the Service must evaluate the effects of golf course construction. If, during the permit term, CPH uses any of the amount in the letter of credit to fund the monitoring activities listed in *Table 11*, CPH must immediately replenish the amount taken. The amount of $58,862 would be more than adequate to cover the costs outlined in *Table 11* ($33,282) and would be sufficient to cover the costs for the following items determined by the Service to be imperative to be performed if CPH ceases to operate the golf course:

TABLE 8. OPERATIONS COSTS FOR MONITORING AND RESPONSES FOR YEAR 1

Activity	Frequency	Person-hours per year	Cost per year
California red-legged frog and bullfrog surveys in water storage lake	Annually; 2 days and 2 nights.	12	$1,360
California red-legged frog, tidewater goby and non-native aquatic species surveys in Eagle Canyon Creek	Annually	24	$2,520
Southern willow scrub site work and construction	Once	$0.29 per square foot (50,000 sf)	$14,500
Southern willow scrub irrigation system	Once	$0.35 per square foot (50,000 sf)	$17,500
Southern willow scrub plant installation	Once	$0.24 per square foot (50,000 sf); 240 salvaged cuttings@$2; 480 new cuttings@$4	$12,720
Southern willow scrub maintenance	Annually for five years	$0.25 per square foot (50,000 sf)/five years	$2,500
Coastal sage scrub site work and construction	Once	$0.25 per square foot (5,227 sf)	$1,310
Coastal sage scrub irrigation system	Once	$0.28 per square foot (5,227 sf)	$1,460
Coastal sage scrub plant installation	Once	$0.15 per square foot (5,227 sf)	$780
Coastal sage scrub maintenance	Annually for five years	$0.12 per square foot (5,227 sf)/five years	$630
Non-native plant surveys in Eagle Canyon	3 times per year for five years	18	$1,440
Non-native plant removal in Eagle Canyon	3 times per year for five years	70 (40hr@$10, 30hr @$15)	$850
Native plantings to replace non-native species removed in Eagle Canyon	3 times per year for five years	20	$300
Revegetation monitoring	3 times per year for five years	27	$2,160
Non-native aquatic species removal	Whenever found	32	$3,360
Monitoring and removal of raccoons and opossums	Once	16	$1,920
Surface water quality and sediment testing for all acute and chronic toxicity, nitrites, nitrates, phosphates, dissolved oxygen and pH	Baseline then monthly for water quality and quarterly for sediment	By fee	$12,240
Surface water testing for chemicals used within the buffer areas as required by the final ATMIPM	6 chemicals in five applications for fairways, tees & roughs; 5 chemicals in five applications for greens	By fee	$27,880
Training golf course personnel about California red-legged frog	Annually	3	$320
Access to beach monitoring	Quarterly for 2 years	8	$640
Installation of signs, gates and fencing	Once	16	$1,500
Reporting	Annually	20	$2,600
Total			$110,970

TABLE 9. OPERATIONS COSTS FOR MONITORING AND RESPONSES FOR YEARS 2 AND 3

Activity	Frequency	Person-hours per year	Cost per year
California red-legged frog and bullfrog surveys in water storage lake	Annually; 2 days and 2 nights.	12	$1,360
California red-legged frog, tidewater goby and non-native aquatic species surveys in Eagle Canyon Creek	Annually	24	$2,520
Southern willow scrub maintenance	Annually for five years	$0.25 per square foot (50,000 sf)/five years	$2,500
Coastal sage scrub maintenance and monitoring	Annually for five years	$0.38 per square foot (5,227 sf)/five years	$1,990
Non-native plant surveys in Eagle Canyon	3 times per year for five years	18	$1,440
Non-native plant removal	3 times per year for five years	70 (40hr@$10, 30hr @$15)	$850
Native plantings to replace non-native species removed	3 times per year for five years	20	$300
Non-native aquatic species removal	Whenever found	32	$3,360
Monitoring and removal of raccoons and opossums	Once	16	$1,920
Revegetation monitoring	3 times per year for five years	27	$2,160
Surface water quality and sediment testing for all acute and chronic toxicity, nitrites, nitrates, phosphates, dissolved oxygen and pH	Monthly for water quality and quarterly for sediment	By fee	$10,740
Surface water testing for chemicals used within the buffer areas as required by the final ATMIPM	6 chemicals in five applications for fairways, tees & roughs; 5 chemicals in five applications for greens	By fee	$26,184
Training golf course personnel about California red-legged frog	Annually	3	$320
Access to beach monitoring	Annually	8	$640
Installation of additional signs and speed bumps on cart paths	Annually or as necessary	8	$500
Reporting	Annually	20	$2,600
Total			$58,904

TABLE 10. OPERATIONS COSTS FOR MONITORING AND RESPONSES FOR YEARS 4 AND 5

Activity	Frequency	Person-hours per year	Cost per year
California red-legged frog and bullfrog surveys in water storage lake	Annually; 2 days and 2 nights.	12	$1,360
California red-legged frog, tidewater goby and non-native aquatic species surveys in Eagle Canyon Creek	Annually	24	$2,520
Southern willow scrub maintenance	Annually for five years	$0.25 per square foot (50,000 sf)/five years	$2,500
Coastal sage scrub maintenance and monitoring	Annually for five years	$0.38 per square foot (5,227 sf)/five years	$1,990
Non-native plant surveys in Eagle Canyon	3 times per year for five years	18	$1,440
Non-native plant removal	3 times per year for five years	70 (40hr@$10, 30hr @$15)	$850
Native plantings to replace non-native species removed	3 times per year for five years	20	$300
Non-native aquatic species removal	Whenever found	32	$3,360
Monitoring and removal of raccoons and opossums	Once	16	$1,920
Revegetation monitoring	3 times per year for five years	27	$2,160
Surface water quality and sediment testing for all acute and chronic toxicity, nitrites, nitrates, phosphates, dissolved oxygen and pH	Monthly for water quality and quarterly for sediment	By fee	$4,890
Surface water testing for chemicals used within the buffer areas as required by the final ATMIPM	6 chemicals in five applications for fairways, tees & roughs; 5 chemicals in five applications for greens	By fee	$15,492
Training golf course personnel about California red-legged frog	Annually	3	$320
Access to beach monitoring	Annually	8	$320
Installation of additional signs and speed bumps on cart paths	Annually or as necessary	8	$500
Reporting	Annually	20	$2,600
Total			$42,522

TABLE 11. OPERATIONS COSTS FOR MONITORING AND RESPONSES FOR YEARS 6 THROUGH 25

Activity	Frequency	Person-hours per year	Cost per year
California red-legged frog and bullfrog surveys in water storage lake	Annually; 2 days and 2 nights.	12	$1,360
California red-legged frog, tidewater goby and non-native aquatic species surveys in Eagle Canyon Creek	Annually	24	$2,520
Non-native aquatic species removal	Whenever found	32	$3,360
Monitoring and removal of raccoons and opossums	Once	16	$1,920
Surface water quality and sediment testing for all acute and chronic toxicity, nitrites, nitrates, phosphates, dissolved oxygen and pH	Monthly for water quality and quarterly for sediment	By fee	$4,890
Surface water testing for chemicals used within the buffer areas as required by the final ATMIPM	6 chemicals in five applications for fairways, tees & roughs; 5 chemicals in five applications for greens	By fee	$15,492
Training golf course personnel about California red-legged frog	Annually	3	$320
Access to beach monitoring	Annually	8	$320
Installation of additional signs and speed bumps on cart paths	Annually or as necessary	8	$500
Reporting	Annually	20	$2,600
Total			$33,282

- California red-legged frog and bullfrog surveys in the water storage lake (five years at $1,360 per year)
- California red-legged frog and tidewater goby and non-native species surveys within Eagle Canyon Creek (five years at $2,520 per year)
- Water quality and sediment testing for acute and chronic toxicity, etc. (one year at $4,890)

- Water quality and sediment testing for other chemicals (one year at $15,492)
- Beach access monitoring (19 years at $320 per year)
- Reporting (five years at $2,600 per year)

In order to fund the biological monitoring and responses associated with anticipated changed circumstances, CPH will submit a letter of credit for $77,330 prior to construction of the golf course (see *Table 5* above). This bond will be renewed annually and the amount will be adjusted annually for inflation per the CPI.

In addition, as part of CPH's reporting requirements, a copy of the proposed annual operating budget shall be submitted each year to the Service, documenting that CPH is adequately providing for funding for each of the requisite activities under the HCP.

In order to provide for maintenance of those areas preserved in perpetuity by the conservation easements, CPH will provide an endowment of $18,825 ($2,500 per acre) to the holder of the easements. This endowment of $8,825 is subject to review and written approval by the holder of the conservation easement. If the easement holder feels this amount is inadequate, CPH will negotiate with the easement holder until a consensus is reached.

All bonds described in this section (*Section 10.2*) will be annually posted by CPH with a condition that the bonds must be renewed each year unless the Service approves the cessation of annual renewals.

SECTION 11.0
ALTERNATIVES

Section 10(a)(2)(A)(iii) of the Endangered Species Act of 1973, as amended, requires that alternatives to the proposed taking of species be considered and reasons why such alternatives are not implemented be discussed. These alternatives are presented below.

11.1 No Action

The No Action alternative involves not constructing the project. This alternative would result in retention of the project site in its present condition, including the informal coastal access by trespass through Eagle Canyon. The golf course and associated facilities, including the coastal access, would not be developed. Thus, the potential for impacts to listed species on the site as a result of the informal access by trespass across the site from Highway 101 would remain unchanged. Moreover, increased development (*e.g.*, Bacara) off site to the east of Eagle Canyon could result in greater impacts to the California red-legged frog and tidewater goby on the site by trespass into Eagle Canyon from foot traffic along the beach. It is estimated that trespassers through Eagle Canyon could take five California red-legged frogs and five tidewater gobies per ten years as a result of trampling, harassment or capture in the absence of a managed access program. It is estimated that trespassers over the remainder of the project site could take one California red-legged frogs per ten years as a result of trampling, harassment or capture in the absence of a managed access program.

11.2 Reduced Take

Several alternatives for constructing the project were addressed in the FEIR. These included a reduced scale project and use of two alternative sites (Naples and Patterson). The reduced scale project involved elimination of the par-three course adjacent to Eagle Canyon but still included the coastal access. This alternative would have about the same potential for take of listed species as the proposed action. Impacts of alternative sites are discussed below.

11.3 Alternative Sites

Construction of the golf links at either of the alternative sites addressed in the FEIR would eliminate the potential for impacts at the proposed site but would generally have similar impacts for most environmental resources at the alternative sites, including the potential for impacts on listed species. The Naples site is located just west of the proposed site and is near

Dos Pueblos Creek, a potential steelhead trout stream. The Santa Barbara Museum of Natural History has no confirmed records for the presence of California red-legged frogs in this stream (probably due to lack of surveys), although the species may be present because suitable California red-legged frog habitat is present. Impacts on traffic and agricultural resources would be less than for the proposed project site. The Patterson site is adjacent to Atascadero Creek, a tributary to Goleta Slough, that historically has been used by steelhead trout. Upstream barriers, however, may have eliminated access to upstream spawning areas in this stream and its tributary, Maria Ygnacia Creek. Impacts on biological resources, traffic, and aesthetics would be less than for the proposed project and fire protection would be improved. However, the Patterson site is an existing agricultural operation of long-standing with prime soils. Existing policies and Board of Supervisors' decisions concerning the Goleta Community would prohibit the conversion of the site from agriculture. Use of the Naples site would be unlikely to reduce the potential for take of listed species while the Patterson site could possibly reduce that potential, but conversion of the site would not be permitted. Construction of the project at an alternative site, thus, does not appear to be a viable or feasible method to reduce the potential for take of listed species.

11.4 No Eastern Vertical Access Alternative

Construction and operation of the Dos Pueblos Golf Links project without vertical access in or near Eagle Canyon would eliminate the potential for take of California red-legged frogs and tidewater gobies that could occur as a result of such access (anticipated take of one California red-legged frog and one tidewater goby per ten years). The lateral access trail, however, would still be constructed on the site to Eagle Canyon Creek, although it would be blocked from use east of the view point until the eastward continuation of that trail is constructed. In addition, access to Eagle Canyon via the beach, from both the east and west, would continue when tides are low enough for such access. In the absence of a managed access program, informal access to Eagle Canyon (south of U.S. Highway 101) from foot traffic along the beach could result in greater impacts to the California red-legged frog and tidewater goby in Eagle Canyon due to increased development off site. It is estimated that trespassers through Eagle Canyon could take five California red-legged frogs and five tidewater gobies per ten years as a result of trampling, harassment or capture in the absence of a managed access program.

The County and California Coastal Commission both approved the previous Dos Pueblos Golf Links project with the eastern vertical access. If the California Coastal Commission

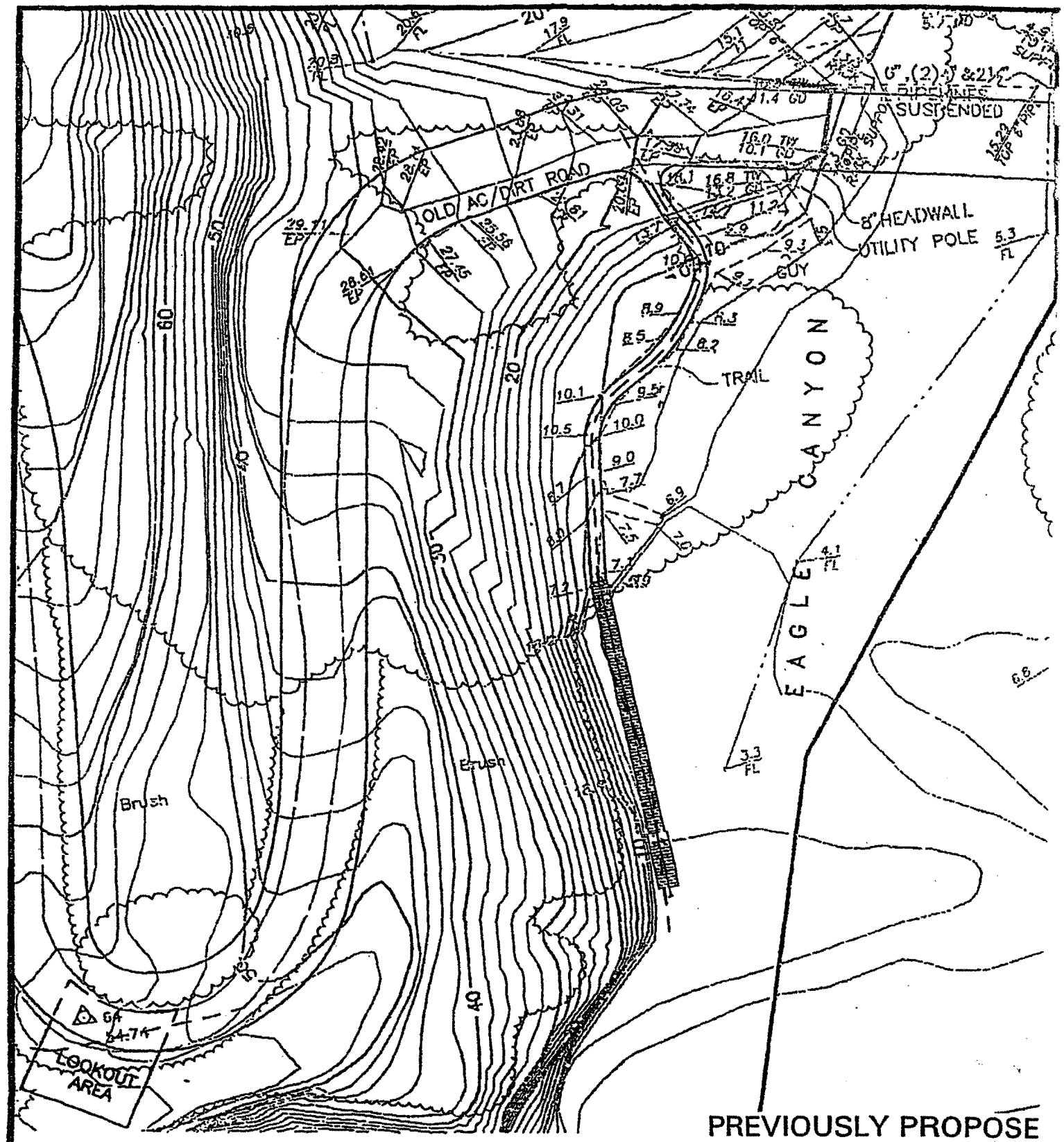
were to require this access as a condition of their approval, this alternative would not be feasible.

11.5 Eastern Vertical Access Within Eagle Canyon Alternative

Construction of the eastern vertical access within the interior of Eagle Canyon, as originally approved by the County and California Coastal Commission, would directly impact the habitat of tidewater goby and the breeding habitat of California red-legged frog (see *Figure 5*). This alternative has the same anticipated take for the California red-legged frog during implementation of the RAP, construction of the golf course, operation of the golf course and operation of the lateral and western vertical public access trails as does the Preferred Alternative. This alternative, however, would result in greater take of California red-legged frogs and tidewater goby in Eagle Canyon during construction than would the preferred alternative. It is estimated that construction of the eastern vertical access trail within the interior of Eagle Canyon could take two California red-legged frogs and five tidewater gobies as a result of crushing or trampling. After consultation with the Service and the California Coastal Commission, this alternative was rejected and the eastern vertical access was relocated to the beach at the mouth of Eagle Canyon.

11.6 Preferred Alternative

Construction and operation of the Preferred Alternative could result in take of up to six California red-legged frogs per ten years and one tidewater goby per ten years (see *Section 5.4*). The anticipated take for the Preferred Alternative is less than that of the No Action Alternative, the No Eastern Vertical Access Alternative and the Eastern Vertical Access within Eagle Canyon Alternative. After consultation with the Service and the California Coastal Commission, the Eastern Vertical Access within Eagle Canyon Alternative was rejected and the eastern vertical access was relocated to the beach at the mouth of Eagle Canyon. In addition, this alternative provides for a managed public access program. The anticipated take for the Preferred Alternative is the same for that of the Reduced Project Alternative. Regarding the Alternative Sites, the Preferred Alternative would result in approximately the same level of take as the Naples Site and in less take than the Patterson site. Conversion of the Patterson site, however, would not be permitted due to the active agricultural uses of the prime soils. For these reasons, the proposed project is the Preferred Alternative.



Penfield & Smith
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12825.06 12825ex6 SCALE: 1"=40'

FIGURE 5

SECTION 12.0
REFERENCES

Bent, A. C. 1928. Life histories of North American shorebirds, Part Two. Dover Publications, New York. (Unabridged and unaltered republication of work first published in 1928 by the U.S. Government Printing Office as Smithsonian Institution U.S. National Museum Bulletin 146).

Bowland & Associates. 1999. Letter to Mr. Chuck Damm, California Coastal Commission dated 1 February.

Bulger, J.B. 1999. Terrestrial Activity and Conservation of California Red-legged Frogs (*Rana aurora draytonii*) in Forested Habitats of Santa Cruz County, California. Prepared for Land Trust of Santa Cruz County. 37 pp.

Dudek & Associates, Inc. 1998. Pre-Construction Notification for Nationwide Permits 25, 26, and 33. Submitted to U.S. Army Corps of Engineers on 13 October 1998.

ENSR. 1998. Dos Pueblos Golf Links Remedial Action Plan. Prepared for ARCO.

Fugro-McClelland (West), Inc. 1993. Final Environmental Impact Report for the ARCO Dos Pueblos Golf Links Project. 92-EIR-16, SCH 92041056, Case #91-CP-085.

Garrett, K., and J. Dunn. 1981. Birds of southern California. Status and distribution. Los Angeles Audubon Society.

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Nongame-Heritage Program, California Department of Fish and Game. 156 pp.

Interface Planning and Counseling Corporation. 1992. Wetland Classification and Environmental Analysis for the Dos Pueblos Golf Links.

Irwin, J. F., and D. L. Soltz. 1984. The natural history of the tidewater goby, *Eucyclogobius newberryi*, in the San Antonio and Shuman Creek systems, Santa Barbara County, California. Prepared for U.S. Fish and Wildlife Service, Contract No. 11310-0215.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. Prepared for California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova.

12.0 References

Lafferty, K. D., C. C. Swift, and R. F. Ambrose. 1996. Post-flood persistence of tidewater goby populations. Southern California Academy of Sciences Annual Meeting, May 1996.

12.0 References

Lee, D. S., C. R. Gilbert, C. H. Hocutt, R. E. Jenkins, D. E. McAllister, and J. R. Stauffer, Jr. 1980. Atlas of North American freshwater fishes. North Carolina State Museum of Natural History. 854 pp.

Lehman, P. E. 1994. The birds of Santa Barbara County, California. Vertebrate Museum, University of California, Santa Barbara.

Moyle, P. B. 1976. Inland fishes of California. University of California Press, Berkeley. 405 pp.

National Marine Fisheries Service (NMFS). 1996. Endangered and threatened species: proposed endangered status for five ESUs of steelhead and proposed threatened status for five ESUs of steelhead in Washington, Oregon, Idaho, and California. Federal Register, August 9, 61 (155): 41541-41561.

Science Applications International Corporation (SAIC). 1999a. Sensitive Species Survey Report, January 11-12, 1999. Submitted to DUDEK, January 20.

. 1999b. California Red-legged Frog Report, March 4, 1999. Submitted to DUDEK, March 11.

. 1999c. Memorandum regarding focused surveys for the California Red-legged Frog to DUDEK, 26 April.

Skinner, M. W., and B. M. Pavlik. 1994. Inventory of rare and endangered vascular plants of California. California Native Plant Society. Special Publication No. 1, Fifth Ed.

Small, A. 1994. The birds of California: Their status and distribution. Ibis Publishing Company, Vista, California.

Soil Conservation Service. 1981. Soil survey of Santa Barbara County, California, South Coastal Part. United States Department of Agriculture.

Swift, C. C., J. L. Nelson, C. Maslow, and T. Stein. 1989. Biology and distribution of the tidewater goby, *Eucyclogobius newberryi* (Pisces: Gobiidae) of California. Natural history Museum of Los Angeles County, Contributions in Science 404: 1-19.

Titus, R., D. C. Erman, and W. M. Snider. History and status of steelhead in California coastal drainages south of San Francisco Bay. In press. To be published in *Hilgardia*.

12.0 References

U.S. Fish and Wildlife Service (USFWS). 1992. Proposed rule. Proposed endangered status for the tidewater goby. *Federal Register* 57(239): 58770-58774.

. 1993. Biological opinion for the proposed construction and operation of the coastal aqueduct through Kern, San Luis Obispo, and Santa Barbara counties, California (1-8-93-F-20) with enclosures of the state biological opinion for DWR and the management agreement for CCWA.

. 1994. Final rule. Tidewater goby. *Federal Register* 59: 5498.

. 1996a. Biological opinion for construction of the coastal aqueduct through Kern, San Luis Obispo, and Santa Barbara counties (1-8-96-F-16).

. 1996b. Determination of threatened status for the California red-legged frog. *Federal Register* 61(101): 25813-25833.

. 1997. Guidance on Site Assessment and Field Surveys for California Red-legged Frogs. Appendix, California red-legged frog ecology and distribution. February 18.

. 1999. Proposed Rule. Proposed Rule to Remove the Northern Populations of the Tidewater Goby from the List of Endangered and Threatened Wildlife. *Federal Register* 64 (121): 33816-33825.

U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (Nmfs). 1998. Habitat Conservation Plan Assurances ("No Surprises") Rule. *Federal Register* 63 (35): 8859-8873.

. 1999. Notice of Availability of a Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process. *Federal Register* 64 (45): 11485-11490.

APPENDIX A

Biological Enhancement Landscape Plan

DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

BIOLOGICAL ENHANCEMENT LANDSCAPE PLAN

INCLUDING: EROSION CONTROL PLAN, NATIVE GRASSLAND MITIGATION PLAN, WETLAND MITIGATION PLAN, SENSITIVE PLANT COMMUNITY PLAN, TREE REPLACEMENT PLAN, EXOTIC PLANT CONTROL PLAN, RESOURCE MANAGEMENT PLAN

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BIOLOGICAL ENHANCEMENT LANDSCAPE PLAN

1.0 INTRODUCTION

This plan addresses protection, revegetation, restoration and landscaping of the disturbed graded areas at the Dos Pueblos Golf Links project. Included in the plan are procedures for seeding and planting, maintenance and monitoring, and the revegetation success criteria for hydroseeding and planting trees and shrubs.

2.0 PRE-CONSTRUCTION

2.1 Native Habitat Protection

2.1.1 Fencing

Prior to construction, all sensitive areas to be preserved will be protected through the installation of temporary protective fencing as required by Permit Condition 11. Protected areas shall include undisturbed barrancas, wetlands, riparian areas, and native grasslands. The location of the protective fencing shall be flagged by the Owner's representative and the installation will be monitored by the County's On-site Environmental Coordinator (OEC).

2.1.2 Specimen Trees

Trees to be retained/removed will be verified against the tree inventory map, dated June 1998, and report by the Owner's representative and the OEC for compliance.

A qualified wildlife biologist shall evaluate all dead or diseased trees proposed for removal for use by raptors or other sensitive bird species, if the trees do not block a playing corridor or have pitch canker or other disease. In the event that these trees are used, or appear to have recently been used, as roost or nesting sites by any sensitive bird species, these trees shall not be removed from the project until the nests have been abandoned. Dead trees which are (or become) a safety hazard to humans and/or occupied structures will be removed.

Trees scheduled to be removed, which are close to sensitive habitats or other vegetation which is to remain, will be selectively removed by a specifically

assigned crew using methods normally employed by the trade to remove trees without disturbing adjacent vegetation. These methods entail climbing trees, or using hydraulic lifts ("Buckets") cutting with chainsaws, and lowering large branches with ropes so as not to disturb adjacent vegetation. Willows to be removed will be removed in conformance with Permit Condition 11, i.e. with hand tools only, unless deemed unfeasible by the OEC. Trees will not be bulldozed in areas where other trees are to remain or near sensitive habitats. Trees will be cut into manageable lengths and removed from the site. Stumps will be removed. See Tree Inventory Report (Table B).

Trees to be removed, which are not near sensitive habitats or other vegetation to remain, will be removed by earth moving equipment during the clearing and grubbing, and grading process and removed from the site.

2.1.3 Pond Turtles/Red-Legged Frogs

A survey for western pond turtles and red-legged frogs shall be conducted by an ~~RMD~~ Planning and Development Department (P&D) approved biologist prior to grading and/or construction occurring in or within 50 feet of Tomate Canyon and Drainage 5 during the wet season, when standing water may be present in the drainages (between November 1 and May 1). If turtles are found, construction shall be prohibited within 50 feet of the standing water between November 1 and May 1. If red-legged frogs are found, mitigation measures recommended by a qualified wildlife biologist shall be implemented.

2.2 Clearing, Grading and Spoil Stockpiling

Brush will be cleared using standard equipment. Grading of areas of Class II soils will be conducted in accordance with Permit Condition 55. Topsoil will be stripped and stockpiled for future use where needed. Topsoil will not be placed on graded slopes steeper that 3:1 because it is likely to erode with irrigation or rainfall. Topsoil will be placed in areas from which it originated. Consideration will be given to the compatibility of growth in the area to be stripped with that in the area to be restored. Soil sampling and analysis will be performed to assure compatibility of soils.

Excavated subsoil will be used as fill soil in other locations to establish pad elevations for the various facility sites. Grading will be balanced on site.

Excavated clay soils, appropriate for future use as a clay liner under the lake. will be stockpiled on site for future use. This will be coordinated with the lake designer.

In general, grading will begin in the vicinity of the storage lake. Slope cutting will start at the top of slopes with installation of drainage ditches, where required, and progress down. The grading for the project will be scheduled to most efficiently satisfy: 1) The Permit Conditions, and 2) Best Construction Practices.

2.3 Site Preparation / Weed Eradication

2.3.1 Site Preparation

All areas to be revegetated will be prepared for planting through proper grading of the areas, removal of non-native/exotic vegetation and weed eradication. All areas will initially be cleared and grubbed of all non-native plant and exotic/invasive weed species as indicated on the plans. The areas will then be tilled/disked to a depth of eight inches to turn over soil and break-up compacted conditions. The majority of the areas to be planted will receive a "grow and kill" treatment described in Section 2.3.3.1. The native grassland revegetation area will receive a soil "greenhouse" procedure to help more thoroughly eradicate weeds prior to seeding with the intended native species. Refer to Section 2.3.3.2.

2.3.2 Native Plant Protection

All existing native plant material intended to remain and be preserved onsite will be protected from potential herbicide overspray (with tarps or other screening/ covers) or accidental removal whenever herbicide is to be used throughout the life of the project. See 2.3.4 Herbicide Application. The project biologist will identify. fence. and/or flag areas and isolated species to be protected.

2.3.3 Weed Removal

Weed removal will be conducted during site preparation procedures. prior to installation of plant material and seeding. and during the plant establishment and

long-term maintenance periods. Weedy, invasive, non-native species will be removed at a time of year to avoid soil erosion and when viable weed seeds are not inadvertently scattered over the site (spring, early summer). Weed species to be removed are described in Section 6.0. Weeding after planting will be conducted primarily by hand unless otherwise authorized. The Contractor will remove weed seedlings before weeds become too large for hand removal. Weed removal via mechanical methods such as weed whipping, mowing and/or disking may occur in certain locations, ~~per~~ with approval of the ~~project~~ County EQAP biologist.

2.3.3.1 Grow and Kill Weed Eradication Before Planting

Those areas of the project site to receive revegetation treatments and which will be irrigated will receive a "grow and kill" weed eradication procedure, ideally in Spring, Summer or Fall. This will include thoroughly irrigating the areas with a minimum 1-inch of water no less than one month prior to commencing planting operations. Weed seeds will be allowed to germinate during this period and a glyphosate, contact herbicide spray, such as "Round-Up" for use in non-aquatic conditions, or "Rodeo" for use in aquatic conditions, will be applied to the germinated weed crop. The herbicide treatment will be applied approximately fourteen days (two weeks) after initiation of irrigation, when significant germination of weed seedlings has occurred. The weed seedlings will then be allowed to die and a second (and possibly third, if necessary) round of irrigation, germination and herbicide applications initiated throughout the remainder of the ~~one month~~ eradication period.

2.3.3.2 Soil "Greenhouse" Procedure

The native grassland revegetation area will receive a soil "greenhouse" procedure to help eradicate weed seeds prior to seeding with the intended native species. This method uses clear or opaque plastic sheets, laid on the soil and weighted down. The plastic traps heat and moisture, creating a greenhouse effect that causes seed held in the soil to sprout. The seedlings continue to grow until suffocated under the plastic. This procedure is used to deplete the seed bank within the soil.

Prior to installing the sheeting the soil will be cleared, cultivated and leveled. Then the soil will be wet via water truck or irrigation system if available. The procedure will involve installing a UV stabilized clear or opaque (not black) plastic sheeting of one to four millimeters thick over the prepared/graded soil surface, anchoring the sheeting in place and burying the edges, and leaving the sheeting in place for a six to eight week period. The sheeting should be in contact with the soil surface to the greatest degree possible. All rips, or gaps in the sheeting should be repaired with tape to maintain a sealed condition. After the six to eight week period is complete the sheeting shall be removed and planting procedures can be implemented. The winter months will be avoided, when temperatures may not be high enough to induce germination.

2.3.4 Herbicide Application

The following herbicides will be applied only when necessary: Rodeo, Roundup or Karmex. Application must be done according to label directions, when wind is <5mph, during periods when no rain is expected for at least 6 hours, when there is no standing water present, by hand sprayers directly on the plant which is to be eradicated. None of the herbicides shall be stored, poured, and refilled within sensitive areas. Herbicide use will be monitored by the project Revegetation Specialist, and may be monitored by the County EOAP biologist. These procedures should also be adequate to protect sensitive vegetation onsite.

3.0 SEEDS AND PROPAGULES

3.1 Hydroseed Mixes

The seed mixes established for this project were based on existing plant communities in the immediate area which generally follow geological formations and varying soil conditons. Existing invasive imported weeds such as mustard and thistle were excluded from the hydroseed mixes as were other highly flammable or "fuel loading" plants.Native bunch grasses (Nassella; Melica), will be included in the hydroseed mix. Nassella will also be planted from plugs (See Section 4.4). Seeds will be purchased from reliable seed companies or other qualified contractors. Seed sources will be ~~from the bioregion~~ from individuals

indigenous to the coastal area from the Santa Ynez river to Carpinteria Marsh. ~~unless unavailable~~, and with the exception of non-native species, tovon, succulent lupine, and California poppy. Reference 4.4 for planting information. As part of the seed collection bid, the Contractor shall submit a seed collection schedule showing all species lested in TABLE A, Seed Mixes. Any species whose collection window has passed at time of bidding, will be reseeded the following year.

Table A, Seed Mixes, lists botanical and common seed names, and lbs/acre.

See Section 5.1.2 for Tarplant seed collection.

3.2 Tree and Shrub Propagule Collection

Coast Live Oak (Quercus agrifolia) will be planted from purchased seeds obtained ~~within the bioregion and from container grown stock originating from the bioregion~~ from Eagle Canyon, if feasible; otherwise from coastal drainages between and including Tecalote Canyon and Las Flores Canyon. Acorns for direct planting and propagation shall be collected from as many trees as feasible to maximize genetic variation. Salix spp. (Willow) will be started from cuttings taken on site. Reference Table B, Tree Inventory Report, for quantities and replacement ratios. Ornamental trees and shrubs will be purchased from nurseries.

The following methods will be used to collect propagules (seeds and cuttings):

3.2.1. QUERCUS AGRIFOLIA (Coast Live Oak)

One Coast Live Oak tree will be removed during construction requiring 10 replacement Oaks to be planted at 10:1 ratio. Acorns will be purchased from reliable sources that verify collection from the ~~bioregion~~ area specified above. Acorns will be floated to test for viability. Acorns which float will be discarded. To ensure the best possible success rate for replanting Oak trees, two methods will be used for the acorns. Each method will be used for one half of the total number of trees being replaced.

Method A: One half of the replacement Oaks (5 seedlings) will be planted from acorns placed directly in the ground on a 10:1 basis. This will require the purchase of 50 viable acorns. All acorns will be planted in gopher cages to prevent predation.

Method B: The acorns for the last half of the replacement Oaks (5 seedlings) will be planted directly into 1-gallon and 5-gallon size, long tube containers. These seedlings will be container grown via a contract growing agreement with a native plant nursery for one full year prior to planting in the field. These seedlings will be transplanted to larger, long tube containers as necessary to ensure healthy tap root formations and to guard against root-bound plants. Sufficient quantities of acorns will be grown in containers to ensure 5 healthy container-grown seedlings in the fall following acorn harvest.

Reference Section 4.2 for planting techniques for Methods A and B.

3.2.2. SALIX LASIOPELIS (Arroyo Willow)

22 willows will be removed during construction. Sufficient cuttings will be taken to ensure planting of 110 willows in Riparian areas at a 5:1 ratio.

Willow cuttings shall be taken from the site and directly planted in pre-determined locations, in accordance with the master planting plan. Cuttings shall be collected in the fall, 1998, after the first saturating rainfall (generally by November 15th). Cuttings shall be taken from willows that will be removed. Willow cuttings will be planted within 24 hours. Cuttings will be kept in water or covered with wet burlap, and stored in the shade until planted.

Refer to Section 4.2 for specific planting information.

3.2.3. Ornamental Trees and Shrubs

Healthy non-native trees to be removed will be replaced at a 3:1 ratio. Replacement

trees will be purchased from nurseries. Dead, sick or dying trees to ~~will~~ be removed as per Section 2.1.2 ~~but not~~ will not be mitigated. Shrubs will be purchased in containers from nurseries.

4.0 INSTALLATION

4.1 Hydroseed Mixes

The intent of the hydroseeding effort is to provide surface erosion control and revegetation of disturbed areas. Each area will be hydroseeded as soon as possible after grading and site preparation of the area is completed.

The hydroseeding process consists of mixing a mulching fiber (Silva-Fiber or equal), fertilizer (Gro-Power-Plus), tackifier (Ecology-M-Binder), microbial treatment (MAT-SCI), and the specific seed mix as outlined in Table A, with water in a hydroseeding truck. This mixture will be sprayed over the graded and prepared areas using either the nozzle arm affixed to the truck or using a hose which is carried across the slopes by two to three individuals. The mulching fiber contains a temporary green dye to assist the "operator" in seeing that the hydroseed coverage is adequate on the disturbed areas and to assure even application. The sun bleaches out the color in one to two days.

The hydroseed tank and hose(s) will be rinsed with water prior to arrival on the project site. Seed mix will be added to the mixture of water, binder, fibre, etc., in the tank after arrival on site and immediately prior to application to minimize damage to the seeds. Seed bag tags will be retained by the Project Revegetation Specialist.

A temporary, automatic, above-grade irrigation system utilizing low precipitation sprinkler heads will be installed at the hydroseeded areas.

Irrigation will be initiated 24 to 72 hours after hydroseeding in most areas. These areas will be monitored by the Dos Pueblos Golf Links Revegetation Specialist and the OEC to determine success of germination. Any slopes or disturbed areas which receive hydroseed

but fail to meet success criteria will be reseeded with the same mix as originally specified. (reference Sections 7.0, Maintenance; 8.0, Monitoring; and 9.0, Revegetation Success Criteria).

The irrigation system will be operated daily until germination is evident (one to three inches growth, typical). At this point, the seedlings will be gradually weaned from supplemental irrigation, with longer watering durations at greater intervals between watering. The weaning process encourages deeper rooting which, in turn, will help the plants to withstand drought and hot, dry wind conditions. Deeper root systems also provide better surface erosion control.

4.2 Tree and Shrub Planting

Tree and shrub planting will occur in the fall of 1999 and 2000. Planting techniques for Coast Live Oak seedlings will be Method A. The method for planting Coast Live Oak acorns which are planted directly after collection is described in Method B. Techniques for planting Willows will be Method C.

4.2.1. Planting Method A - Coast Live Oaks (Seedlings) (Refer to Section 3.2.1)

The nursery-grown seedlings will be hand planted in late fall at favorable locations chosen on site by the Dos Pueblos Golf Links Revegetation Specialist and the OEC. Approximate locations are indicated on the enclosed map (Exhibit C). Each seedling will be planted in a "gopher cage" (wire basket) to discourage predation/root grazing (reference Detail 1). Seedlings will be grouped in naturalistic arrangements where feasible and enclosed in a 42-inch high protective fence (reference Details 2 and 3). The fence will protect seedlings from being trampled and eaten by wildlife. Plant holes will be twice the diameter of the container and a minimum of 6 inches deeper. Holes will be backfilled with native soil and 4 slow release "Gro-Power" fertilizer tablets per seedling. A planting/watering basin with a three inch high berm will be constructed. Basins will be mulched with organic mulch such as tree chippings or native leaf mulch.

A drip irrigation system, using temporary valves will be installed. Each seedling will receive one emitter capable of delivering one gallon per hour.

4.2.2 Planting Method B - Coast Live Oak (Acorns) (Refer to Section 3.2.1)

Viable acorns will be planted directly in the ground in the fall immediately after purchase. A total of 50 acorns will be planted to ensure the growth of a minimum 5 replacement oaks. Acorns will be planted in "plant spots" of 5 acorns each. Each plant spot will be planted in a "gopher cage" (wire basket) (reference Detail 1). Plant spots will be grouped together where feasible and will be enclosed in a 42 inch high protective fence (reference Details 2 and 3).

Plant spot locations will be chosen on site by the Dos Pueblos Golf Links' Revegetation Specialist and by the OEC. Approximate locations are shown on the enclosed map (Exhibit C).

Drip irrigation systems will be installed to supplement natural rainfall with each plant spot receiving one emitter capable of delivering one gallon per hour. Deep waterings will be applied to encourage deep root development.

4.2.3 Planting Method C - Willow

Cuttings shall be from 18 to 24 inches long with diameter of 0.75 to 1.5 inches at the base of the cutting. Cuttings shall be stripped of all but the top few leaves, and shall be immediately placed in a bucket of water. Rooting hormone shall be used prior to planting; either a liquid solution or a powder shall be applied prior to planting. Holes shall be prepared using a dibble or other similar tool to create a small narrow hole. Cuttings shall be placed at least 12 inches deep within the soil, and the soil shall be firmly tamped down around the cuttings to remove air pockets. Cuttings shall then be thoroughly watered following planting.

Cuttings will be placed directly at locations chosen by the Dos Pueblos Golf Links Revegetation Specialist and by the OEC. Cuttings will be installed between

November through April. Approximate locations are shown on the enclosed map (Southern Willow Scrub Revegetation Areas, Exhibit C). Protective fencing will not be required for the cuttings. No gopher cages (wire baskets) will be installed for the cuttings. Temporary drip irrigation will be installed until the cuttings are established.

4.2.4 Planting Method D - Ornamental Trees

The nursery-grown seedlings for other ornamental tree replacements within the project will be hand planted in late fall at favorable locations selected by the Landscape Architect. Approximate locations are indicated on the enclosed "Tree Revegetation Plan" (Exhibit C). Each seedling will be planted in a "gopher cage" (wire basket) to discourage predation/root grazing (reference Detail 1). Seedlings will be grouped in naturalistic arrangements where feasible. Plant holes will be twice the diameter of the container and a minimum 6 inches deeper. Holes will be backfilled with native soil and 4 slow release Gro-Power fertilizer tablets per seedling. A watering basin with a three inch high berm will be constructed. Basins will be mulched with organic mulch such as tree chippings or native leaf mulch. (See Detail 4).

A drip irrigation system, using temporary valves will be installed. Each seedling will receive one emitter capable of delivering one gallon per hour.

4.3 Landscape Screening

Trees and shrubs will be planted north and northwest of Tees 1,3, and 4 to screen Highway 101 and to meet the requirements of Permit Condition 15. See Tree Revegetation, Exhibit C.

4.4 Native Grassland Revegetation Area

4.4.1 Revegetation by Plugs

Seeds will be sown in 2-inch liners and nursery flats in the spring 1999/2000. Seedlings will be allowed to grow in containers for approximately 6 months.

Seedlings will be transplanted to larger containers as necessary to guard against root-bound plants. Seedlings will be planted in late fall, 1999/2000 to coincide with the natural cycle (seeds naturally drop in the fall).

Native grassland seedlings will be planted en masse at 12" on center spacing at areas selected by Dos Pueblos Golf Links' Revegetation Specialist and the On-site Environmental Coordinator. The area selected will be enclosed with a protective fence (reference Details 2 and 3). Approximate areas of seedling planting are shown on Exhibit A.

Irrigation will be installed prior to planting.

Seedlings will be encouraged to naturalize following planting. Minimal interference is proposed. Fertilizer will not be added to the plant pit. Seedlings will not be enclosed in gopher cages. Cages of this small size could inhibit root formation.

4.4.2 Revegetation from Seeds

See Section 4.1 for hydroseed installation. Approximate area of native grassland hydroseed area is shown on Exhibit A.

5.0 SENSITIVE PLANT COMMUNITY PLAN

5.1 Southern Tarplant (Hemizonia parryi spp. australis)

One population of southern tarplant occurs in an area planned for golf links construction. This population will be relocated to the area surrounding the vernal pool, lake edge, and area between, excluding the existing disturbed wetlands, through a combination of direct transplanting of mature plants, direct seeding, and planting of tarplant grown from seeds collected from the site. See Sheet LR-4.

5.1.1 Receiver Site Preparation

The 100 foot buffer zone around the existing Vernal Pool is the proposed receiver

site for the Southern Tarplant.

The vernal pool is currently surrounded by the non-native, invasive iceplant known as Hottentot fig (*Carpobrotus edulis*). The Hottentot fig will be sprayed with a systemic herbicide suitable for use adjacent to wetland areas, such as Rodeo at a time of year when there is no standing water. The Dos Pueblos Golf Links biological consultant shall monitor the herbicide application, to be conducted in the summer of 1999. One month after spraying, the site will be checked for completeness of plant eradication, and re-sprayed if necessary. Once the Hottentot fig is thoroughly dead (brown and brittle), ~~approximately 2/3 of~~ the dead material will be removed and disposed of off-site. ~~The remaining 1/3 will be left in place to serve as an organic mulch.~~

5.1.2 Seed and Plant Collection

Seeds will be collected from the parent tarplants within ~~the one~~ all populations located on site. Southern tarplant goes to seed in the late summer to fall. (Seeds were collected previously in November 1997.) Adult plants will also be dug up and directly re-planted within the receiver site. Adult plants will also be maintained at a nursery location, for continuing use in collecting seeds and propagation. Approximately ¼ of the collected seeds will be placed in long-term storage. Of the remaining seeds, approximately ½ will be grown at the nursery and ½ will be sown directly into the receiver site. The various plots at the receiver site shall be staked and marked for future reference and identification of the revegetation treatments.

5.1.3 Planting Plan

Adult plants retrieved from the parent population will be directly planted within the receiver site in spring and summer 1999. Tarplant seeds from 1997 collection were planted in pots and liners in a nursery in Fall 1998.Tarplant seeds will be scattered by hand throughout the receiver site in the late summer through early fall ~~1998~~, 1999. Seeds will be placed ~~both within the area containing dead Hottentot fig and~~ in the cleared areas at the Vernal Pool and Lake Edge. See Sheet LR-4.

One-half of the receiver site will receive overhead irrigation: the other half will not be irrigated.

6.0 EXOTIC PLANT CONTROL PLAN

6.1 Initial Eradication

Non-native, invasive exotic plants will be removed from the revegetation sites to the extent practicable. A combination of chemical, physical, and mechanical removal will be used to achieve the desired removal. Exotic plant removal within the development areas of the Golf Links will be removed through physical methods during the initial clearing and grubbing/grading operation.

Plant species to be targeted both initially and during the long-term maintenance monitoring period include those listed below; additional plants may also be controlled if found to be present on the site and/or as directed by the biological monitor.

	SCIENTIFIC NAME	COMMON NAME
	Brassica nigra	Black mustard
	Carpobrotus edulis	Hottentot fig
	Carduus pycnocephalus	Italian thistle
	Centaurea melitensis	Tecolote
	Centaurea solstialis	Star thistles
	Cirsium vulgare	Bull thistle
	Conium maculatum	Poison hemlock
	Cotula coronopifolia	Brass buttons
	Delaireria odorata	Cape ivy (=German ivy)
**	*Eucalyptus species*	Eucalyptus (gum) trees
	Foeniculum vulgare	Sweet fennel
	Marrubium vulgare	Horehound
	Melilotus albus & indicus	White & yellow sweet clover
	Myoporum laetum	Myoporum
	Nicotiana glauca	Tree tobacco
	Pennistemum setaceum	Fountian grass
	Phalaris aquatica	Harding grass
	Picris echioides	Bristly ox-tongue
	Ricinus communis	Castor bean
	Salsola tragus	Russian thistle

	Schinus terebinthifolius	Brazilian pepper
***	*Tamarisk sp.*	Tamarisk
	Xanthium sturmarium	Cocklebur
	Arundo donax	Giant Reed Grass
	Ehrharia calycina	Veldt Grass
***	*Ehrharia erecta*	Ehrharta

** To be controlled only within natural or naturalized areas.
*** To be removed from wetland areas only.

Non-native plant species that will be allowed to remain may include the following: *Avena barbata, Bromus diandrus, B. madritensis, B. hordeaceus, Hordeum species, Lolium multiflorum, Trifolium hirtum.* ~~and the~~ Non-native species of *Vicia spp.* may be allowed to remain unless they appear to exclude growth and spread of native species.

6.2 On-going Eradication

Invasive exotics will be removed on a continuing basis during the long-term maintenance period within the restoration areas. Hand removal and weed-whacking will be the preferred methods. Use of herbicides will be minimized to the degree practical.

6.3 Ice Plant Removal at Bluff Edge

Ice Plant within 30 feet of the Bluff Edge, and along the cliff face where practical, will be sprayed with two successive treatments of Round-Up to kill both the vegetation and roots. The surface vegetation will be removed at the soil level and disposed off-site. Below grade roots will remain in place to minimize disturbance of the bluff.

Ice Plant will be removed on a continuing basis during the long-term maintenance period within the revegetation areas. Hand pulling will be the preferred method of removal. Use of herbicides will be minimized to the degree practical.

7.0 MAINTENANCE

7.1 Hydroseed Area Maintenance

Hydroseeded areas will be irrigated until the germinated species are adequately established and/or the crop has set seed. The goal of project irrigation practices is a gradual weaning of

the plant's need for supplemental irrigation from the time of germination to the time of establishment and/or setting seed. After the first cycle of growth and setting seed, no additional irrigation will be supplied. It is anticipated that natural rainfall will bring up the second and subsequent cycles of seed growth.

The hydroseed mixes contain annual grasses which, once established, should be able to compete with obnoxious invasive non-native weeds. Hand weeding of invasive weeds such as mustard, thistle, annual clover and castor bean will be performed for the entire maintenance/monitoring period. After establishment of the replacement grasses (hydroseed mix), no additional weeding is proposed. Invasive weeds are prevalent on all areas surrounding the project site. Seeds from these weeds will blow or wash into the site continually and it is not reasonable to expect complete eradication of the weeds. The use of chemical herbicides should be minimized. Physical methods of removal are preferred.

7.2 Tree and Shrub Maintenance

Maintenance for trees and shrubs will consist of weeding the seedling/watering basins, checking the condition of the protective fences, and supplementing natural rainfall with drip irrigation. Basins will be weeded monthly for the first year and bi-monthly thereafter, or, as deemed necessary by the OEC. Mulch in basins will be replenished after each weeding. Protective fences will be monitored monthly and repaired monthly as required for the first year, and then 4 times per year thereafter until final acceptance. Fences will be removed when trees/shrubs are of an appropriate size to preclude predation, acceptable to the County of Santa Barbara and/or by the end of the maintenance/monitoring period.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the various species. Controllers will be equipped with a rain sensor to ensure that irrigation systems do not operate during or immediately following rainfall.

The intent of the drip irrigation is to help the seedlings establish themselves in the intended revegetation sites. After the first year, irrigation will be gradually tapered off. Each

watering will be of longer duration than the last to encourage deep rooting, and the interval between waterings will be gradually increased. Seedlings should be able to be weaned from supplemental irrigation by their third winter in the ground (approximately two years from planting). Reference Permit Condition 5(A)(4).

Slow-release Gro-Power fertilizer tablets will be placed in the planting pit of trees and shrubs at the time of planting. No additional fertilizer is anticipated during the maintenance period.

7.3 Tarplant Maintenance

Maintenance of the southern tarplant planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants. The project biological monitor shall flag all tarplant locations for protection prior to the weeding effort.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

7.4 Native Grasslands Maintenance

Maintenance of the native grassland planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

8.0 MONITORING

8.1 Seeded Areas

8.1.1 Hydroseeded Areas: Native Grassland, Erosion Control Area, Barranca Edge

Hydroseeded areas will be evaluated two to three months after seeding (spring and summer 1999) by the Dos Pueblos Golf Links Revegetation Specialist and the

OEC to determine adequacy of germination/coverage, and the need for supplemental seeding. Slopes will be reevaluated the following spring (2000) to determine the success of self-seeding/naturalization. Refer to Revegetation Success Criteria (Table C) for additional information.

8.1.2 Hydroseeded Areas: Riparian and ~~Wetland~~ Southern Willow Scrub

Revegetated/enhanced Riparian and ~~Wetland~~ Southern Willow Scrub areas will be monitored bi-monthly for a two-year period (1999, 2000) by the Dos Pueblos Golf Links Revegetation Specialist and the OEC. These areas will then be monitored on an annual basis for three additional years (2001-2003) for a total five year program. During the first two years after seeding and planting, Riparian and Southern Willow Scrub areas will be evaluated on a bi-monthly basis. The initial focus will be on surface erosion control and weed control (Winter 1999-2000). Beginning in Spring of 2000, the focus will shift to evaluating revegetation success. Evaluation will occur in Fall of 2000. Refer to the Revegetation Success Criteria (Table C) for additional information.

8.2 Tree and Shrub Monitoring

Trees and shrubs will be monitored for five years (or until final acceptance by the County of Santa Barbara) by the Dos Pueblos Golf Links' Revegetation Specialist and the OEC. Trees and shrubs will be evaluated every three months for the first two years and then yearly, thereafter. Caged trees, particularly oaks, will be monitored a minimum of two years until the cages are removed. Trees and shrubs will be evaluated for growth, health of the seedlings, condition of the planting/watering basin and protective fencing, and weed growth near seedling. Trees ~~and shrubs~~ will be accepted by the County of Santa Barbara on an individual basis when they have reached a height of six feet and the tree has been independent of supplemental water, fertilizer, and herbicide treatments for a minimum of two years. This criteria was established by County as the size at which the plant should be able to withstand predation.

Ornamental trees and shrubs will be planted at a 3:1 replacement ratio with the intent to successfully establish tree and shrub at a minimal 1:1 final replacement ratio; i.e."no-net-loss." When one third of the replacement plants for each species is acceptable. the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Willows will be planted at a 5:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal + 4:1 final replacement ratio; ~~i.e. "no-net-loss."~~ When four fifths of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Oaks will be planted at a 10:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal + 5:1 final replacement ratio; ~~i.e. "no-net-loss."~~ When one half of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

~~8.3 Fresh Water Marsh Monitoring~~

~~The newly created Fresh Water Marsh at the lake edge will be monitored monthly for weed invasion and health of plants for the first year (1999), and quarterly thereafter for a total of five years (2000-2003).~~

~~Weeds will be hand-pulled. Dead plants will be replaced with the like plants from liners. The focus of the monitoring effort will be to ensure the creation of a viable, self-regualting fresh water marsh. Refer to Revegetation Success Criteria (TABLE C) for additional information.~~

8.4 Tarplant Monitoring

Permanent monitoring transects will be installed to facilitate long-term monitoring of the southern tarplant receiver site. including photo-documentation stations. Photos will be collected both before and during the initial site preparation and planting phase, and throughout the monitoring period. Monitoring will be conducted on a quarterly basis for the

first year, and then on a semi-annual basis thereafter. Monitoring will be conducted in the spring of each year to check for invasion by non-native weedy plant species, and again in the late summer to early fall to check the growth of the southern tarplant. Qualitative and quantitative data shall be collected during the late summer/early fall visits.

8.5 Native Grassland Monitoring

Hydroseeded Native Grassland areas will be monitored as per Section 8.1.1. Native Grassland areas planted from pots will be evaluated monthly for six months for weed invasion and health of seedlings, and quarterly thereafter for a total of five years. Refer to Revegtation Success Criteria (Table C) for additional information.

8.6 Year End Reporting

The Dos Pueblos Golf Links Revegetation Specialist and the OEC shall prepare a year end monitoring report, due at the anniversary date of completion of the installation each year for five years, summarizing the years' maintenance activities, the status of establishment of the seeded and planted areas, achievement of success criteria standards, and the need for remedial measures. Reports will include photo documentation for all native plant revegetation and restoration areas. The year end report shall be submitted to the County of Santa Barbara and the applicable resource agencies (permitting agencies) for review and approval each year.

9.0 REVEGETATION SUCCESS CRITERIA

Table C, adapted from the Celeron Pipeline Revegetation Plan and the Exxon Las Flores Canyon Revegetation Plan, outline the Revegetation Success Criteria proposed for the Dos Pueblos Golf Links Biological Enhancement Landscape Plan.

10.0 GOLF BALL RECOVERY PROGRAM

Condition 5.e. of the Conditional Use Permit #91-CP-085 for the Dos Pueblos Golf Links project requires the development of a golf ball recovery program for retrieval of balls in drainages, sensitive biological areas (i.e., native restoration areas, wetlands, etc.) and on the beach. In accordance with Condition 5.e., the following program will be implemented:

Course employees who have received training regarding the sensitive environmental habitats onsite, such as drainages, wetlands, native restoration areas, and the harbor seal rookery and haul-out beach, shall be designated to retrieve golf balls from these and other out-of bounds areas that are off-limits to golf course users. The designated employees will enter the out-of-bounds areas on foot on a quarterly basis to retrieve errant balls. Care will be taken to keep disturbance of these areas to a minimum.

In accordance with CUP #91-CP-085 Condition 8.a., access to the harbor seal haul-out and rookery beach shall be prohibited during the seal pupping/breeding season (February 1 to May 31). Golf ball recovery will not take place at the seal haul-out beach during the seal pupping/breeding season.

TABLE A

SEED MIXES

BARRANCA EDGE (Coastal Sage Scrub)

Botanical Name	Common Name	Lbs/Acre
Artemisia californica	California Sagebrush	1
Baccharis piluarlis consanginuea	Coyote Bush	5
Encelia california	California Sunflower	2
Epilobium (Zauschneria) californica	California Fuschia	1
~~Ericameria ericoides ericoides~~	~~Mock Heather~~	~~4~~
Eriogonum fasciculatum	California Buckwheat	10
Eriogonum parvifolium	Coastal Buckwheat	6
Eriophyllum confertiflorum	Golden Yarrow	1
*Heteromeles arbutifolia	Toyon	6
Isocoma menziesii	Coast Goldenbush	2
Leymus condensatus	Giant Wild Rye	6
Lotus scoparius	Deerweed	~~7~~ 9
Mimulus aurantiacus	Monkeyflower	1
Nassella lepida	Slender (foothill) Needle Grass	6
*Rhamnus californica	Californinia Coffee Berry	6
Salvia leuchophylla	Purple Sage	3
Salvia mellifera	Black Sage	3
Scophularia californica	California Beeplant	2
Hazardia squarrosa	Saw-toothed Goldenbush	2
Rhus integrifolia	Lemonade Berry	

* May augment seeding of these species with 1 gallon container plants.

EROSION CONTROL MIX (Transition Areas)

Botanical Name	Common Name	Lbs/Acre
Artemesia californica	California Sagebrush	1
Bromus hordeaceus (B. mollis)	Soft Chess	~~15~~ 16
Bromus madritensis	Foxtail Chess	10
~~Bromus diandrus~~	~~Ripgut Grass~~	~~1~~
Encelia californica	California Encelia	2
~~Ericameria ericoides ericoides~~	~~Mock Heather~~	~~3~~

Eschscholzia californica	California Poppy	2
Isocoma menziesii	Coast Goldenbush	2
Lolium multiflorum	Italian Rye	20
Lotus pursianus	Deerweed	2
Lotus scoparius	Deerweed	2
Lupinus succulentus	Blue Lupine	5
Sisyrinchium bellum	Blue-eyed Grass	2
Trifolium hirtum	Rose Clover	30

RIPARIAN

Botanical Name	Common Name	Lbs/Acre
Artemesia douglasii	Mugwort	1
Festuca megalura	Zorro Fescue	12
Mimulus longiflorus	Monkey Flower	0.5
Rosa californica	California Rosebush	5
Salvia spathacea	Hummingbird Sage	1
Sambucus mexicana	Elderberry	3
~~Symphoricarpus mollis~~	~~Snowberry~~	~~5~~
Venegasia carpesioides	Canyon Sunflower	3
Clematis ligusticifolia	Creek Clematis	1

SOUTHERN WILLOW SCRUB

Botanical Name	Common Name	Lbs/Acre
Seeds:		
Artemesia douglasiana	Mugwort (seed)	1
Nassella lepida	Slender (foothill) Needle Grass (seed)	10
Mimulus guttatus	Yellow Marsh Morningflower (seed)	3
Pluchea sericea	Arrow Weed (seed)	4
*Sambucus mexicana	Mexican Elderberry	4
Cuttings:		
Baccharis salicifolia	Mulefat (direct cut & stick)	
Salix lasiolepis	Arroyo Willow (direct cut & stick)	

* May augment seeding with 1 gallon container plants

NATIVE GRASSLAND

Botanical Name	Common Name	Lbs/Acre

A mixture of seeding and use of liners for these species:

* Melica imperfecta	Coast Range Melic	8

* Nassella lepida	Slender (foothill) Needle Grass	6
* Nassella pulchra	Purple Needle Grass	18

* To be hydroseeded and planted from plugs. See Revegetation Plan (Exhibit C).

~~FRESH WATER MARSH (Note: All from liners-no seed)~~

~~Botanical Name~~	~~Common Name~~
~~Anemopsis californica~~	~~Yerba Mansa~~
~~Eleocharis macrostachya~~	~~Common Spikerush~~
~~Juncus bufonius~~	~~Toad Rush~~
~~Juncus balticus~~	~~Baltic Rush~~
~~Juncus textilis~~	~~Basket Rush~~
~~Mimulus guttatus~~	~~Yellow Marsh Monkeyflower~~
~~Scirpus acutus~~	~~Common Tule~~
~~Scirpus microcarpus~~	~~Small-fruited Bulrush~~
~~Scirpus robutus~~	~~Prairie Bulrush~~

TABLE B

TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
REVISION COUNTY COMMENTS 11-6-98

Prepared by Jackie Bowland and Trish Burgess, Interface Planning and Counseling
Includes all trees on-site except Willows in Tomate Creek and Eagle Canyon*
Revised by the Office of Katie O'Reilly Rogers

** DBH = Diameter measured average breast height (four feet above grade)
(***) Grove I – of 40 trees. 25 will be removed

TREE ID	TREE SPECIES	NUMBER OF TRUNKS	TRUNK DIAMETER (INCHES) @ DBH**	STATUS (NO COMMENT INDICATES TREE TO REMAIN)
5	Pine	1	12	
6	Pine	1	11	REMOVE (G/F)
7A	Pine	1	9 w/ sapling	REMOVE (G/F)
7B	Cypress	1	12	REMOVE (G/F)
7C	Eucalyptus	1	8	REMOVE (G/F)
8	Cypress	1	20	
9	Cypress	1	18	
10	Cypress	1	N/A	REMOVE – STUMP
11A	Cypress	3	36	
11B	Eucalyptus	1	14	
12	Cypress	1	36	
13	Cypress	1	24	
14	Cypress	1	36	
15	Cypress	1	24	
16	Cypress	1	16	
17A	Cypress	1	20	
17B	Cypress	1	12	
18	Pine	1	12	REMOVE – STUMP
19A	Eucalyptus	1	24	REMOVE
19B	Eucalyptus	1	24	REMOVE – SICK/DEAD
20	# Not Used			
21	Cypress	2	20; 10	REMOVE (F)
22	# Not Used			
23A	Cypress	1	24	
23B	Cypress	1	30	REMOVE (F)
23C	Cypress	1	30	
24	Cypress	1	30	
25	Cypress	1	12	
26	Cypress	4	30	REMOVE (F)
27	Cypress	1	26 w/ sapling	
28	Eucalyptus	1	6	REMOVE (F)
29	# Not Used			
30	Ornamental	1	8	
31A	Eucalyptus	1	9	
31B	Eucalyptus	1	12	
32	Ornamental	1	18	
33	Eucalyptus	1	18	
34	Pine	1	22	
35	Pine	1	16	
36	Pine	1	14	

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37A	Eucalyptus	2	36	
37B	Eucalyptus	1	8	
37C	Ornamental	1	8	
37D	Eucalyptus	1	8	REMOVE (F)
38A	Pine	1	24	REMOVE (G)
38B	Eucalyptus	1	12	REMOVE (G)
39A	Eucalyptus	5	30	
39B	Eucalyptus	1	8	
39C	Eucalyptus	1	12	
39D	Eucalyptus	1	12	REMOVE (G)
40A	Ornamental	1	26	
40B	Ornamental	1	12	
40C	Ornamental	1	12	
41	Cypress	1	18	REMOVE (F)
42	Cypress	4	10;11;16;15	
43A	Cypress	1	23	REMOVE (F)
43B	Cypress	1	18	REMOVE (F)
43C	Eucalyptus	1	12	REMOVE (F)
43D	Eucalyptus	1	18	REMOVE (F)
44A	Cypress	1	30	REMOVE – SICK/DEAD
44B	Eucalyptus	1	12	REMOVE (F)
44C	Eucalyptus	5	Fallen	REMOVE – SICK
44D	Eucalyptus	1	Split Apart	REMOVE – SICK
45	Cypress	1	28	REMOVE (F)
46	Eucalyptus	1	20	REMOVE (F)
47	Eucalyptus	1	30	REMOVE (F)
48	Eucalyptus	6	Sprouts	REMOVE – SICK/DEAD
49	Eucalyptus	1	20	REMOVE – SICK/DEAD
50	Eucalyptus	1	24	REMOVE – SICK/DEAD
51A	Eucalyptus	1	30	REMOVE (F)
51B	Cypress	1	40	REMOVE (F)
52	Ca. Pepper	1	8;10	REMOVE (F)
53	Eucalyptus	1	30	REMOVE – SICK/DEAD
54	Cypress	1	28	REMOVE (F)
55	Eucalyptus	1	22	
56	Eucalyptus	1	9	
57	Eucalyptus	1	35	
58	Eucalyptus	1	23 Blown Over	REMOVE – SICK
59	Cypress	1	20	REMOVE – SICK
60	Eucalyptus	2	Large number of Stumps sprouting	REMOVE – SICK
61A	Cypress	1	20	
61B	Cypress	1	18	
62	Cypress	1	20	
63	Cypress	1	20	
64	Cypress	2	26	REMOVE (G/F)
65	Cypress	1	28	
66	Eucalyptus	1	35	REMOVE – SICK
67	Cypress	1	36	REMOVE (F)
68	Eucalyptus	1	20	REMOVE – SICK

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69	Cypress	1	30	REMOVE (F)
70	Cypress	3	Broken Apart	REMOVE (F)
71	Eucalyptus	1	18	REMOVE – SICK
72	Cypress	1	30	REMOVE (F)
73	Cypress	1	12	REMOVE (F)
74	Eucalyptus	1	18	REMOVE (F)
75	Eucalyptus Gone	3	26;10;8	REMOVE – GONE
76	Cypress	1	34	REMOVE (F)
77A	Eucalyptus	1	20	REMOVE (F)
77B	Eucalyptus	1	6;8	REMOVE (F)
77C	Eucalyptus	1	12;6	REMOVE (F)
78	Cypress	1	40	REMOVE (F)
79A	Cypress	1	30 Split Apart	REMOVE (F)
79B	Cypress	1	12	REMOVE (F)
80	Eucalyptus	1	20	REMOVE (F)
81	Cypress	3	20;12;9	REMOVE (F)
82	Cypress	1	36	REMOVE (F)
83	Cypress	1	40	REMOVE (F)
84	Eucalyptus	1	26	REMOVE (F)
85	Pine	2	70% Dead	REMOVE (F)
86	Eucalyptus	1	18	REMOVE (F)
87	Cypress	1	28	REMOVE (F)
88	Cypress	1	24	REMOVE (F)
89	Cypress	1	12	
90	Cypress	1	8	
91	Cypress	1	11	
92	Cypress	1	12	
93	Cypress	1	28	
94	Cypress	1	25	
95	Cypress	1	12	
96	Cypress	1	16	
97	Cypress	1	26	
98	Cypress	1	8	
99	Cypress	5	9;9;12;10;11	
100	Cypress	1	10	
101A	Cypress	1	24	
101B	Cypress	1	4 Trunks	REMOVE – SICK
102	Cypress	1	22	
103A	Cypress	1	24	
103B	Cypress	1	22	
103C	Cypress	1	30	
104	Cypress	1	30	
105	Cypress	1	24	
106	Cypress	1	20	REMOVE (G)
107	Cypress	1	12	REMOVE (G)
108	Cypress	2	16	REMOVE (G/F)
109	Cypress	1	26	REMOVE – SICK
110	Cypress	2	14;18	REMOVE (G/F)
111	Cypress	1	24 Prune Out Blight	
112	Cypress	1	32	

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113	Cypress	1	30	REMOVE (G)
114	Cypress	1	32	REMOVE (G)
115	Cypress	1	34	REMOVE (G)
116	Cypress	1	20	REMOVE (G)
117	Cypress	1	24	REMOVE (G)
118	Redwood	2	11,11	REMOVE (G/F)
119	Cypress	2	36	REMOVE (G/F)
120	Cypress	1	30	REMOVE (G/F)
121	Cypress	1	22	REMOVE (F)
122	Pine	3	10;12;11	REMOVE (G)
123	Pine	2	10'12	REMOVE (G)
124	Pine	2	10'12	REMOVE (G)
125	Pine	6	Blown over	REMOVE – DEAD
126	Pine	2	9;12	
127	Cypress	2	10;12	
128	Pine	3	12;10;16	
129	Pine	3	10;11;16	
130	Pine	2	12;9	
131	Pine	3	10;12;16	
132	Pine	2	24;18	
133	Pine	2	10;8	
134	Pine	3	10;8;9	
135	Pine	2	24;19	
136	Eucalyptus	1	11	REMOVE (F)
137	Eucalyptus	5	6;6;6;7;8	REMOVE (F)
138	Eucalyptus	1	6	REMOVE (F)
139	Eucalyptus	2	11;8	REMOVE (F)
140	Eucalyptus	1	10	REMOVE (F)
141	Eucalyptus	1	10	REMOVE (F)
142	Pine	2	12;10	
143	Pine	2	14;9	
144	Pine	2	9;10	
145	Pine	6	10;10;10;8;6;11	
146	Pine	4	8;10;12;9	
147	Pine	3	9;6;8	
148	Cypress	5	18;14;10;10;16	REMOVE (F)
149	Cypress	1	10	REMOVE (F)
150	Cypress	1	10	REMOVE (F)
151	Cypress	1	10	REMOVE (F)
152	Eucalyptus	1	10	REMOVE (F)
153	Eucalyptus	2	20;16	REMOVE (F)
154	Cypress	3	18;12;10	REMOVE (F)
155	Eucalyptus	2	18;16	
156	Eucalyptus	2	18;11;w/7 saplings	
157	Eucalyptus	1	18	
158	Eucalyptus	2	10;18	
159	Pine	2	12;10	
160	Pine	2	10;11	
161	Pine	1	21	
162	Pine	2	12;16	

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163	Pine	3	10;10;8	
164	Pine	4	4	
165	Cypress	2	8;6	REMOVE (G)
166	Cypress	1	10	REMOVE (G)
167	Pine	3	10;10;12	REMOVE (G)
168	Pine	3	10;10;12	REMOVE (G)
169	Pine	3	10;10;14	REMOVE (G)
170	Pine	4	16;10;9;11	REMOVE (G)
171	Pine	2	11;9	REMOVE (G)
172	Pine	3	12;16;10	REMOVE (G)
173	Pine	4	10;9;11;14	REMOVE (G)
174	Cypress	6	9;10;18;6;11;10	REMOVE (G/F)
175	Pine	1	22	REMOVE (G/F)
176	Pine	2	18;12	
177	Pine	5	16;11;10;18;9	
178	Pine	2	16;17	REMOVE (G/F)
179	Pine	2	Dead	REMOVE – DEAD
180	Pine	4	Dead	REMOVE – DEAD
181	Pine	1	Dead	REMOVE – DEAD
182	Pine	3	Dead	REMOVE – DEAD
183	Pine	1	28	REMOVE (G/F)
184	Pine	3	18;10;16	REMOVE (G/F)
185	Pine	2	14;10	REMOVE (G/F)
186	Pine	2	10;16	REMOVE (G/F)
187	Pine	2	12;14	REMOVE (G/F)
188	Pine	2	16;10	
189	Pine	2	20;16	
190	Pine	2	18;14	
191	Pine	2	16;11	
192	Willow	1	9	REMOVE – MANY DEAD TRUNKS
193	Willow	4	9;10;16;12	
194	Willow	3	12;18;21	
195	Willow	4	16;9;8;6	
196	Willow	3	9;8;10	
197	Willow	2	14	REMOVE
198	Willow	2	12;16	REMOVE
199A	Willow	3	16;10;20	
199B	Willow	1	14	
200	Willow	2	16;12	REMOVE
201	Willow	1	23	REMOVE
202	Willow	4	28;16;19;20	REMOVE
203	Willow	2	16;12	
204	Willow	2	12	
205	Willow	3	8;10;6	
206	Willow	2	8;10	
207	Willow	2	10;8	
208	Willow	3	16;10;18	
209	Willow	2	10;18	REMOVE
210	Willow	1	10	REMOVE

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211	Willow	4	18;11;9;16	REMOVE
212	Willow	3	16;10;18	REMOVE
213	Willow	3	16;12;10	REMOVE
214	Willow	2	10;18	REMOVE
215	Willow	2	26;10	REMOVE
216	Willow	4	6	REMOVE
217	Willow	2	8;10	
218	Willow	2	6;10	
219	Willow	3	18;10;9	
220	Willow	4	18;12;9;10	
221	Willow	3	8;10;11	
222	Willow	2	12;10	
223	Willow	2	12;10	
224	Willow	4	16;20;11;11	
225	Willow	4	10;18;9;12	
226	Willow	3	16;20;12	
227	Willow	5	10;6;6;10;11	
228	Willow	3	6;6;8	
229	Willow	1	6	
230	Willow	3	9;10;6	
231	Willow	3	18;9;11	REMOVE (G)
232	Willow	3	6;6;9	REMOVE (G)
233	Willow	4	8;11;6;6	
234	Willow	1	6	
235	Willow	2	6;4	
236	Willow	4	8;16;6;6	
237	Willow	1	7	
238	Willow	2	8;10	
239	Willow	7	16;9;6;10;14;8;9	
240	Willow	1	8	
241	Willow	1	6	
242	Willow	1	8	
243	Willow	1	6	
244	Willow	3	12;10;8	
245	Willow	1	6	
246	Willow	1	8	
247	Willow	1	6	
248	Willow	1	8	
249	Willow	4	6;6;4;8	
250	Willow	2	9;6	
251	Willow	2	12;8	
252	Willow	2	18;9	
253	Willow	2	6;8	
254	Willow	1	8	
255	Willow	2	6;6	
256	Willow	3	6;6;6	
257	Willow	3	6;6;6	
258	Willow	4	6;8;5;9	
259	Willow	6	6;6;6;5;7;6	
260	Willow	3	6;4;6	

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261	Willow	2	7;6	
262	Willow	2	6;14	
263	Willow	4	10;9;7;11	
264	Willow	6 main trunks	6;10;7;9;11;18	
265	Eucalyptus	1	8	
266	Eucalyptus	1	16	
267	Willow	1	26	
268	Eucalyptus	6	38;22;28;16;14;18	
269	Eucalyptus	1	18	
270	Eucalyptus	4	39;26;18;14	
271	Eucalyptus	1	14	REMOVE (G)
272	Willow	1	6	
273	Willow	2	24;11	
274	Willow	2	18;10	
275	Willow	1	8	
276	Willow	1	12	
277	Willow	7	9;11;10;11;7;9;8	
278	Willow	1	20	
279	Willow	1	16	
280	Willow	1	16	
281	Willow	2	9;9	
282	Willow	2	8;9	
283	Willow	3	6;10;14	
284	Willow	1	16	
285	Willow	1	6	
286	Willow	3	10;10;9	
287	Willow	1	9	
288	Willow	1	10	
289	Willow	2	9;8	
290	Willow	1	12	
291	Willow	4	6;8;9;6	
292	Willow	2	12;11	
293	Willow	1	11	
294	Willow	3	8;9;6	
295	Willow	2	6;8	
296	Willow	2	6;5	
297	Willow	2	6;11	
298	Willow	1	9	
299	Willow	1	6	
300	Willow	2	17;12	
301	Willow	2	6;8	
302	Willow	2	7;6	
303	Willow	4	6;7;6;5	
304	Eucalyptus	3	11;12;7	REMOVE
305	Coast Live Oak	1	10	
306	Cypress	1	24	
307	Eucalyptus	1	12	
308	Eucalyptus	2	10; 11	
309	Eucalyptus	1	16	
310	Eucalyptus	4	6; 6; 9; 8	

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311	Eucalyptus	4	9; 8; 6; 6	
312	Eucalyptus	3	9; 12; 6	
313	Eucalyptus	4	6; 10; 9; 6	
314	Eucalyptus	1	9	
315	Eucalyptus	1	11	
316	Eucalyptus	1	15	
317	Eucalyptus	1	16	
318	Eucalyptus	4	6; 6; 9; 9	
319	Eucalyptus	1	10	REMOVE (G/F)
320	Eucalyptus	5	18; 16; 13; 10; 12	REMOVE (G/F)
321	Eucalyptus	1	24	REMOVE (G/F)
322	Eucalyptus	2	21; 9	REMOVE (G/F)
323	Eucalyptus	1	20	REMOVE (G/F)
324	Eucalyptus	1	20	REMOVE (G/F)
325	Eucalyptus	1	24	REMOVE
326A	Eucalyptus	8	16; 10; 12; 9; 15; 10; 11; 11	REMOVE (G/F)
326B	Eucalyptus	1	12	REMOVE (G/F)
326C	Eucalyptus	1	12	REMOVE (G/F)
326D	Eucalyptus	1	12	REMOVE (G/F)
326E	Eucalyptus	1	12	REMOVE (G/F)
326F	Eucalyptus	1	10	REMOVE (G/F)
326G	Eucalyptus	1	10	REMOVE (G/F)
327	Eucalyptus	2	12; 12	REMOVE (G/F)
328	Eucalyptus	4	12; 10; 8; 9	REMOVE (G/F)
329	Eucalyptus	1	26	REMOVE (G/F)
330	Eucalyptus	1	12	REMOVE
331	Eucalyptus	1	14	REMOVE
332	Eucalyptus	1	18; 12	REMOVE
333	Cypress	1	21	REMOVE (G)
334	Cypress	3	15; 12; 9	REMOVE (G/F)
335	Pine	1	23	REMOVE (G)
336	Pine	1	22	REMOVE – SICK
337	Pine	4	14; 22; 20; 21	REMOVE – SICK
338	Pine	2	21	REMOVE – SICK
339	Pine	1	22	REMOVE – SICK
340	Pine	1	22	REMOVE – SICK
341	Pine	1	26	REMOVE – SICK
342	Pine	3	18; 17; 20	REMOVE – SICK
343	Ornamental	1	19	REMOVE – SICK
344	Ornamental	1	17	REMOVE
345	Pine	1	52	REMOVE
346	Ornamental	1	19	REMOVE – SICK
347	Ornamental	1	16; 12; 24	REMOVE - SICK
348	Cypress	1	26	REMOVE
349	Ornamental	2	24; 10	REMOVE
350	Pine	1	7	REMOVE – SICK
351	Pine	1	58	REMOVE – DEAD
352	Cypress	1	10	REMOVE (G)
353	Cypress	1	36	

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354	Cypress	1	58	REMOVE (G)
355	Willow	3	3;4;6	
356	Willow	1	11	
357	Willow	1	10	
358	Willow	1	9	
359	Willow	1	8	
360	Willow	1	9	
361	Willow	4	7;10;6;9	
362	Pine	3	16;10;12	REMOVE (G)
363	Pine	2	10;12	REMOVE (G)
364	Pine	2	12;10	REMOVE – DEAD
365	Cypress	3	10;15;18	REMOVE (G/F)
366	Cypress	1	15	REMOVE (G/F)
367	Tamarisk	2	23;12	
368	Tamarisk	2	24;14	
369	Tamarisk	1	18	
370	Tamarisk	1	14	
371	Tamarisk	Multiple	12 to 20; suckers	
372	Tamarisk	Multiple	8 to 23; suckers	
373	Tamarisk	Multiple	9 to 18; suckers	
374	Tamarisk	Multiple	6 to 25; suckers	
375	Prunus	Multiple	2 to 6; suckers	
376	Cypress	4	15;8;6;7	REMOVE (G)
377	Cypress	1	13	REMOVE (G)
378	Cypress	6	9;9;13;6;12;16	REMOVE (G)
379	Pine	3	9;11;11	REMOVE (G)
380	Cypress	6	11;8;7;8;6;13	REMOVE (G)
381	Pine	1	23	REMOVE (G)
382	# Not Used			
383	Coast Live Oak	4	48;52;36;28	
384	Coast Live Oak	2	7;6; several ≤ 2" trunks or stems	REMOVE (G)
385	Eucalyptus	48		
386	Eucalyptus	48		
387	Ornamental	8		REMOVE (G)
388	Ornamental	8		REMOVE (G)
389	Ornamental	10		REMOVE (G)
390	Ornamental	7		REMOVE (G)
391	Ornamental	12		REMOVE (G)
392	Pine	10		REMOVE
393	Pine	28		REMOVE – SICK
394	Eucalyptus	27		REMOVE (G)
395	Eucalyptus	32		REMOVE (G)
396	Ornamental	14		REMOVE (G)
397	Eucalyptus	36		REMOVE (G)
398	Ornamental	15		REMOVE (G)
399	Ornamental	24		
400	Ornamental	18		REMOVE (G)
401	Ornamental	8		REMOVE (G)
402	Ornamental	14		REMOVE (G)

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403	Ornamental	8		REMOVE (G)
404	Ornamental	10		REMOVE (G)
Grove A	Eucalyptus	≈12 Trees	6 to 10	
Grove B	Eucalyptus	≈50 Trees	6 to 12 w/ saplings	
Grove C	Eucalyptus	≈50 Trees	4 to 11 w/ saplings	
Grove D	Eucalyptus	14 trees over 6"; saplings & smaller trees present 9 mult-trunks	15;9;11;6;8 and ranging from 2 to 6	REMOVE
Grove E	Eucalyptus	≈20 + saplings & crown sproutings	Ranging from 6 to 26	REMOVE (F)
Grove F	Tamarisk	6 trees	16 to 30	REMOVE
Grove G	Tamarisk	10 trees	9 to 26	REMOVE
Grove H	Tamarisk	16 trees	10 to 20	REMOVE
Grove I**	Tamarisk	40 trees	10 to 25	REMOVE
Grove J	Eucalyptus	≈159 trees	6 to 18 w/ saplings	
Grove K	Cypress	1	30	REMOVE
Grove L	INDIVIDUAL TREES LISTED			
Grove M	Eucalyptus forest	100 trees	Single & multi-trunk; ≤ 1" to 14" w/ saplings.	
Grove N	Willow	30 – 40 trees	Multi-trunk & saplings; ≤ 1" to 10"; sprouting from horizontal branches.	
Grove O	Willow	10 trees	Multi-trunk & saplings; ≤ ½" to 3"	
Grove P	Willow	20-30 trees	Multi-trunk & saplings; ≤ ½" to 12", sprouting from horizontal branches.	
Grove Q	Ornamental	4		REMOVE (G) – SICK
Grove R	Ornamental	6	Plus or Minus 12" w/ sapplings	REMOVE (G)

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SUMMARY:

DESCRIPTION:	QUANTITY OF TREES TO BE REMOVED:	MITIGATION:
WILLOWS	15	75
OAK	1	10
NON-NATIVES	187	576
TOTAL	203	662

STATUS LEGEND

REMOVE (G):	REMOVE DUE TO GRADING
REMOVE (F):	REMOVE, TREE LOCATED IN PROPOSED FAIRWAY
REMOVE (G/F):	REMOVE DUE TO GRADING AND LOCATION IN PROPOSED FAIRWAY
(NO COMMENT):	TREE TO REMAIN

NOTES

1. TAMARISK TREES ARE NOT COUNTED OR MITIGATED.
2. SICK, DYING OR DEAD TREES NOT MITIGATED.

TABLE C

REVEGETATION SUCCESS CRITERIA: HYDROSEEDING

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate 1 month after hydroseeding	Interferes with germination or coverage	Hand pull/Weed whip (Herbicide may be used if acceptable by the biological monitor)
	Evaluate at end of first growing cycle	Interferes with revegetation	Hand pull/weed whip (Herbicide may be used if acceptable by the biological monitor)
Hydroseeded Native Grassland, Erosion Control, Barranca Edge	Evaluate 2-3 months after seeding	>70% cover by visual observation	Acceptable*
		>40% cover, stable	Wait until 2nd year
		<40% cover	Reseed
Hydroseeded Riparian/~~Wetland~~ Southern Willow Scrub Areas	Evaluate 6 months after seeding	>70% cover by visual observation	Continue to monitor
	Evaluate 24 months after seeding	>75% cover	Acceptable*
		<70%	Reseed
	Evaluate yearly for 3 additional years	>80% cover	Acceptable*

*Indicates partial release of Revegetation Bond.

REVEGETATION SUCCESS CRITERIA: TREES & SHRUBS

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for one year	Weeds in basins	Hand pull; replenish mulch
	Evaluate 4 times/year(years 2-5) until acceptance	Weeds in basins	Hand pull; replenish mulch
Protective Fencing	Evaluate monthly for 1 year	Broken or collapsed fence	Repair Fence
	Evaluate 4 times/year(years 2-5) until acceptance	Broken or collapsed fence	Repair Fence
		Fencing/Caging interferes with development of normal growth form.	Re-locate affected branch to promote normal, healthy growth form, anchor to cage (if needed) with non-binding Nursrty tape, or clip small section of cage/fence to free branch.
Irrigation	Months 1 & 2	Approximate Irrigation Schedule **	1x/week, 4 hrs each session
	Months 3 - 6	" "	2x/month, 8 hrs each session
	Months 7 - 12	" "	1x/month, 12 hrs each session
	Months 13 - 24	" "	Monitor, water as needed. Likely scenario: 1x/month in summer/fall only. 12-20 hrs each session.

Tree/Shrub	Evaluate at end of each growing season	1 healthy seedling (per plant removed)	Continue to monitor
		0 seedling	Replant
	Evaluate at the end of 5th year	1 healthy 6-foot non-native tree/ shrub established for each tree removed	Acceptable *
		5 healthy 6-foot oak/native trees established for each oak/native tree removed ***	
		4 healthy 6-foot willow trees established for each willow tree removed ***	
		0 tree/shrub	Replant
	Monitor growth & success	Replant until 1 healthy 6-foot non-native tree/ shrub established for each tree removed	Acceptable *
		Replant until 5 healthy 6-foot oak/native trees established for each oak/native tree removed ***	
		Replant until 4 healthy 6-foot willow trees established for each willow tree removed ***	

*Indicates partial release of Revegetation Bond.

TABLE C

** Irrigation scheduling shall be coordinated between the landscape contractor and the biological monitor to assure adequate watering and to facilitate weaning off irrigation by the end of the maintenance period.

*** Each tree has attained six feet in height, is in healthy condition verified by an arborist or biologist acceptable to the County, has been independent of supplemental water, fertilizer, pesticide and fungal treatments, protection from herbivores, and other maintenance for a minimum of two full years. At acceptance by the County for release, trees shall exhibit sufficient spacing to allow them to grow to maturity in a normal manner.

REVEGETATION SUCCESS CRITERIA: SOUTHERN TARPLANT

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for 1st year; quarterly for years 2-5	Invasive weeds interfering with growth of tarplant	Hand pull; re-spray Hottentot fig with herbicide "Rodeo"
Seeded Tarplant	Evaluate quarterly after seeding for one year	>70% cover by visual observation with at least 75% of plants in flower and/ or producing fruit.	Continue to monitor
		<60% cover	Reseed in fall
Planted Tarplant	Evaluate quarterly after planting for one year	1 healthy transplant/ each removed	Continue to monitor
	Evaluate semi-annually for 4 additional years	Survival of approximate number of plants same as original population	Acceptable *

*Indicates partial release of Revegetation Bond.

REVEGETATION SUCCESS CRITERIA: NATIVE GRASSLAND FROM POTS

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for 6 months	Invasive weeds interfering with growth of Nassella	Hand pull/weed whip (Herbicide may be used if acceptable by the biological monitor)
	Evaluate quarterly for 5 years	Invasive weeds interfering with growth of Nassella	Hand pull/weed whip (Herbicide may be used if acceptable by the biological monitor)
Fence	Evaluate 2x/year until acceptable	Collapsed fence	Repair Fence
		Acceptance of Native Grassland by the County of Santa Barbara	Remove Fence
Seedlings	Evaluate monthly for 6 months	Dry or wilting plants	Hand water as necessary
	Evaluate quarterly for 5 years or until acceptance by the County of Santa Barbara	>80% cover by visual observation	Accept-able*
		<70% cover	Replant

*Indicates partial release of Revegetation Bond.

~~REVEGETATION SUCCESS CRITERIA: FRESH WATER MARSH~~

~~Feature~~	~~Performance Criterion~~	~~Findings~~	~~Action~~
~~Weed Invasion~~	~~Evaluate monthly for 1" year; quarterly for years 2-5~~	~~Invasive weeds interfering with growth of plants~~	~~Hand pull;~~

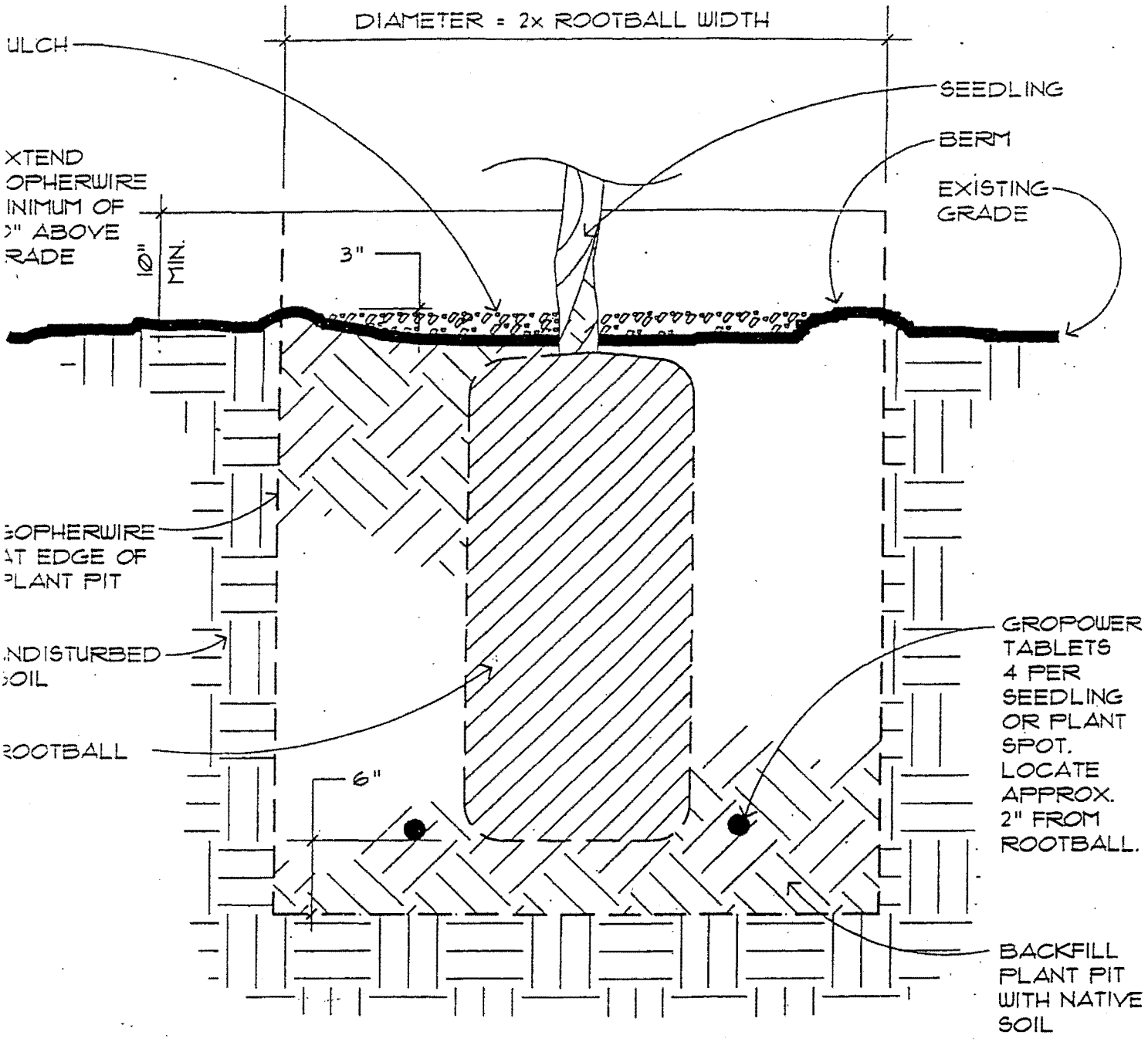
Marsh Plants	Evaluate quarterly after planting for one year	Healthy plants	Continue to monitor
		Dead Plants	Replace with same species
	Evaluate semi-annually for 4 additional years	>80% survival	Acceptable *

*Indicates partial release of Revegetation Bond.

TABLE D

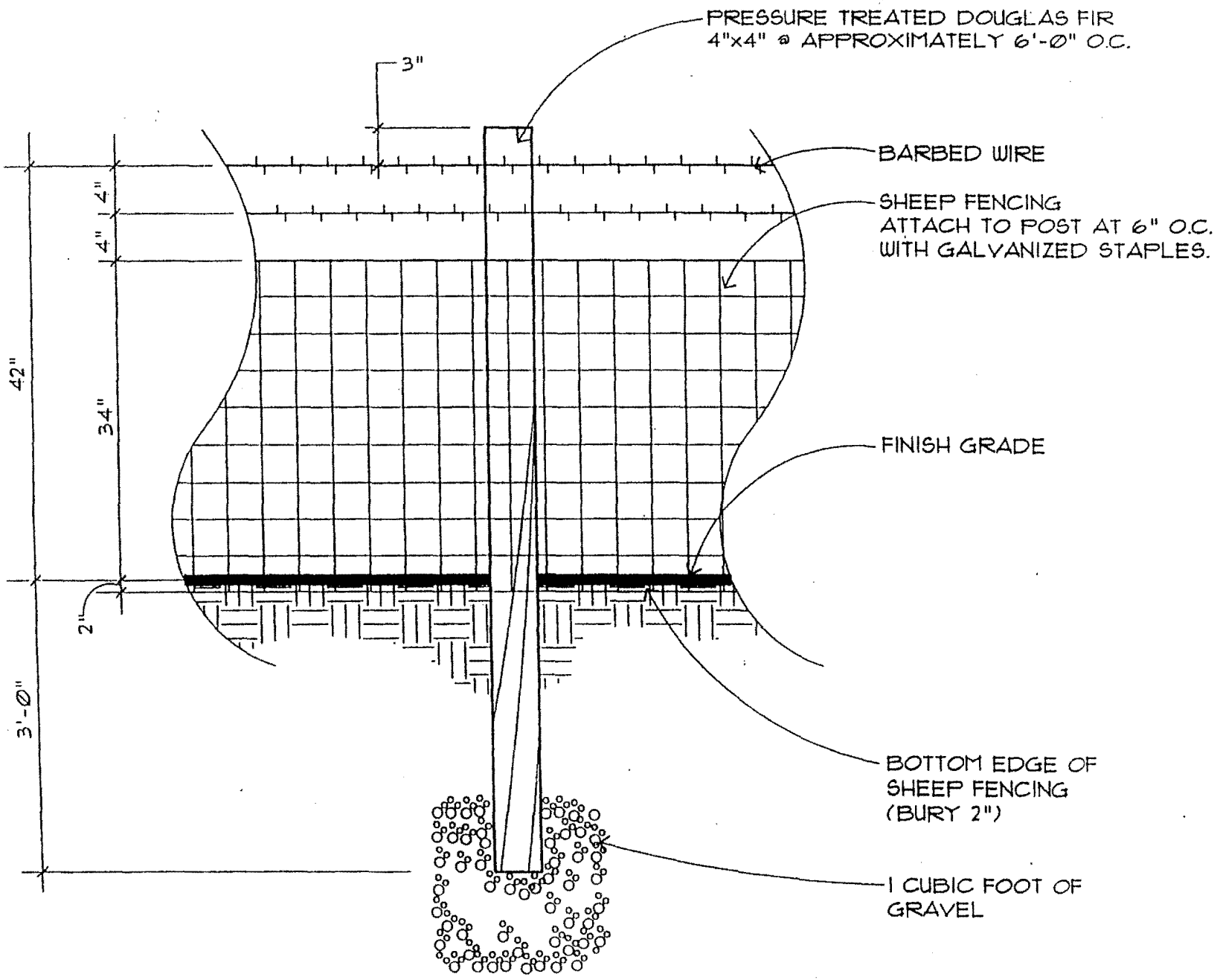
IMPACTS AND MITIGATIONS

Habitat Type	Proposed Impacts (square feet)	Proposed Mitigation (square feet)	Required Mitigation Ratio	Required Survival ~~Actual Mitigation~~ Ratio
Ratio -				
Southern Willow Scrub by Area	~~8,431~~ 8.326	49,956	6:1 (Areal)	5:1 ~~6:1~~ (Areal)
Disturbed Wetland ~~(to be mitigated as recreated Fresh Water Marsh)~~	~~3,893~~ 0	~~5,880~~ 0	1.5:1	~~1.5:1~~ N/A
Fresh Water Marsh	0	0	2:1	N/A
Native Grassland	~~11,360~~ 8.105	64,656	~~3:1~~ 4:1	~~5.7:1~~ ~~8:1~~ 4:1
Temporary Impacts				
Southern Willow Scrub	75	75	1:1	1:1
Freshwater Marsh	88	88	1:1	1:1
TREES				
Ornamental	(See TABLE B)		3:1	~~3:1~~ 1:1
Willow	(See TABLE B)		5:1	~~5:1~~ 4:1
Oak	(See TABLE B)		10:1	~~10:1~~ 5:1



1 GOPHER CAGE (WIRE BASKET)

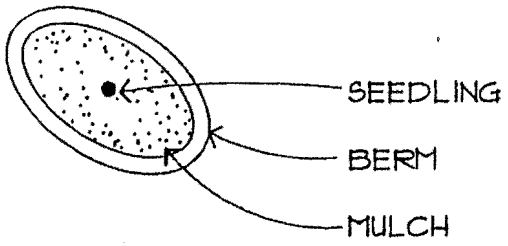
SCALE: NTS

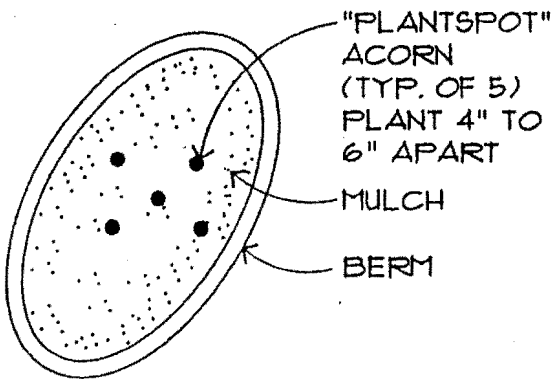


PROTECTIVE FENCE - SECTION

7

SCA. NTS





NOTE:
NUMBER OF SEEDLINGS & PLANTSPOTS WILL VARY WITHIN EACH FENCE. FENCE DIMENSIONS WILL VARY WITH NUMBER OF SEEDLINGS PLANTED WITHIN ENCLOSURE & WITH THE LIMITS OF THE TERRAIN.

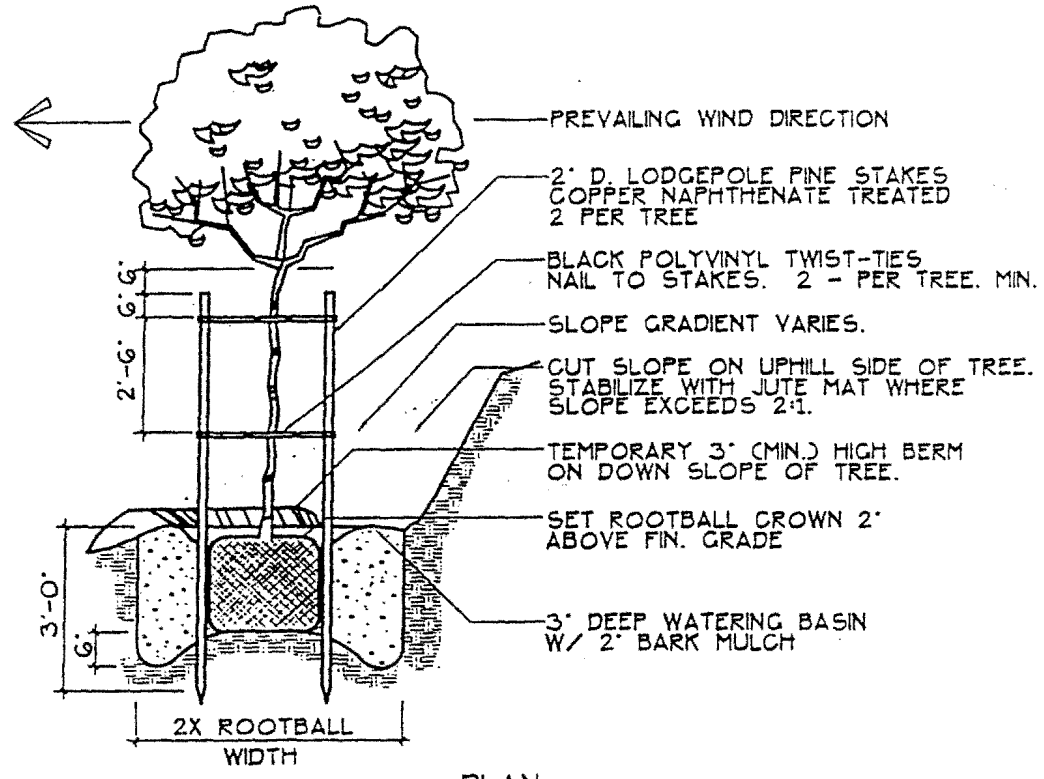
4x4 PTDF AT APPROXIMATELY 6'-0" O.C.

FENCING - REF: DETAIL 2

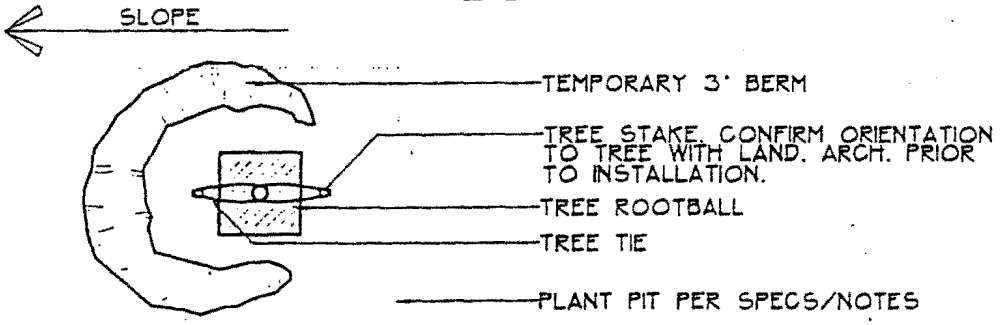
PROTECTIVE FENCE AND BASIN - PLAN

3

SCALE: NTS



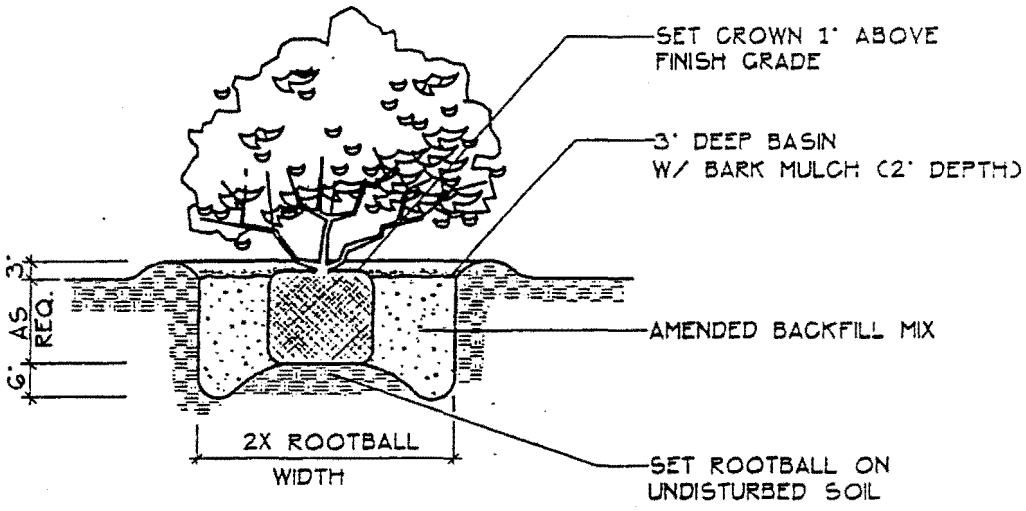
PLAN



SECTION

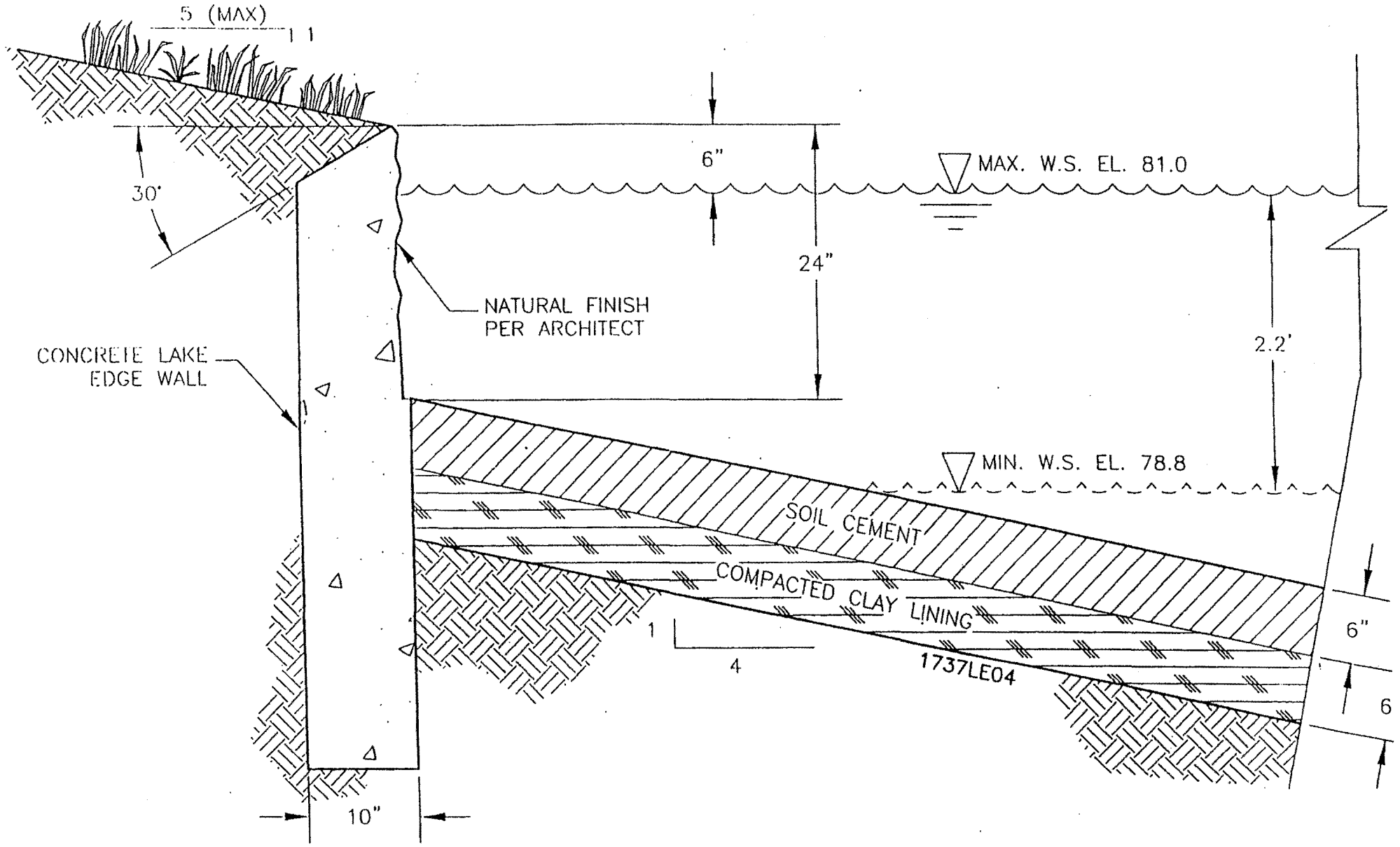
4 TREE PLANTING / SLOPE

SCALE: 1



5 CONTAINER STOCK

SCALE: N



TYPICAL LAKE EDGE-SECTION

7

SCAL NTS

DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

BIOLOGICAL ENHANCEMENT LANDSCAPE PLAN

REVEGETATION GOALS

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AUGUST 1998
Revised: OCTOBER 1998
Revised: NOVEMBER 1998

REVEGETATION GOALS

The following revegetation goals and guidelines have been established for the Dos Pueblos Golf Links Biological Enhancement Landscape Plan (BELP). The revegetation goals reflect permit conditions incorporated in the Dos Pueblos Golf Links Conditional Use Permit (CUP # 91-CP-085, County of Santa Barbara, Resource Management Department, August 17, 1993); California Coastal Commission Permit (Appeal No. A-4-STB-93-154); anticipated conditions to be included in a Streambed Alteration Agreement to be secured from the California Department of Fish and Game (CDFG); and a Section 404 permit to be obtained from the U.S. Army Corps of Engineers (ACOE). Also considered in the revegetation goals are the biological thresholds/standards for the relevant habitat types as expressed in the County of Santa Barbara Local Coastal Plan (LCP), California Coastal Act Policies regarding Environmentally Sensitive Habitats (ESH), and the County of Santa Barbara Environmental Thresholds and Guidelines Manual, Biological Resources Guidelines.

Revegetation goals presented herein address four categories of resources for which revegetation requirements have been identified in existing permits and the conditions of approval. These categories are as follows: (1) Specimen Tree Replacement; (2) Wetland Mitigation; (3) Grassland Revegetation; and (4) Sensitive Plant Transplantation (Southern Tarplant). The revegetation goals will be implemented through features incorporated into the Master Landscape Plan (drawings) for the Dos Pueblos Golf Links and in a Resource Management Plan (written document) addressing long-term management, monitoring and maintenance of biological resources in the context of overall Golf Links construction and operations.

1. Specimen Tree Replacement Goals and Guidelines

a) Existing mature specimen trees shall be preserved onsite to the extent feasible. Preservation shall be based upon the health, quality and vigor of the trees per the horticultural tree inventory and characterization survey, and based upon the landscape design intent for the overall Golf Links layout.

b) Mature trees with a main trunk >6" diameter breast height (dbh) to be removed by the Golf Links development, shall be replaced. (*Final numbers for replacement to be verified between final Golf links design and tree inventory.*) Species to be replaced/compensated for include:

- Native coast live oak (*Quercus agrifolia*)

- Native willows (*Salix lasiolepis*)
- Non-native pines (*Pinus* spp.)
- Non-native eucalyptus (*Eucalyptus* spp.)
- Non-native cypress (*Cupressus* spp.)
- Non-native silk oak (*Grevillea robusta*)

c) Willow trees with a main trunk greater than 6" dbh shall be replaced at a ratio of 5:1 (replacement sizes shall be 1 gal. container size and/or from cuttings taken from onsite sources, depending upon time of year/installation period). The direct stick method for willow cutting planting will be an acceptable installation method.

d) All other trees (non-willow species except oaks) greater than 6" dbh shall be replaced at a ratio of 3:1. Replacement shall be like-kind (same species) or out of kind (different species), depending upon the landscape design context: native trees to be replaced in-kind; non-native trees can be replaced out of kind depending upon design intent. Minimum replacement size for all non-willow species shall be determined by the landscape architect, in consultation with the County EQAP biologist.

e) Tamarisk trees to be removed do not require replacement (existing tamarisk are the non-invasive species, exist in upland areas, and can be retained to the extent desirable by the landscape plan and Golf Links layout). Any tamarisk trees within wetland/ riparian areas will be removed.

f) Oaks greater than 6" dbh shall be replaced at a ratio of 10:1. ~~Minimum~~ Oak replacement size shall be a mix of 5 gallon, 1 gallon, ~~or~~ and acorns, with final determination by the landscape architect in consultation with the County EQAP biologist.

g) Short-term planting and monitoring requirements for replacement trees.

- Oaks: Replacement oaks shall be planted individually or in groupings to provide a natural character. Oaks shall be planted such that sufficient area is provided to accommodate their ultimate canopy/dripline width. Areas directly around the replacement oaks shall be mulched. Turf areas shall be held back a minimum of 15 feet from the trunk of the replacement oaks and 10 feet from the canopy/dripline of existing/mature oaks to provide for a natural mulch/duff zone and to avoid excess water under the oak canopy.

- Willows: Replacement willows shall be planted in areas with suitable soils and hydrology (i.e., available water source) adequate to support the trees without supplemental water in perpetuity. Willows shall be clustered in groupings of three or more to provide a natural appearance. Willows can be planted in irrigated/turfed areas if desirable by the landscape/Golf Links design.

- ~~Replacement tree survival requirements: Dead replacement trees shall be replaced during the first year of the long-term (5-year) monitoring period (100% replacement) with comparable species and sizes as originally specified. A 90% replacement rate shall be maintained each year thereafter (remainder of 5-year period) until acceptance by County of Santa Barbara.~~ Refer to Table D in BELP.

h) Long-term operational considerations: Golf Links superintendent shall adhere to all management plan requirements for tree replacement and maintenance over the long-term maintenance ~~(5-year)~~ period. Native trees, particularly oaks, shall be protected for the life of the project.

2. **Wetland Mitigation/Habitat Replacement Goals and Guidelines**

a) Existing wetlands shall be preserved onsite to the maximum extent feasible, and as allowed by CDFG and ACOE permits.

b) Wetland creation/enhancement efforts shall incorporate all ACOE/CDFG/RWQCB permit requirements for habitat replacement. Creation/enhancement areas shall adhere to all permit conditions. This includes:

- ~~Creation of freshwater marsh (FWM) habitat for impacts to FWM within the project. This shall provide a 1:1 replacement ratio for FWM impacts, based upon final Golf links development plan and impacts. Replacement acreage shall be created at the lake perimeter. Water fluctuations shall be planned into the elevation of the planting area adjacent to the lake to provide adequate water source in perpetuity. The intent will also be to enhance surface water wildlife values at the lake. Appropriate clay soils shall be stockpiled onsite during construction for use as a clay liner under the lake and to provide a perched water table under the marsh creation areas bordering the lake.~~

- Enhancement of existing disturbed habitat adjacent to southern willow scrub habitat (SWS) as compensation for impacts to SWS habitat. Location for SWS enhancement/revegetation shall be at the disturbed wetland areas near Holes 9 and 14. This shall satisfy a ~~3:1~~ 5:1 replacement ratio for onsite ~~wetland~~ southern will scrub impacts based upon area of impact from final golf links development plans (i.e., impacts and mitigation acreage to be calculated in acres or sq.ft.).

- ~~Provision of additional enhancement or wetland creation to compensate for impacts to recently created (manmade) disturbed wetlands. Mitigation shall be accomplished as part of the FWM creation effort or as part of the SWS enhancement effort, as well as at newly created wetlands at graded areas to be seeded with "Riparian Mix" (see Master Landscape Plan). This shall satisfy a 0.5:1 replacement ratio for impacts to disturbed wetlands.~~

c) ~~Vernal pool protection – provide~~ The vernal pool onsite shall be protected by temporary fencing during construction and permanent fencing through the life of the project. Protective measures shall include ~~Provide~~ 100-foot setbacks where possible, protective and informational signage, buffers; and non-native (exotic) plant removal as directed by project biologist. This meets the requirements of Permit Condition 13.

d) Maintenance of 30' transitional native planting buffers along edges of native canyons (barranca areas) shall be provided, consistent with the biological mapping; dense native plantings shall be provided within buffer areas adjacent to canyons where native vegetation is sparse or lacking. The intent is to have the edge of the Golf Links turf and developed areas remain 30' away from canyon edges.

e) Long-term Golf Links operational considerations shall be planned for. Invasive tamarisk and/or other undesirable exotic plant and weed species shall be removed from all wetland mitigation and enhancement areas over the life of the project as described in the Exotic Plant Control Plan.

3. Grassland and Erosion Control Revegetation Goals and Guidelines

a) The Dos Pueblos Golf Links landscape and erosion control plans shall incorporate revegetation ~~with grassland habitat~~ as a transitional landscape element between

the Golf Links and the existing native areas (See (b) below). Extent of Native Grassland revegetation shall be based upon applicable project mitigation requirements. See Sheets LR-14, LR-15 ~~Hydroseed~~ Revegetation Plan.

b) ~~Native and~~ Non-native grasses shall be incorporated into transitional areas (Erosion Control Areas) extending from the Golf Links play areas out to existing native vegetation (i.e., outside of tee, fairway, green and rough areas) (see "Erosion Control Mix," ~~Master Landscape~~ Landscape Revegetation Plan). Transitional revegetation shall be defined as a managed non-native grassland vegetation community located in a transitional area between Golf Links uses (outside the rough) and the undisturbed vegetation areas to provide erosion control protection. This managed ~~grassland~~ vegetation community shall be composed of both native and non-native ~~grassland~~ species to provide erosion control protection.

c) ~~Native~~ Grass~~land~~ and upland shrub species to be seeded in the ~~erosion control~~ transitional areas (~~revegetation~~ erosion control areas) may include the following: *Nassella pulchra, Nassella lepida, Melica imperfecta, Lotus scoparius, Lupinus succulentus*, ~~*Ericameria ericoides ericoides*~~, *Artemisia californica, Isocoma menziesii, Encelia californica,* and *Eschscholzia californica.* Final plant pallette shall be as described in the ~~Master~~ Landscape ~~Hydroseed~~ Revegetation Plan.

All seeds shall have been collected from local central coast California sources (from individuals indigenous to the coastal side of the Santa Ynez mountains between the Santa Ynez River and Carpinteria Marsh). ~~unless unavailable within this region. within the bioregion~~. Seed shall be acquired from an approved native seed supplier. If any species are unavailable within this region, the mix percentages of available seeds will be changed to accommodate shortages.

Non-native plant species will be allowed as part of the overall plant composition, but will not be intentionally planted in the native grassland areas. Non-native species which will be allowed to remain may include the following: ~~*Lolium multiflorum*~~, *Bromus diandrus, B. madritensis, B. hordeaceus, Hordium spp., Avena barbata, Vicia spp., Trifolium hirtum (rose clover).* Invasive weed species such as black mustard (*Brassica nigra*), tree tobacco (*Nicotiana glauca*), Pampas grass (*Cortaderia sellowiana*), fennel (*Foeniculum vulgare*), castor bean (*Ricinus communis*) and other invasive species shall be controlled/eradicated as directed by the project biologist and per the requirements of the Exotic Plant Control Plan (EPCP).

d) Techniques used to create the managed transitional vegetation community may include the following:

- Revegetation (i.e., erosion control ~~protection~~) areas shall be defined on project landscape plans to show the following: (1) areas to be disked and seeded; (2) areas for preservation of existing grasses with weed removal; (3) edge transition areas; (4) transitional areas where grassland goals don't apply but other transitional species might be utilized. (This goal is dependent on the ~~master landscape~~ Landscape Revegetation Plan layout).
- Existing native grassland areas to be retained/preserved shall be flagged and fenced prior to grading.
- Implement weed eradication procedures in areas to be seeded with native grassland species; the weed eradication procedure shall consist of an iterative grow and kill procedure (i.e. irrigation applications and weed germination), and herbicide treatments prior to seeding.
- Disk areas designated for seeding with transitional vegetation (erosion control ~~protection~~) species.
- Seeds and limited use of plugs and/or liners ~~would~~ will be used to establish the native grasslands.
- Hand-weed ~~or mow~~ in native grassland preservation areas not designated for seeding (to be coordinated with project biologist).
- Conduct aggressive weed removal (by hand) immediately following seeding and until plant establishment has assured adequate plant cover of desirable grassland/erosion control ~~protection~~ species and weed competition is minimized.

e) Maintenance and monitoring shall include intensive weed control procedures until adequate plant establishment is achieved and verification of achievement of cover goals.

f) Specific management guidelines for the long-term management of the native grassland community and its relationship to Golf Links operational requirements shall be provided in the project Resource Management Plan (Mitigation, Maintenance and Monitoring Plan).

4. Sensitive Plant Transplantation Guidelines (Southern Tarplant)

a) Southern tarplant (*Hemizonia paryiii* ssp. *australis*) salvage areas shall be flagged for seed collection and individual plant relocation.

b) Collect seed from tarplant populations to be impacted and store seed for subsequent seeding effort at translocation site. Propagate a portion of the seed at a native plant nursery to produce container plants for out-planting at the translocation site.

c) Design southern tarplant translocation site/s in a location/s where long-term viability of the population can be assured (size of translocation site to be based upon original impacts to the existing population, estimated population of ~~20-30~~ 4500 individual plants)[1]. Adequate buffers shall be established from the Golf Links play areas to minimize human intrusion and to minimize non-native/weed invasion. The translocated population shall border native areas or shall be established in context to the native plant revegetation effort, to help avoid invasion of non-native plant species.

d) Re-introduce seed, salvaged plants, and container grown plants into the designated translocation site. Work to be coordinated by project biologist. Fence site for protection of translocated population. Fencing to be determined by landscape architect.

e) Monitor the translocated/revegetated population for viability for a minimum ~~three~~ two-year period.

f) Success criteria shall be established to assure adequate replacement (based upon quantity of individual plants impacted) for impacts to the original population.

g) Tarplant Contingency Plan:
The project biologist will continue to collect seeds from southern tarplants growing on the project site. Seeds will also be collected from any nursery-grown tarplants that go into seed (these seeds will be stored separately from seeds collected from natural populations).

[1] Historically, population of the southern tarplant has been limited onsite. Due to unusual weather conditions and abandonment activities this last year, the population of the southern tarplant has increased significantly. Thus, the actual number of southern tarplants impacted by the Golf Links project shall be determined prior to grading activities. A survey of southern tarplants removed shall be conducted by the project biologist and verified by the County EQAP biologist.

Southern tarplant seeds will be held at the nursery or other acceptable storage location for use in propagation as needed. Stored seeds will be periodically checked for viability through simple germination testing at the nursery.

In the event that tarplant revegetation efforts at the site fail, the stored seeds will be used to propagate additional plants. Planting locations and strategies will be re-evaluated, based on information gained during previous revegetation attempts.

5. Performance Criteria

~~All revegetation areas shall have a minimum survival for plantings from containers and/or cuttings, of 70% the first two years and 80% survival thereafter each year for the five-year monitoring period. Replacement plants shall be monitored under the same performance criteria stated above~~. Refer to TABLE C, Revegetation Success Criteria, in BELP for ~~additional information~~ complete performance criteria.

6. Temporary Irrigation

Temporary irrigation (drip at container plants, spray at seeded areas) will be installed at the time of planting. The intent of the irrigation is to help get the plants/seedlings established, with the goal of weaning plants as quickly as they are able to survive without supplemental irrigation. See BELP for specific information.

7. Moisture Sensors

Temporary and permanent irrigation systems shall be installed with moisture sensors to monitor the soils and plants requirements for water. See Schematic Irrigation Plans (LI-1, LI-2).

MEMORANDUM

TO:	Samantha Kim
FROM:	Craig A. Steward, P.E.
SUBJECT:	Erosion Control Plan
W.O. NO:	12825.06 Dos Pueblos Golf Links
DATE:	December 1, 1998

The purpose of this memo is to explain the operation of the erosion control plan and contingency plans.

The erosion control plan uses many devices to control the major site pollutant - sediment. These devices include:

- Silt fencing - silt fencing is proposed to be constructed wherever water will drain off the active (disturbed) project site. Silt fencing consists of filter fabric attached to stakes or fencing. See Detail A-35. Silt laden water collects along the fence. The silt is filtered out as the water passes through the fabric. This device shall be examined by the contractor before and after each rainfall event. When a significant amount of sediment has been trapped, the contractor shall remove the excess sediment. If there is a failure of the fencing, this shall be examined for modifications and repaired immediately.
- Straw Bale Dikes - straw bale diking is placed in small swales to reduce the velocity of the water and allow silt to settle out at regular intervals as well as to direct and contain sheet flow. See Detail F-35. This device shall be examined by the contractor before and after each rainfall event. When a significant amount of sediment has been trapped, the contractor shall remove the excess sediment. If there is a failure of the diking, this shall be examined for modifications and repaired immediately.
- Desilting Facility - the desilting facilities are placed around storm drain inlets to prevent the entry of silt into the storm drains and the subsequent discharge of silt to creeks. See Detail E-35 and G-35. Silt will settle out around the straw bales or gravel. These devices shall be examined by the contractor before and after each rainfall event. When a significant amount of sediment has been trapped, the contractor shall remove the excess sediment. If there is a failure of the desilting facility, this shall be examined for modifications and repaired immediately. Modifications may involve additional grading around the facility to provide more silt storage or intermediate silt fencing.

- Rock Berm - rock berms are constructed within graded earth swales to reduce the velocity of storm water runoff. See Detail C-35. The rock berms reduce the effective gradient of the swale, break up the flow of runoff and trap loose sediment behind the rock berms. This device shall be examined by the contractor before and after each rainfall event. When a significant amount of sediment has been trapped, the contractor shall remove the excess sediment. If there is a failure of the rock berm, this shall be examined for modifications and repaired immediately. Modifications may involve closer berm placement or the use of larger rock.
- Rock Rip-Rap - rock rip-rap is loose rock that is placed at the outflow of a storm drain pipe to slow and the storm water down and disperse the flow. These devices shall be examined by the contractor before and after each rainfall event. When a significant amount of the rock has been displaced, the contractor shall add rock of an appropriate size. If there is a failure of the rock rip-rap, this shall be examined for modifications and repaired immediately. Modifications may involve the use of larger rock or simply more rock.
- Silt Trap - a silt trap is a local depression that is used to slow down water from a small graded drainage area (5 acres or less) and settle out the silt. See Detail H-35. These devices shall be examined by the contractor before and after each rainfall event. When a significant amount of the silt storage has been used, the contractor shall clean out the silt trap. If there is a failure of the silt trap, this shall be examined for modifications and repaired immediately.
- Slope Protection - graded slopes are to be seeded with grass or other approved plantings as soon as practicable. After grass has germinated and is lush and growing, it will significantly reduce erosion due to wind and rain. It shall be examined by the contractor before and after each rainfall event. If there is a failure of the slope protection (i.e., gullying or excessive sheet erosion), this shall be examined for modification and repaired immediately. Repair or modifications may include re-grading and reseeding or application of an erosion control fabric such as jute netting/geotextile fabric and re-grading.

These erosion control plans have been prepared for the County of Santa Barbara. As required per Condition #28 of the Dos Pueblos Golf Links Project Conditional Use Permit, graded areas shall be revegetated within three weeks of final grading activities within a given area. Scheduling of construction shall be limited to the dry season (May through October) unless appropriate erosion control devices are installed. Any significant erosion control measures, proposed in addition to the measures noted in the County-approved Erosion Control, Construction Fencing & Access Plan (sheets G33 and G34), will be subject to approval on a case-by-case basis by the County of Santa Barbara and may require permits from the County and/or other agencies.

In addition, since the disturbed area of the site exceeds 5 acres, a NPDES Construction Permit and Storm Water Pollution Prevention Plan (SWPPP) will be prepared prior to the initiation of grading. The SWPPP will include these erosion control plans and outline, in detail, the required inspection procedures, responsible parties, and maintenance procedures as they impact construction activities.

APPENDIX B

Restricted Access Implementation Plan

Project: Dos Pueblos Golf Links
91-CP-085; A-4-STB-93-15
APN: 079-180-05,-16,-18
079-200-04,-08
Location: South side of US 101, approximately 1.6 miles west of Winchester Canyon exit, Goleta Area, Third Supervisorial District

RESTRICTED ACCESS IMPLEMENTATION PLAN

FOR THE DOS PUEBLOS GOLF LINKS PROJECT

This Restricted Access Implementation Plan (the "Plan"), prepared in consultation with, and approved by, the California Department of Fish and Game ("DFG") and the National Marine Fisheries Services ("NMFS"), for the Dos Pueblos Golf Links Project ("Project"), is established to comply with Santa Barbara County Conditional Use Permit No. 91-CP-85 and California Coastal Commission Coastal Development Permit No. 4-STB-93-154.

The Owner, CPHPAH DOS PUEBLOS ASSOCIATES, LLC, (hereinafter referred to as the "Owner") agrees for the life of the Project, to implement each of the following provisions to reduce impacts to the Harbor Seal haul-out area associated with the offer to dedicate vertical coastal access to the beac at the mouth of Eagle Canyon and to the beach and at the mouth of the canyon just west of Tomate Canyon:

1. During the seal pupping/breeding season (February 1 to May 31): (a) access to the beach at the vertical coastal access point at Eagle Canyon shall be prohibited, and (b) access eastward along the beach from the vertical coastal access point west of Tomate Canyon shall be prohibited.

2. Locking gate(s) shall be installed at the vertical access trail(s) to implement any restrictions on access to the beach under this Plan.

3. No dogs shall be allowed on the vertical access trails or on the beach.

4. Signs informing users of access restrictions and relevant Marine Mammal Protection requirements shall be posted at the golf course parking lot, at the bridge stairway to the coastal access trail, at the terminus of the trail at Eagle Canyon, at the terminus of the vertical access trail west of Tomate Canyon and, if allowable, on the beach bluff east and west of the haul-out area. Interpretative signing shall also be provided at these locations. The content of the interpretative signs shall be subject to the review and approval of P&D (formerly RMD) and the Executive Director of the California Coastal Commission.

Signs informing users of alternative access locations during restricted access periods shall be posted at the golf course parking lot and the bridge stairway to the lateral access. The content of such signs shall be subject to the review and approval of P&D and the Executive Director of the California Coastal Commission.

5. To assure that the above restrictions are enforced and that the seals are not being harassed, the Owner shall provide for ongoing monitoring of the Harbor Seal haul-out area as follows:

a. During the seal pupping/breeding season (February 1 to May 31), on-site monitor(s) shall be provided by the Owner and shall wear appropriate clothing (shirt or jacket) marked with the Project's logo for identification.

b. The on-site monitor(s) shall receive instruction on the nature and importance of the Harbor Seal haul-out area and of the access regulations of this Plan.

c. The responsibilities of the on-site monitor(s) shall include:

(1) To ensure that the gate at the Eagle Canyon vertical access trail is locked during the seal pupping/breeding season (February 1 to May 31);

(2) To use all reasonable efforts to enforce the pupping/breedin seasonal restrictions of: a) no use of the Eagle Canyon vertical access trail, b) no beach access eastward of the west of Tomate Canyon access trail, and c) no dogs on the vertical access trail or beach;

(3) To promptly notify any person(s) whose actions are in violation of this Plan and request that such actions in violation cease;

(4) To request any person who, after such notice, continues to violate the restrictions of this Plan to identify himself or herself and to immediately leave the area. The monitor(s) shall also notify the Santa Barbara County Sheriff. Records shall be maintained of these violations. The monitor(s) wil not risk either physical or property harm or damage.

6. The Harbor Seal haul-out area also shall be monitored by NMFS and/or DFG subject to the following monitoring program, developed and approved by NMFS, for the purpose of determining the effect of use of the public access features of the development on the seals. The Owner shall be financially responsible for the implementation of the monitoring program for a period of three years. A NMFS-approved monitor will conduct all monitoring.

The first year of monitoring will be implemented prior to the opening of the Project to the public to gather baseline data on the Harbor Sea colony. Monitor(s) will conduct observations of seal behavior one day per wee for approximately one tidal cycle each day. The following data will be recorded: (1) number of seals on site; (2) date; (3) time; (4) tidal height; (5) number of adults, subadults and pups; (6) number of females and males; (7) number of molting seals; and (8) details of any observed disturbances. A

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baseline report shall be submitted to NMFS within 90 days of the opening of Project to the public.

The second and third year(s) of monitoring shall consist of the same monitoring frequency and data gathering requirements as the first year. During the second and third year(s), the on-site monitor(s) shall also document: (1) the number of people using the Eagle Canyon beach trail and th west of Tomate Canyon vertical access trail; and (2) all incidents of violations of the restrictions of this Plan. Reports of the second and thir year(s) monitoring shall be submitted to NMFS on a quarterly basis. Upon completion of the third year of monitoring, the Owner will cooperate with NM in the event NMFS wishes to continue monitoring of the Harbor Seal haul-out area.

If NMFS or DFG determines that the Harbor Seals are being detrimentally affected by users of the vertical accessways, the Owner shall, the request of NMFS or DFG, seek an emergency coastal development permit fr the California Coastal Commission to further regulate use of the vertical accessways to avoid jeopardizing the Harbor Seals. Approval of such additi access regulation shall be consistent with all applicable provisions of the certified County of Santa Barbara Local Coastal Program, the California Coas Act and the Federal Marine Mammal Protection Act.

7. The Owner agrees to cooperate fully with NMFS, DFG, the County of Santa Barbara and the California Coastal Commission to ensure compliance wi all of the terms of this Plan.

APPENDIX C

Project Construction Schedule

pullout sheets
(not reproduced
in Exhibit 6)

APPENDIX D

Agronomic Turf Management and Integrated Pest Management

AGRONOMIC TURF MANAGEMENT
AND
INTEGRATED PEST MANAGEMENT PLAN
FOR
DOS PUEBLOS GOLF LINKS

SANTA BARBARA, CALIFORNIA

DECEMBER 1, 1998

PLAN MISSION STATEMENT:

Effective environmental and human safety programs are the primary objectives in formulating a successful golf course maintenance plan. Dos Pueblos Golf Links is dedicated to promoting sound turf management procedures while at the same time helping to enhance and preserve the environmental, recreational and aesthetic value of the golf course facility.


PREMIER
GOLF & LANDSCAPE™

TABLE OF CONTENTS

This document was formulated by Premier Golf and Landscape, Inc., using existing information and documentation provided by the USGA Greens Section, University of California Statewide Integrated Pest Management Project, the GCSAA and Premier Golf & Landscape, Inc. Any questions and or specific implementation strategies during the construction and operation of this golf facility should be directed to the on-site Golf Course Superintendent.

GENERAL DISCUSSION

One of the most appealing aspects of golf is the beauty of the course. It is the superintendent's responsibility to minimize weeds, insects, nematodes, and diseases in order to maintain an "acceptable" playing condition. Golf course superintendents experience pressure from golfers to provide tournament conditions on a year-round basis, regardless of the agronomic conditions necessary to grow turf in such a manner. Often, this standard requires grasses to be grown outside their natural range of agronomic adaptability. Consequently, superintendents have been forced to increase the usage of fertilizer, water, and pesticides in order to maintain a course to the players satisfaction.

As public concerns about chemical use and restrictions on the use of traditionally used maintenance methods increase, superintendents are being forced to either let playing conditions lapse or creatively solve agronomic problems in new ways. Dos Pueblos shall incorporate a "common sense" approach to golf course maintenance by emphasizing preventative measures as opposed to simply reacting. Steps will be taken to ensure the preservation of the natural environment and to incorporate the most environmentally compatible materials wherever possible in solving agronomic problems.

Dos Pueblos shall also be a member of the Audubon Cooperative Sanctuary Program which recommends and supplies information and implementation programs for enhancing habitat for local wildlife proliferation. The installation of bat and swallow boxes as well as the establishment of other beneficial species habitat within these guidelines shall be a principle element of the Integrated Pest Management (IPM) implementation at Dos Pueblos.

Dos Pueblos shall implement management practices which encourage optimum plant health. The desire is to accomplish this goal with as little fertilizer, water, and chemical pest control as possible. Dos Pueblos shall exclusively employ the Integrated Pest Management system which optimizes prudent maintenance practices by combining proper plant selection, correct cultural practices, careful monitoring of pests and environmental conditions, biological control measures, and judicial pesticide use.

A dense, vigorously growing, competitive stand of turfgrass will resist invasion by weeds, disease and other pests. While it is difficult to eliminate all pests from turf, in highly maintained turf it is possible to prevent large infestations, which make turf unattractive and reduce its utility.

The first step is preparing the site properly and choosing an appropriate turfgrass species for the location, followed by cultural practices that contribute to turf vigor, such as proper irrigation, mowing, fertilization, thatch removal, and aeration. The increased vigor allows turf to better withstand insect, disease, and nematode damage and to recover more quickly. Healthy turf can also out-compete weeds and reduce the chances of their becoming established. Herbicides are used as tools in turf management where high quality turf is required; however, their use should be integrated with a good cultural program.

TURF SELECTION

Turf species and cultivars vary in their adaptability to different areas of California. Choosing a well-adapted cultivar to plant will be one of the most important turf management decisions. Cool season species (bentgrass, bluegrass, perennial ryegrass, and tall fescue) are most competitive in the coastal and northern regions of California; some of the newer cultivars of perennial ryegrass, Kentucky bluegrass and tall fescue, however, are more competitive and grow better than the old cultivars. Warm season species (common and hybridbermudagrass and zoysiagrass) are most competitive with weeds in the interior valleys and desert regions.

Cultivars are continually being developed or improved. For the latest information, consult your Superintendent or the USGA Greens Section. The major species used for turfgrass in California and that may be considered for this site are listed below.

Common Name	Scientific Name
bentgrasses	Agrostis spp.
bermudagrass	Cynodon
bluegrass, Kentucky	Poa pratensis
fescue, fine	Festuca rubra commutata
fescue, tall	Festuca arundinacea
ryegrasses	Lolium spp.
Zoysiagrass	Zoysia japonica
Kikuyugrass	

Santa Barbara has a Mediterranean climate that is characterized by rainfall in winter and spring and very little rainfall in summer and fall, (16.1" annually). In addition, temperatures are very mild year round with annual average lows in the 40's to high 50's and annual average high's in the 60's and 70's. These climactic characteristics allow for the effective management of both warm and cool season turfgrasses.

Dos Pueblos shall provide Planning and Development (P & D) with written notification of final turfgrass selections and supporting documentation of those choices.

The turfgrass selection process for Dos Pueblos shall take into consideration such factors as soil types, climate, durability of species, and water quality. The turf species selected should reflect those most adaptable to and compatible with these areas of evaluation.

Preliminary investigation has uncovered an unusually high salt content in the reclaimed water irrigation source (1,000 – 1,200 ppm). Therefore, varieties selected should be salt tolerant and drought tolerant to reduce watering requirements.

Preliminary water testing of the reclaimed water source shall be conducted prior to use of the irrigation system. Testing shall reflect salt, solids, and nitrate levels and shall be used as baseline data. Surface water testing shall be implemented as specified in the following table. Surface water testing shall be conducted prior to use of any pesticides or fertilizers on the golf course and shall be used as baseline data. Surface water sampling and testing shall be conducted by a third party designee. In addition, samples

shall be taken from locations designated by the Regional Water Quality Control Board (RWQCB) and P&D. Surface water quality monitoring shall be performed for the first two years of golf course operation. Sampling frequency may be reduced after two years, as approved by P&D, if IPM practices are shown to be effective. If sampling indicates exceedances of thresholds, as determined by the RWQCB and P&D, the applicant shall modify the IPM to eliminate practices which contribute to the exceedances of the thresholds and to reach acceptable levels, as determined by the RWQCB & P&D.

SURFACE WATER SAMPLING SCHEDULE			
Location	**Parameter**	**Species**	**Frequency**
Creeks of seasonal water flow	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Monthly with most sensitive species until flow ceases.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Twice annually at first creek flush and again approx. 90 days after first test.
	Nutrient (N, P)		Monthly at first creek flush and until flow ceases.
Creeks of perennial water flow	Acute Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Annually at first creek flush. Quarterly thereafter.
	Nutrient (N, P)		Monthly.
On-site bodies of water (vernal pool and pond)	Acute Toxicity	Algae, Vertebrate, Invertebrate	Quarterly.
		Species of highest sensitivity	Repeated monthly.
	Chronic Toxicity	Algae, Vertebrate, Invertebrate	Quarterly.

Soils tests shall be conducted prior to turf selection at six different locations, three north of the railroad and three south of the railroad, to be determined by the applicant and approved by P&D. The data obtained from these tests shall be used as both base line data and for further testing comparisons described below. Turfgrass selection shall reflect varieties conducive to the soils growth medium as shown in the soils tests.

Soils tests shall reflect basic fertility, composition, and nematode levels. Test cores shall be taken by a third-party designee and delivered to a certified soils lab for analysis. Future testing at the same site-specific locations shall be conducted semi-annually for the first two years of golf course operation. Soil sampling frequency may be reduced after two years, as approved by P&D, if IPM practices are shown to be effective.

TURF ESTABLISHMENT

Before planting, annual weeds can be controlled by irrigating to allow germination, followed by cultivation or application of a contact herbicide. This process should be repeated two or three times to improve the chances of establishing a turfgrass with a minimum of weed populations.

MANAGING ESTABLISHED TURF

Turfgrass can be established and maintained to discourage weeds in the turf or to decrease chances for weeds invasion. Any condition that exposes the soil surface to additional light allows weeds to invade. Weed problems are often the result of overwatering or underwatering, mowing too low or too high, low fertility, excessive wear, disease or insect damage, soil compaction, and excessive shading.

AGRONOMIC TURF MANAGEMENT

The following is a description of the agronomic turf management practices that shall be used at Dos Pueblos Golf Links in the daily maintenance of the golf course. The cultural practices described herein are formulated to maintain the healthiest stand of turf possible. All mowing heights and frequencies are periodically evaluated and adjusted to reflect changes in agronomic conditions.

MOWING

Tees

All tees are mowed a minimum of 3 times weekly .

Tees are hand mowed and triplex mowed depending on design contours and tee square footage.

Tees are mowed to a height of 1/4"- 3/8" depending on agronomic conditions.

All tees are cross-cut for aesthetic presentation and promotion of turf quality.

Fairways

All fairways are mowed a minimum of 3 times weekly.

Fairways are mowed with lightweight mowing units to reduce compaction and promote healthy turf conditions.

Fairways are mowed to a height of 3/8" to 5/8" depending on turf conditions and playability.

All fairways shall be crosscut for aesthetic presentation and promotion of turf quality.

Greens

All greens are hand mowed and/or mowed triplex daily.

Standard green mowing height is 1/8" to 3/16".

All collars are hand mowed a minimum of 3 times weekly.

Standard collar mowing height is 3/8".

All greens are crosscut for aesthetic presentation and promotion of turf quality.

BUNKER MAINTENANCE

All Bunker bases are machine raked with Bunker faces being hand raked.

All Bunker faces are edged weekly or as agronomic conditions dictate.

Depth of sand is adjusted as necessary to maintain uniform playing conditions (approximately 4"- 6").

IRRIGATION MANAGEMENT

Santa Barbara has a Mediterranean climate that is characterized by rainfall in winter and spring and very little rainfall in summer and fall, (16.1" annually). In addition, Temperatures are very mild year round with annual average lows in the 40's to high 50's and annual average high's in the 60's and 70's. These climactic characteristics allow for the effective management of both warm and cool season turfgrasses. Irrigation is needed, therefore, for both cool and warm season turfgrasses. It is very important to follow good irrigation practices, regardless of turfgrass species used, so that optimum growth and development of turfgrass is obtained. A rapidly growing, competitive turfgrass sward resists weed invasion.

Most golf courses in California are irrigated with a computer controlled irrigation system which maximizes irrigation effectiveness. A uniform application of water is extremely important for maximum efficiency because it is important to avoid wet and dry spots within the sward. Installation and incorporation of an on-site weather station is recommended for optimum data collection by the Superintendent. The daily monitoring of evapotranspiration, temperature, humidity, wind speed, and solar radiation levels allow for the most precise irrigation scheduling and reduction of water usage.

Turf is weakened in wet spots because of poor soil aeration and root disease that can result in the invasion of shallow-rooted weeds such as crabgrass, annual bluegrass, and

oxalis. Also, runoff from over irrigated areas is wasteful and results in accumulation of water in low parts of the sward. In contrast, dry sites will be characterized by turf of poor color, density, and uniformity that allows the invasion of deep-rooted weeds such as bermudagrass, dandelions, plantains, clover, knotweed, and yarrow.

Proper timing and an adequate amount of irrigation are necessary for optimum growth, maximum quality, and best appearance of the respective turf species. Warm season turf species require less irrigation than cool season turf species. Frequently used warm season turf species in California for golf courses include common and hybrid bermudagrass and zoysiagrass. The most commonly used cool season turfgrasses for California golf courses are bentgrass, tall fescue, Kentucky bluegrass, and perennial and annual ryegrass, which are the higher water us rate grasses. Water use rates vary based on location.

Key points for maximum irrigation efficiency are as follows:

Irrigate deeply, but infrequently.

Irrigate late at night or early in the morning. At these times water loss from evaporation is minimal and distribution is usually good because of good water pressure and limited wind.

Avoid runoff by matching water application rates to soil infiltration rates (the rate water enters the soil).

In general, use less water in shaded areas than in open sun.

Remove thatch in spring if it is more than one-half inch thick.

Do not overfertilize; fertilize moderately according to the individual species and location.

A preventative irrigation system maintenance program shall be instituted with periodic checks and adjustments as follows:

Pump Stations - Weekly
Central Controller - Daily
Scheduling - Daily
Injection System - Daily (if applicable)
Satellite Controller - Weekly
Pressure Relief/Release Valves - Bimonthly
Air Release Valves - Semiannually
Lake Circulation System - Monthly

There are other site-specific considerations that should be addressed. It will be important to incorporate part-circle irrigation heads on all maintained turf perimeters in order to control coverage. Precise spacing of heads throughout the irrigation system is omnipotent in controlling uniformity of fertilizer and chemical degradation, as well as dispersement control through fertigation system.

FERTILIZATION

Greens are liquid fertilized every two weeks; all other areas will be fertilized on an as needed basis according to weather and turf conditions. It is recommended that a irrigation injection or fertigation system be incorporated into irrigation delivery for tees, fairways and roughs. The tangible benefits include immediate and uniform applications as will as reducing the amount of leaching in the soil. This system allows for the delivery of nutrients, minerals and trace elements, to specific areas or course wide, more often and in a reduced concentration, which promotes a more vigorous turf stand.

CHEMICAL APPLICATIONS

Licensed Pest Control Advisors and Applicators, shall on a daily basis, observe, recommend, and implement pesticide applications as the agronomic conditions warrant.

The storage, mixing, handling and application of chemicals shall be covered in detail in the Hazardous Materials Business Plan (HMBP) and shall conform to all federal, state and local regulatory agency requirements. A copy of the HMBP shall be submitted to P&D.

SPECIALIZED PROCEDURES

Aerification

Aerification of the entire course is done in stages with greens being done 2-3 times a year, tees 2 times a year, and fairways once a year.

Verticutting

Ordinarily verticutting is implemented only on greens with varying degrees of frequency depending on turf growth rates, mowing heights, and amount of grooming implemented in the mowing program. Tees and fairways may require verticutting depending on turf varieties selected.

Topdressing

Greens are lightly topdressed bi-monthly or monthly to minimize the accumulation of thatch and maximize the consistency of the putting surface. Tees are to be topdressed twice annually to coincide with aerification. Fairways are topdressed only for drainage considerations.

Equipment Maintenance

In an effort to avoid the high costs associated with replacing maintenance equipment and promote consistent cultural practices, it will be important to incorporate a comprehensive preventative maintenance program, as well as sending all course

mechanics to extensive maintenance procedural programs in order to maximize equipment performance and longevity.

Maintenance Crew Training

Before maintenance work commences on-site, the golf course superintendent will be directly responsible for educating and training maintenance crewmembers in the intricacies associated with the IPM, the Biological Enhancement and Landscape Plan (BELP), and the Dos Pueblos Golf Links conditions of approval. Crewmembers will be made aware of all restrictions specified in the plans and permits. The superintendent shall conduct meetings as warranted so he or she may cover any changes to instituted programs and evaluate past employee performance in this area.

Prior to golf course operation, tables, simplifying correct IPM procedures, and checklists will be designed and kept by the superintendent so that historical record of cultural practices by crewmembers may be traced.

INTEGRATED PEST MANAGEMENT

Treatment thresholds within this program shall be governed by agronomic conditions and the University of California IPM Program for Turf. This enables the superintendent the flexibility to treat pests in the most environmentally beneficial manner possible.

Effective implementation of IPM requires reliable information about the following:

1. **The Complete Ecological Situation Involving a Pest**

   Identifying all ecological factors affecting the pest so those factors may be manipulated to either reduce the pests population, or cause plant material to overcome and/or tolerate the pest.

2. **A Monitoring System to Carefully Follow Pest Trends**

   Determining if a pesticide will be necessary, and if so, when it would be most effectively applied.

3. **Maintain Accurate Records Measuring IPM Effectiveness**

   The IPM system is broken down into two distinct categories. The first is of a non-chemical nature, which is the most desirable. The second is of a chemical nature, which is used as a second line of defense.

NON-CHEMICAL STRATEGIES

The following contributes to the integration of non-chemical strategies for pest management: host-plant resistance, pest-free propagation, site preparation, cultural practices, biological control, and habitat enhancement.

Host Plant Resistance

One of the oldest means of pest control is the proper selection of pest-resistant or pest-tolerant plants. Many turfgrass varieties have been developed as a direct result of this type of selection process. During the grow-in period careful consideration will be given to the types of turf and plant material selected in order to create an environment ill-suited for common pest proliferation.

Pest-Free Propagation

One of the most often overlooked means of preventing pest establishment in turf and plant material is by using pest-free planting material. Various California seed certification programs have been among the first regulatory measures established to provide pest-free propagation. To meet certification, each bag of seed must provide information on purity and germination percentages. In addition, a weed seed listing is also provided. Noxious weed seeds are not allowed in the certified bags of seed.

Dos Pueblos will take this process one step further and ensure that all planting materials introduced contain few, if any, pests. For example, with limited nematode control options currently available, management personnel will make every effort to insure that all sod and stolons do not bring with them a serious nematode problem. A nematode assay of the material before delivery can help by showing the kinds of nematodes that are present and if they are at excessive levels. While it is not realistic to expect turf-planting material to be entirely free of nematodes, it is reasonable to seek material that contains harmless types in small amounts.

By visually examining root systems at the time of purchase, it can be determined if root pests have been sever in the production field and thus prevent a high risk of damage once the material has been planted. In addition, the turf should also be inspected for other pests such as weeds and insects. The old saying, "An ounce of prevention is worth a pound on cure" has never been truer than when deciding which planting material should be used. The same philosophy also applies to planting in soil that is free of noxious pests. Soil fumigation to control many soil-born pests such as nematodes and diseases should be considered in almost all cases before turf establishment.

Site Preparation

Properly preparing the planting site is an important, yet often overlooked, IPM step. This involves planning and constructing the golf course with exacting water management capabilities. Precise water management is the major key to successful turf maintenance under intense playing conditions.

Disease and soil compaction are problems that occur if soil saturation is allowed during intense play. Adequate surface and subsurface drainage must be provided.

Cultural Practices

The best defense against pest invasion is maintaining a dense, healthy, competitive turf. This is achieved by incorporating cultural practices, which encourage turf growth over pest proliferation. These practices include proper irrigation, fertilization, mowing, aerification and topdressing.

Biological Control

Biological pest control uses natural enemies to reduce pest populations. Criteria for a successful biological control agent include:

1) Absence of non-target effects on desirable plants or other organisms.

2) Its ability to reproduce quickly to prevent the pest from attaining damage thresholds.

3) Its persistence in the environment of the host. The biological control agent also should be free of its own predators, parasites, and pathogens.

The concept of biological control has been so widely publicized that the general public views it as a viable and readily available alternative for all pesticides. Unfortunately, this is not yet the case, but it is an area currently receiving funding for research and development, and hopefully it will provide additional control strategies in the future.

Habitat Enhancement

A site-specific habitat enhancement program shall be developed as beneficial species habitat is observed and documented by the superintendent. A site visit will be conducted by an Audubon Ecologist prior to design of the habitat enhancement program. Prior to implementation of any enhancement program, the developed program shall be submitted to P&D for review and approval. The Audubon Cooperative Sanctuary Program (ACSP) for existing golf courses promotes ecologically sound land management and the conservation of our natural resources. Golf courses can enhance and protect wildlife habitat and water resources. This program provides an advisory information service about how to conduct proactive environmental projects for golf courses. The Audubon Cooperative Sanctuary Program (ACSP) was created by Audubon International and is sponsored by the United States Golf Association (USGA). Together, the USGA and Audubon International are striving to:

1. Enhance wildlife habitats on existing golf courses by working with the golf course manager and providing advice for ecologically sound course management.
2. Encourage active participation in conservation programs by golfers, golf course superintendents, course officials, and the general public.
3. Recognize golf courses as important open spaces and credit the people actively participating in environmentally responsible projects.
4. Educate the public and golf community on the benefits of golf courses and the role they play relative to the environment and the wildlife.

Information regarding the ACSP and specific habitat enhancement and housing for beneficial species is provided in Attachment "A". Targeted species for habitat enhancement and their primary food sources are listed below.

Predator	Food Source
Barn Owl	Rodent
Bat	Mosquito, Insect
Swallow	Insect
Kestral	Insect

CHEMICAL STRATEGIES

Not all pest problems can be solved by host plant resistance, manipulating cultural practices in the plant environment, or by the use of biological control agents. In these cases, pesticides become the second line of defense. Dos Pueblos' philosophy in the IPM system eliminates indiscriminate spraying and will practice only the practical use of pesticides. However, when a pesticide is needed, it should be selected with its environmental affects taken into consideration. This requires extensive knowledge of the pest colony and the interrelation of the pest, host plant, and beneficial natural enemy population. The golf course superintendent shall make these determinations within the guidelines presented herein.

The use of chemicals shall be restricted to the maintained turf areas and used only in accordance with label instructions. It is important to note that those areas at Dos Pueblos considered to be highly sensitive such as buffer zones, native areas, and natural drainage areas shall not be treated with chemicals unless otherwise called for in the Biological Enhancement Landscape Plan (BELP). Those areas in which maintained turf and sensitive areas merge shall be spot sprayed only when necessary in order to minimize the chemical effects to the area, if any. In all cases, spot treatment in these areas ,if applicable, shall always be in compliance with the requirements of the BELP.

In no case shall any spaying of chemicals take place anywhere on site when wind conditions exceed 5 miles per hour.

Considerations for strategic pesticide use involve making management decisions concerning the following:

1. Locate the Pest Using Reliable Monitoring Techniques

Pest identification is a fundamental requirement in this IPM program. The golf course shall be examined on a daily basis in order to identify pests and monitor their levels. Monitoring ranges from visual inspection, sampling and analyzing soil and plant tissue, to the use of sophisticated "high-tech" detection techniques. Decisions based on what pests and symptoms are visible can immediately be determined. When specialized tests must be run at a diagnostic laboratory (e.g., Nematode Assays, detection and accurate identification of certain viruses, species identification of some fungi), the superintendent will know how each type of sample should be taken and handled to provide the most useful and reliable information. Once pests

have been identified and their infestation levels recorded, a control action is initiated at a predetermined pest threshold level as supplied and continually updated by the University of California IPM Program for Turf.

Highly maintained areas such as putting greens have a lower aesthetic threshold than less maintained areas such as roughs, which can withstand a higher degree of pest damage before action is required. These thresholds also vary with the maintenance level expectations of a particular golf course, the availability of financial resources, and the available alternative control measures.

2. **Attack the Pest During Its Most Susceptible Point in the Life Cycle**

Each pest has a point in its life cycle when it is less difficult to control. Usually, this point is during the early stages of development. This same philosophy is also true for most weeds. Young, actively growing weeds are usually the easiest to control. Once weeds begin to mature, they become more difficult and expensive to control.

3. **If a Pesticide is Necessary, Use One That is the Least Harmful to Non-Target Organisms and the Environment**

The superintendent shall be a licensed pesticide advisor and applicator with extensive knowledge and understanding of a pesticides usage and affects. The philosophy is to spot treat, if possible, instead of applying "blanket" or "wall-to-wall" treatments. This will depend on effective monitoring techniques and properly recording and/or mapping pest outbreaks.

Insect Control

There are many insects that can be found on a golf course. Fortunately, only a few are of major importance. Most turfgrass injury from insect pests can be prevented by regular monitoring and immediate remedial action. Good control depends on correct identification and knowledge of a pest's behavior and biology as well as the environmental factors surrounding the pest, such as temperature, moisture, soil type, and location that affect population buildup. The first line of defense against turfgrass pests is a program of sound cultural practices. Good fertilization, watering, and aerification programs cannot be over emphasized. The healthier the turf, the fewer insecticide treatments required, if they are needed at all.

Dos Pueblos has entered into an agreement with the Santa Barbara Coastal Vector Control District for the ongoing abatement of mosquito and black fly infestation.

Although it is impossible to list all potential insects and recommend treatment, without the specific environmental and agronomic factors present at the time of infestation, the following list of insects and potential treatment information are those most likely to occur. It is important to note that this information is taken directly from the UC IPM Program information.

Cutworms and Armyworms

DESCRIPTION OF THE PESTS:

Cutworms and armyworms are larvae of heavy-bodied, night-flying moths [53K] in the Family Noctuidae. The white or greenish eggs of these noctuids are laid in masses, darkening as they approach hatching. Larvae can grow up to 2 inches (5 cm) long and typically curl up and lie still when disturbed.

Although damage is similar, armyworms are distinct from cutworms in their behavior. While cutworms are usually solitary feeders, armyworm eggs are laid in masses and larvae will feed as a group. If there is a high population and food is scarce, armyworms will move as a group, feeding indiscriminately on plants in their path. Variegated cutworms are also known to march like armyworms when populations are high.

DAMAGE:

Any turf species can be affected by any of these noctuid larvae; armyworms prefer damp areas. Cutworms and armyworms are active from mid-March to October. Cutworms and armyworms feed on leaves and crowns and may cut off plants near the soil surface. The larvae feed at night and hide in the thatch layer or in a burrow in the soil during the day. Look for close clipping of grass around aeration holes, which are commonly occupied by larvae. Damage appears as circular spots of dead grass or depressed spots.

BIOLOGICAL CONTROL:

Larvae are parasitized by braconid wasps (Apanteles spp.) and by tachinid flies. Birds also commonly feed on armyworms and cutworms. The extensive contact noctuid larvae have with soil or thatch makes Steinernema carpocapsae nematodes a valuable control measure. Bacillus thuringiensis subsp. kurstaki (Bt) is not as effective against cutworms and armyworms as for sod webworms; consider using Bt only when armyworms and cutworms are in the first and second instars.

CULTURAL CONTROL:

Remove thatch to eliminate much of the daytime resting habitat for noctuid larvae. Armyworms tend to lay eggs in damp areas with rank growth, so eliminate such areas, if possible.

WHEN TO TREAT:

Conduct a pyrethrum or detergent test to determine the infestation level. Consider treatment when there are more than five larvae per square yard. Mow the turf and irrigate before treating. After treatment, do not mow or irrigate for at least 24 hours (in the case of Bt, delay watering a couple days) unless nematodes were applied, in which case apply a post-treatment irrigation.

TREATMENT:

Pesticide (Commercial Name)	Amount/1000 sq ft**
A. ACEPHATE (Orthene Turf, Tree, and Ornamental Spray)	1.2-2.4 oz (cutworms) 0.5-1.2 oz (armyworms)
B. CARBARYL* (Chipco Sevin)	3 fl oz
C. CHLORPYRIFOS (Dursban) 50W (Dursban Pro) 2E Comments: Odorous	0.75 oz 1.5 fl oz
D. CYFLUTHRIN (Tempo) 20 WP	0.175 oz (5 grams)
E. FLUVALINATE (Mavrik Aquaflow)	0.23 fl oz
F. TRICHLORFON (Dylox) 80S	2.5-3.75 oz

Leafhoppers

DESCRIPTION OF THE PESTS:

Adults are 0.125 to 0.25 inch long, wedge-shaped, active insects that jump and fly short distances when disturbed. Their colors vary by species; whitish green, yellow, and brownish gray are common colors, often the colors are speckled or mottled. Adults lay eggs into host leaves. Nymphs lack wings; their color varies with species. Disturbed nymphs have a characteristic habit of moving sideways or backwards. Generation time varies from 12 to 30 days, depending on species and temperature.

DAMAGE:

All grasses can be affected by leafhopper feeding. Though these species are common, observations of injury are unusual. Both nymphs and adults suck sap from the leaves, resulting in yellowing or bleaching. Turf can lose vigor and die as a result of extended presence of high populations of leafhoppers.

WHEN TO TREAT:

Treat if populations are high enough that damage may occur.

TREATMENT:

Pesticide (Commercial Name)	Amount/1000 sq ft**
A. CHLORPYRIFOS	
(Dursban) 50W	0.75 oz
(Dursban Pro) 2E	1.5 fl oz
COMMENT: Odorous	
B. FLUVALINATE	
(Mavrik Aquaflow)	0.11-0.23 fl oz
C. ACEPHATE	
(Orthene Turf, Tree, and Ornamental Spray)	1 oz
Comments: Odorous	
D. CARBARYL	
(Chipco Sevin) 80 WSP	1.5-3 fl oz

Disease Control

Turfgrasses receiving proper cultural practices are less likely to develop diseases and are not as likely to be seriously damaged if a disease occurs. Most diseases of turfgrasses are easier to prevent than to cure. To minimize the possibility of disease, Dos Pueblos shall plant the appropriate grasses for its particular climatic zone. Weakened, non-adapted grasses are susceptible to certain turf-attacking fungi and to stresses such as drought and hot, dry winds.

Recommended cultural practices such as mowing, fertilization, irrigation, and aerification will help prevent diseases by maintaining a vigorously growing turf. By enhancing plant vigor, diseases will be minimized and the need for fungicides will be reduced.

Although it is impossible to list all potential diseases and recommend treatment without the specific environmental and agronomic factors present at the time of infestation, the following list of diseases and potential treatment information are those most likely to occur. It is important to note that this information is taken directly from the UC IPM Program information.

Anthracnose

SYMPTOMS:

Anthracnose appears as irregular patches of diseased turf that can be up to 12 inches in diameter but usually is much smaller, about the size of a dime. Leaf blotches are brown, fading to light tan. The fungus forms minute, black fruiting structures on dead grass blades.

COMMENTS ON THE DISEASE:

All grasses, especially annual bluegrass, are susceptible to anthracnose. The disease is most severe under high temperatures (80° to 90°F), when foliage remains wet, and soil fertility is low.

CULTURAL CONTROL:

Apply adequate balanced nutrients, especially potassium and phosphorus. Do not fertilize during periods of high temperatures. Do not irrigate any more than necessary to maintain vigorous growth of turf and do not water in late afternoon or evening. Alleviate compaction and avoid low mowing and high traffic.

WHEN TO TREAT:

Fungicides are not recommended for use on grass other than golf greens, where they may be helpful when the disease is severe. At the onset of damage symptoms, use one of the following fungicides.

TREATMENT:

Pesticide	Commercial Names
A. CHLOROTHALONIL	Daconil 2787
B. FENARIMOL	Rubigan
C. MANCOZEB	Fore
D. PROPICONAZOLE	Banner GL
E. TRIADIMEFON	Bayleton
F. THIOPHANATE-METHOMYL	Fungo Flo Scotts Systemic Fungicide Clearys 3336

Dollar spot

SYMPTOMS:

Dollar spot affects small, circular areas of turf, about 1 to 5 inches in diameter. The spots may merge to form large, irregular areas. Leaves appear water-soaked at first, then later turn brown; they often have a reddish band extending across the leaf. Fine, white, cobwebby hyphae (fungal threads) may be seen in early morning.

COMMENTS ON THE DISEASE:

Bentgrasses, bermudagrasses, bluegrasses, fescues, ryegrasses, and annual bluegrasses are susceptible to dollar spot. The fungus survives in soil as sclerotia, which are tiny, hard, often dark, resting bodies. The disease is common near the coast, especially on creeping bentgrass and annual bluegrass. Moderate temperatures (60° to 80°F), excess moisture or water stress, fog, and excess mat and thatch favor dollar spot. Turf deficient in nitrogen tends to develop more dollar spot than turf adequately fertilized.

CULTURAL CONTROL:

Keep thatch to a minimum. Irrigate only when needed to a depth of 4 to 6 inches, but do not stress the plants between irrigations. Apply adequate nitrogen. Maintain good air circulation by keeping the turf mowed and pruning barrier trees and shrubs. Composted top dressings may suppress dollar spot.

WHEN TO TREAT:

Fungicides are usually needed to control this disease, especially on closely clipped grass such as golf greens. If the disease has been present in previous years, apply fungicide in early spring or fall before disease develops.

TREATMENT:

Pesticide	**Commercial Names**
A. FENARIMOL	Rubigan
COMMENTS: Use with caution on bluegrass species.	
B. TRIADIMEFON	Bayleton
C. THIOPHANATE-METHYL	Fungo Flo Scotts Systemic Fungicide Clearys 3336
D. NCLOZOLIN	Curalan
E. IPRODIONE	Chipco 26019 Scotts Fungicide X
F. CHLOROTHALONIL	Daconil 2787
G. MANCOZEB	For
H. THIRAM	Spotrete F Thiram 75 W Proturf Fluid

Fungicide III

I. MYCLOBUTANIL — Eagle WSP

J. PCNB — Turfcide 10G

Fairy ring

SYMPTOMS:

Fairy ring appears as a dark green band of turf that develops in a circle (from 10 to 20 cm up to 10 m) or semicircle in moist turf; mushrooms may or may not be present. Frequently, just behind the dark green band is an area of sparse, brown, dying grass caused by lack of water penetration. A second ring of thin dying grass may appear inside the circle. Weeds commonly invade infested areas.

COMMENTS ON THE DISEASE:

All grasses are susceptible to fairy ring, which is caused by several species of mushroom-forming fungi. In northern and central California, the predominant fungus is Marasmius oreades. Lepiota spp. are predominant in southern California.

Fairy ring develops most frequently in soils high in undecomposed organic matter containing lignin. Thus, adding woody plant materials, such as sawdust, wood chips, bark, and other uncomposted material, favors fairy ring development.

CULTURAL CONTROL:

Apply adequate nitrogen. Aerate soil for better water penetration and water heavily in holes for several days; soil wetting agents may improve water penetration. De-thatch the turf because fairy ring often develops in soils with high levels of thatch. In some situations, replace infested soil. If fairy ring symptoms consist only of mushrooms and there is no zone of dark green grass, the mushrooms can be raked off and disposed of. While this will not weaken or control the fungus, it will improve the turf's appearance.

WHEN TO TREAT:

Fairy ring can be eliminated by removing the turf and root zone containing the white, cottony mass, and by fumigating the soil. However fumigation is a dangerous and expensive process that should be done only by a licensed specialist.

TREATMENT:

Pesticide	**Commercial Name**

A. METHYL BROMIDE* — Brom-O-Gas
COMMENTS: Complete soil sterilization. Use 400 lb/acre, 1 lb/100 sq ft, or 10 lb/1000 sq ft.

* Permit required from county agricultural commissioner for purchase or use.

Fusarium blight

SYMPTOMS:

Fusarium blight first appears as small, circular, grayish green areas, ranging from a few inches up to a foot in diameter. Some plants in the center of the circles may survive, giving them a frog eye or donut appearance. The crown or basal area [49K] of the dead stems is affected with a reddish rot and is hard and tough. The dead foliage appears bleached.

COMMENTS ON THE DISEASE:

The disease principally attacks bluegrass, the most susceptible cultivars are Park, Campus, Fylking, and Nugget. A-34, Baron, Merion, Victa, Windsor, and the new cultivars, such as Adelphi, Bonnieblue, Geronimo, Majestic, Parade, and Rugby, are much less susceptible.

Fungi survive in soil and turf as resting structures. The disease is favored by daytime temperatures of 85° to 95°F and night temperatures of 70°F or above. Fusarium blight occurs most commonly in areas that have been stressed for moisture and in areas in full sun. The disease is also favored by excessive nitrogen fertilization.

CULTURAL CONTROL:

Provide the appropriate amount of irrigation to avoid moisture stress in the plants. Keep the thatch moist, but not overly wet. Avoid heavy nitrogen applications. Use 20% perennial ryegrass when seeding bluegrass, and choose resistant varieties. Do not mow lower than 2 inches. Remove thatch mechanically if more than 0.5 inch accumulates.

WHEN TO TREAT:

Complete control with fungicides has not been attained in California. When fungicides are necessary, make an application in spring before initial symptoms appear, or at the earliest appearance of the disease.

TREATMENT:

Pesticide	**Commercial Names**
A. TRIADIMEFON	Bayleton
COMMENTS: Provides the most effective control.	
B. FENARIMOL	Rubigan
C. IPRODIONE	Chipco 26019 Scotts Fungicide X

D. MANCOZEB	Fore
E. THIOPHANATE-METHYL	Fungo Flo Scotts Systemic Fungicide Clearys 3336

Fusarium patch

SYMPTOMS:

Fusarium patch causes roughly circular patches of 1 to 2 inches to develop that may enlarge to 12 inches. The leaves first appear water-soaked, then turn reddish brown. Finally, the leaves appear bleached. Minute white or pinkish, gelatinous spore masses are occasionally seen on the dead leaves. Fungal threads, which are also white or pinkish, may be seen in the early morning.

COMMENTS ON THE DISEASE:

Bluegrasses, fescues, ryegrasses, and zoysiagrass are susceptible to Fusarium patch. It is common on annual bluegrass and creeping bentgrass.

Fusarium patch is also known as pink snow mold. It is commonly observed only in central and northern California and is rarely found in southern California.

Cool (40° to 60°F), moist conditions, such as prolonged rainy periods in winter, favor Fusarium patch. High nitrogen applied in fall also favors the disease. Fusarium patch is more severe when the soil pH is neutral or alkaline. The pathogen survives in grass residues.

CULTURAL CONTROLS:

Reduce shade and improve soil aeration and water drainage. Avoid excess nitrogen fertilization, especially in fall. Adjust soil pH to 6.5 to 6.7. High levels of potassium tend to suppress the disease. Reduce mowing height to reduce pockets of high humidity.

WHEN TO TREAT:

If Fusarium patch has been a problem in previous years, apply a fungicide in fall before symptoms develop.

TREATMENT:

Pesticide	**Commercial Names**
A. FENARIMOL	Rubigan
B. IPRODIONE	Chipco 26019 Scotts Fungicide X

C. MANCOZEB	Fore
D. THIOPHANATE-METHYL	Fungo Flo Scotts Systemic Fungicide Clearys 3336
E. TRIADIMEFON	Bayleton
F. VINCLOZOLIN	Curalan

Pythium blight

SYMPTOMS:

Pythium blight, also known as grease spot, kills turf in small, roughly circular spots (2 to 6 inches) that tend to run together. Blackened leaf blades rapidly wither and turn reddish brown. Leaf blades tend to lie flat, stick together, and appear greasy. Roots may be brown.

COMMENTS ON THE DISEASE:

All grasses are susceptible to Pythium blight. This disease is also known as grease spot. The fungus forms thick-walled sexual spores, which enable it to survive in the soil for long periods. Pythium blight usually appears in low spots that remain wet; the disease depends on excessive moisture and may be very destructive at high temperatures (80° to 95°F). Under humid conditions, masses of fungal mycelium may appear.

CULTURAL CONTROL:

Reduce shading and improve soil aeration and water drainage. Avoid overwatering; irrigate only when needed to a depth of 4 to 6 inches. Avoid mowing wet grass. Keep nitrogen levels low during hot, humid weather.

WHEN TO TREAT:

In California's semiarid climate this disease is usually kept under control with proper water management. Fungicides may be required, however, on some golf greens. Treat when symptoms first appear.

TREATMENT:

Pesticide	**Commercial Names**
A. METALAXYL	Subdue
B. FOSETYL-AL	Chipco Aliette

C. MANCOZEB	Fore

Pythium root rot

SYMPTOMS:

Pythium root rot causes poor growth as a result of rotten roots. Small, bleached patches develop in the turf that may progress to large dead areas.

COMMENTS ON THE DISEASE:

All grasses are susceptible to Pythium root rot. The disease is favored by hot weather, poor drainage, and excessive soil moisture.

CULTURAL CONTROL:

Improve drainage and do not overwater. Increase mowing height to reduce plant stress.

WHEN TO TREAT:

Fungicides may be considered for use on turf when cultural control has not resulted in satisfactory control.

TREATMENT:

Pesticide	Commercial Names
A. METALAXYL	Subdue
B. FOSETYL-AL	Aliette

Rhizoctonia blight

SYMPTOMS:

Rhizoctonia blight first appears as small, irregular brown patches or rings that may enlarge to many feet in diameter. The centers of the areas may recover, resulting in rings of diseased grass. Leaves and leaf sheaths become water-soaked, wilt, turn light brown, and die. Stems, crowns, and roots may also be infected. In light infestations, roots are usually not involved and plants recover.

COMMENTS ON THE DISEASE:

This disease was formerly called brown patch. Bentgrasses, bermudagrasses, bluegrasses, fescues, ryegrasses, zoysia, and annual bluegrass are susceptible to Rhizoctonia blight.

Rhizoctonia is a soil-inhabiting fungus that is active as fine fungal threads in the soil or in and on the turf. Hard masses of these fungal threads (sclerotia) develop that are very resistant to fungicides.

Excess thatch and mat along with high temperatures (75° to 95°F), high humidity, and soft, lush growth due to excess nitrogen favor the development of Rhizoctonia blight. This disease is more common in warm, inland areas.

CULTURAL CONTROL:

Reduce shading and improve soil aeration and water drainage. Irrigate only when needed to a depth of 4 to 6 inches, if possible. Avoid nitrogen fertilization that results in a soft foliage growth. Maintain thatch at less than 0.5 inch.

WHEN TO TREAT:

Fungicides may be useful in treating Rhizoctonia blight on golf greens when there has been a history of infestations. They may also be necessary on young turf when seedling are being infected. Other infestations may be managed best by improving water and fertility management.

TREATMENT:

Pesticide	Commercial Names
A. CAPTAN	various
B. CHLOROTHALONIL	Daconil 2787
C. FENARIMOL	Rubigan
COMMENTS: Use with caution on bluegrass species.	
D. IPRODIONE	Chipco 26019 Scotts Fungicide X
E. MANCOZEB	Fore
F. MYCLOBUTANIL	Eagle WSP
COMMENTS: Do not apply more than 7.2 oz/1000 sq. ft/year.	
G. PCNB	Terraclor Turfcide
H. THIOPHANATE-METHYL	Fungo Flo Fungicide Clearys 3336

I. THIRAM	Spotrete F Thiram 75W Proturf Fluid Fungicide III
J. TRIADIMEFON	Bayleton

Summer patch

SYMPTOMS:

Summer patch appears as circular yellow or tan areas up to one foot in diameter, consisting of dead and dying plants. Roots, crowns, and stolons are affected by a dark, brown rot. The youngest roots may appear healthy, but dark brown hyphae may be present on these tissues. Vascular discoloration and cortical rot occur in later stages of the disease. On occasion, patches may retain centers of green, apparently unaffected grass.

COMMENTS ON THE DISEASE:

Most bluegrasses and fine fescues are susceptible to summer patch; resistant Kentucky bluegrass cultivars include Adelphi, Enmundi, Sydsport, and Touchdown. Infections generally first appear in late spring. The disease is favored by high temperatures (83° to 95°F) and is most severe when turf is mowed too low or when soil moisture levels are too high.

CULTURAL CONTROL:

Promote root growth by soil aeration and slow release nitrogen. Improve drainage, reduce compaction, and avoid drought stress. Do not mow too low or water too frequently. Maintain thatch at about 0.5 inch in thickness and lower the soil pH by adding an acidifying nitrogen fertilizer.

WHEN TO TREAT:

Fungicides may be required for control if summer patch has been a problem in previous years. Apply treatment 3 to 4 weeks before symptoms are likely to occur in late spring when temperatures are in the 65° to 68°F range. Irrigate after application.

TREATMENT:

Pesticide	**Commercial Names**
A. FENARIMOL COMMENTS: Use with caution on bluegrass species.	Rubigan
B. THIOPHANATE-METHYL	Fungo Flo Scotts Systemic Fungicide Clearys 3336

C. TRIADIMEFON	Bayleton
D. MYCLOBUTANIL	Eagle WSP

Take-all patch

SYMPTOMS:

Take-all patch appears as circular or ring-shaped dead areas which range from a few inches up to 3 feet or more in diameter. Dying bentgrass at the advancing margins of these areas has a purplish tinge. The roots of the diseased plants are rotted and have dark strands of mycelium visible on the surface of the roots. Large black perithecia, which are globular or flask-shaped fungal fruiting bodies, may be visible with the use of a hand lens.

COMMENTS ON THE DISEASE:

Bentgrasses are the most susceptible, but fescues and ryegrasses are susceptible to take-all patch. This disease was formerly called Ophiobolus patch.

The pathogen survives in grass debris and living grass plants. In California, take-all patch principally occurs in late fall and winter. Soil conditions that favor the disease include light texture, low organic matter, low or unbalanced fertility, high pH, and high moisture conditions.

CULTURAL CONTROL:

Improve growing conditions, such as soil drainage and fertility. Lower soil pH using elemental sulfur (ammonium sulfate) if it is above 7. Replant with less susceptible grasses, and fertilize in fall with ammonium chloride.

WHEN TO TREAT:

Fungicides may be necessary on golf greens that have experienced the disease in the past. Apply a fungicide on a preventative basis in fall.

TREATMENT:

Pesticide	**Commercial Names**
A. FENARIMOL	Rubigan
B. TRIADIMEFON	Bayleton

Preemergent Weed Control

Preemergent herbicides provide several months of residual control in the soil and will kill seedling weeds as they emerge. Most weed seeds germinate over a period of six to fifteen weeks, therefore repeat applications are generally needed for season-long control. Approximate timing of applications for preemergent crabgrass control are February 1 in California, or as soil temperatures approach 55 degrees F. Goosegrass germinates approximately 3 to 4 weeks later than crabgrass, therefore, those areas dominated with goosegrass should have preemergence herbicide application delayed accordingly. Yearly weather variations may require minor adjustments to the February 1 date. Adequate soil moisture, both prior and following application, is necessary to ensure success.

Although it is impossible to list all potential weeds and recommend treatment without the specific environmental and agronomic factors present at the time of infestation, the following potential weed treatment information are those most likely to occur. It is important to note that this information is taken directly from the UC IPM Program information.

A. ATRAZINE 1-2.2 lb a.i.
(Drexel Atrazine)

COMMENTS: Used for control of annual broadleaf weeds and some annual grasses in St. Augustinegrass or zoysiagrass turf. Do not use on other turf types or injury will result. May be applied up to 30 days before cutting or lifting sod. Do not apply in light textured (sandy) soils where tree or shrub roots may absorb the herbicide.

B. BENEFIN 3 lb a.i.
(Balan)

COMMENTS: For crabgrass control, apply 2-3 weeks before initial germination (January for Los Angeles Basin, early to mid-February for Central Valley and central coast, mid-February to March 1 for northern California and north coastal areas). Sprinkle-irrigate after application to wash herbicide off leaves and into the soil. For annual bluegrass control, apply 2-3 weeks before initial germination (August-September) and sprinkle-irrigate after application to wash herbicide off leaves and into the soil. For speedwell control, apply preemergence in January. Benefin is often combined with other preemergence herbicides, such as trifluralin or oryzalin, for longer residual. Do not apply to bentgrass greens.

C. BENEFIN 2-3 lb a.i.
...AND...
ORYZALIN
(XL 2G)

COMMENTS: For use on warm season grasses only. Apply on established turf before annual weeds germinate. Do not aerate or verticut after application. Do not use on bluegrass, bentgrass, ryegrass, or fescue turf.

D. BENEFIN 1.5-2 lb a.i. (cool season species)
...AND...
TRIFLURALIN
(Team 2G) 2-3 lb a.i. (warm season species)

COMMENTS: Apply on established turf in spring 1-2 weeks before expected germination of summer annuals (crabgrass, goosegrass, foxtail, or barnyardgrass). For annual bluegrass control, apply in late summer or early fall before germination. A second application can be applied 10-12 weeks after the first in the southern part of the state to control late-germinating weeds. Do not overseed grasses for 12-16 weeks after application.

E. BENSULIDE 7.5-10 lb a.i.
(Presan)

COMMENTS: Safest preemergence control material in bentgrass. For crabgrass control, apply 2-3 weeks before initial germination (January for Los Angeles Basin and south coast area, mid-February for Central Valley and central coast, mid-February to March 1 for northern California and north coastal areas). For annual bluegrass control, apply 7.5 lb a.i./acre in fall and 7.5 lb a.i./acre in midwinter (Jan-Feb). Crabgrass may germinate and become established in turf in late summer if lower rates are used. Good management will allow use of lower rates. For annual bluegrass control, apply in early fall before annual bluegrass germinates (mid-August to mid-September). Exclude children and pets during application and until treated area has been thoroughly sprinkler-irrigated.

F. DCPA 10 lb a.i.
(Dacthal)

COMMENTS: Apply 2-3 weeks before initial crabgrass germination (January for Los Angeles Basin and south coast area, early- to mid-February for Central Valley and central coast area, mid-February to March 1 for northern California and north coast area). Do not use on bentgrass and dichondra. Exclude children and pets during application and until treated area has been thoroughly sprinkler-irrigated. Will not control crabgrass after germination. For annual bluegrass control, apply at the end of August or beginning of September.

G. DITHIOPYR 0.25-0.5 lb a.i.
(Dimension)

COMMENTS: Apply to established turf before annual weeds germinate. Apply in spring for crabgrass, spurge, and oxalis, or in fall for annual bluegrass. May be applied as a single application in spring or fall, or as a split application with half being applied in spring and half in fall. Do not apply more than 1.5 lb a.i. per year. Do not apply within 3 months of seeding, overseeding, or sprigging. May injure fine fescue or bentgrass in golf course greens.

H. ISOXABEN 0.5-1 lb a.i.
(Gallery)

COMMENTS: Apply to established turf in late summer or early fall before winter annual weeds germinate. Provides 6-8 month control of many broadleaf weeds including: henbit, speedwells, oxalis, brass buttons and knotweed. A spring application helps control spurge and other summer broadleaf annuals. Follow application with at least 0.5 inch water. Will not control established weed plants. Not for use on putting greens or grass grown for seed.

I. NAPROPAMIDE 2-3 lb a.i.
(Devrinol)

COMMENTS: Apply at seeding or on established dichondra; can also be used on bermudagrass, St. Ausustinegrass, and fescue. Principally for grass control, but will control some broadleaf weeds. A split application of 2 lb can be applied for crabgrass and 2 lb for goosegrass; apply 8-10 weeks apart. Follow treatment with a minimum of 1 inch of water to wash material from the leaves and into the soil. Do not reseed or overseed within six months after application.

J. ORYZALIN 1.5-2 lb a.i.
(Surflan)

COMMENTS: For use on warm season grasses only. Apply on established turf before annual weeds germinate. Use low rate of application for annual bluegrass control in late summer or early fall. Use high rate in late winter or early spring before germination of summer annual weeds. Do not aerate or verticut after application. Do not use on bluegrass, ryegrass, or tall fescue turf. Long residual may prohibit overseeding of winter annual grass from a summer application.

K. OXADIAZON 2-4 lb a.i.
(Ronstar)

COMMENTS: The granule formulation can be used safely on most grass species except bentgrass. Some foliar injury may be observed if the granules are applied to wet foliage or the herbicide is not washed from the leaves after application. Only use the wettable powder formulation on dormant established bermudagrass, St. Augustinegrass, or zoysiagrass turf. Apply the wettable powder formulation at least 2 weeks before turf greens in spring. Do not use on dichondra or on newly seeded turf. Has not been effective for control of prostrate spurge or creeping woodsorrel (Oxalis) in California.

L. PENDIMETHALIN 1.5-3 lb a.i.
(Pre-M)

COMMENTS: Apply to established turf before annual weeds germinate. Useful in the control of many weeds including: crabgrass, foxtail, oxalis, and spurge. Use lower rate for control of annual bluegrass in fall or as a split application for control of crabgrass or spurge in late winter and early summer. Do not aerate or verticut after application. Do not overseed with grasses for 8-12 weeks after application. Do not apply on bentgrass.

M. PRONAMIDE* 0.5-1 lb a.i.
(Kerb) 50 WSP

COMMENTS: Used for control of annual bluegrass in bermudagrass turf; the higher rate gives longer residual control. Most effective in late fall at, or just before, emergence; 14-21 days are required before results are observed. Do not use on seedling, newly sprigged, or newly sodded turf.

Postemergent Weed Control

Postemergent herbicides are effective only on emerged, visible weeds. Best results occur when weeds are young. Temperatures above 85-90 Degrees may result in toxicity to the turf. Repeat applications may be required for acceptable control. These are timed 10 to 14 days apart. No mowing of turf will be done within 24 hours after an application for most chemicals. Most postemergent herbicides require the use of a spreader-sticker, adjuvant, or wetting agent.

In both preemergent and postemergent programs, a covered sprayboom shall be used to reduce overspray and drift.

Although it is impossible to list all potential weeds and recommend treatment, without the specific environmental and agronomic factors present in the environment at the time of infestation, the following potential weed treatment information are those most likely to occur. It is important to note that this information is taken directly from the UC IPM Program information.

A. BENTAZON 1-2 lb a.i.
(Basagran) 4 EC

COMMENTS: Apply in 40 gal water/acre for yellow nutsedge in established turfgrass; thorough coverage is important. The nutsedge should be growing vigorously with good soil moisture. If control is not as desired, apply a second treatment after 10-14 days. Do not apply more than 3 lb a.i. per season. For optimum control, do not mow 3-5 days before or after application. Do not use on newly seeded or sprigged turf or golf course greens.

B. BENTAZON 1 lb a.i.
(Basagran) 4 EC
...PLUS...
2,4-D* 1 lb a.i.

COMMENTS: For nutsedge and other broadleaf control. Do not use on newly seeded or sprigged turf.

C. DICAMBA* 0.25-0.5 lb a.i./100 gal. water
(Banvel 4-S)

COMMENTS: Apply in 40 gal water/acre for control of chickweeds, clovers, English daisy, prostrate knotweed, pearlwort, red sorrel, curly dock. Do not

apply more than two times per year. The 4 lb acid equivalent/gal formulation can also be used for spot spraying; do not exceed 0.5 lb acid equivalent/acre/season. Active through the soil; do not use where roots of ornamental plants may extend into treated area or spray on tree basins. Spray on calm days to avoid spray drift onto susceptible crops or ornamentals. Do not use on dichondra or spray in tree basins.

D. DITHIOPYR (Dimension) — 0.25-0.5 lb a.i.

COMMENTS: Apply to crabgrass before tillering stage. May be used with MSMA to control existing crabgrass. Equally effective on smooth or large crabgrass.

E. DICAMBA* ...AND... 2,4-D* (Trimec) — Label rates

COMMENTS: For English daisy or other difficult to control broadleaf weeds such as dandelion or plantain. Do not exceed 0.25 acid equivalent/acre of dicamba on bentgrass turf. Active through the soil; do not use where roots of ornamentals may extend into treated area. Spray on calm days to avoid spray drift onto susceptible crops or ornamentals. Do not use on dichondra.

F. DSMA (Methar) — 3-4 lb a.i.

COMMENTS: Apply in 175-200 gal water/acre. Effective for crabgrass, dallisgrass, and nutsedge control. Temperature, soil moisture, and turf type determine degree of turf selectivity. Avoid spraying under hot, droughty conditions. Bentgrasses, fine-leafed fescues, and dichondra are most sensitive; bermudagrass is most tolerant. Do not use on St. Augustinegrass turf. Use lower rate on bentgrasses and fine-leafed fescues and if daily temperatures exceed 80°F. Lower rate is sufficient to control young crabgrass; use higher rate for mature crabgrass; requires 2-3 resprays at 5-7 day intervals. Use repeated monthly sprays for established dallisgrass and nutsedge. Use higher rate on bermudagrass and, if temperatures are 80°F or lower, in Kentucky bluegrass as well; will yellow zoysiagrass turf.

G. FLUAZIFOP (Fusilade) — Label rates

COMMENTS: For selective grass control in dichondra only. Will not control annual bluegrass. Apply when the grass is young and vigorous and has good soil moisture. Retreatments may be required for hard-to-kill weeds such as bermudagrass, dallisgrass, and kikuyugrass. Will not control nutsedge.

H. GLYPHOSATE (Roundup) — 1-2 lb a.i./acre or 1.6 oz a.i./gal/1000 sq ft

COMMENTS: Apply to rapidly growing weeds in 20-40 gal water/acre or as a spot treatment. For control of annual weeds shorter than 6 inches, apply 1 lb a.i./acre; if 6 inches or taller, apply 1.5 lb a.i./acre. Allow minimum of 3 days between application and renovation or cultivation. For control of perennial weeds, apply 4-5 lb a.i./acre to vigorous but nearly mature weeds (bermudagrass in summer-fall; field bindweed, at full bloom). In mowed turfgrass areas, do not mow before application. Delay verticutting, removing sod, or tillage for at least 7 days after treatment. To maximize control, allow the soil surface and root area to dry after verticutting or sod removal before replanting. When turf or ornamentals are to be planted, a follow-up preemergence program is required to control the seeds of perennials.

I. MECOPROP (MCPP) — 1-1.5 lb acid equivalent

COMMENTS: For control of clover, prostrate knotweed, pearlwort. Spray on calm days to avoid spray drift onto susceptible crops or ornamentals. Safer to use on bentgrass than 2,4-D; do not use on dichondra. Use 1 qt surfactant/100 gal spray. For spot spraying use the same concentration/100 gal spray or 3-4 tsp. mecoprop plus 2 tsp. surfactant/gal water. (Rate for spot spraying applies only to formulations containing 2 or 2.5 lb acid equivalent/gal.)

J. MSMA — 2-4 lb a.i.

COMMENTS: Temperature and turf type determine degree of selectivity. Use lower rate for nutsedge control, on bentgrass, and on other turf types when daily temperature exceeds 85 F. For control of dallisgrass and nutsedge. Make no more than two applications/season at a 30-day interval. Apply uniformly over area regardless of distribution of the weed. Hesitating with sprayer over weedier spots may cause excessive rate and injure or kill the turf. Repeated applications of high rates reduces kikuyugrass. Turf may be temporarily discolored. Injurious to St. Augustinegrass, red fescue, dichondra, and zoysiagrass.

K. PRONAMIDE* (Kerb) 50 WSP — 0.75-1.5 lb a.i.

COMMENTS: For control of annual bluegrass in bermudagrass turf only. Use 0.75-1 lb a.i. to control seedling to young tillering stages of annual bluegrass; a higher rate of 1-1.5 lb a.i. is needed for seed-forming stages. Do not apply where the herbicide can move into sensitive cool season grasses. Do not overseed cool season grasses within 90 days after treatment.

L. TRICLOPYR (Turflon) — 0.25-0.5 lb a.i.

COMMENTS: For use on cool season turf species only. Especially useful for creeping woodsorrel control. Apply in 50-100 gal water/acre to vigorously growing broadleaf weeds, preferably in spring or fall. May be retreated 4 weeks following the first application for hard-to-kill weeds. To broaden weed spectrum

and control dandelion, use a tank mix of amine or low volatile ester of 2,4-D with triclopyr. Do not apply around trees or shrubs, since injury may result. Do not follow application with an irrigation within 4 hrs.

M. 2,4-D low-volatile esters* (Weedone LV4) — 0.48-0.95 lb a.i.

COMMENTS: Apply in 100 gal water/acre. Use to control common yarrow, speedwells, mallows, mature knotweed. For spot treatments, use 4 tsp. formulation/1 gal water.

N. 2,4-D WATER-SOLUBLE AMINES* (Weedar 64) — 1-1.5 lb a.i.

COMMENTS: For control of dandelion, plantain, young pigweed use 1 lb acid equivalent plus 1 qt surfactant in 100 gal water/acre. For spot treatment use 2 tsp. formulation plus 2 tsp. surfactant to 1 gal water. For control of young knotweed (2- to 4-leaf stage), field bindweed, wild lettuce, and filaree use 2 lb acid equivalent plus 1 qt surfactant in 100 gal water/acre. For spot treatment, use 4 tsp. formulation plus 2 tsp. surfactant to 1 gal water. On bentgrasses use water-soluble amine only and do not exceed 0.75 lb acid equivalent/acre.

O. 2,4-D* — 0.5-1 lb a.i.
...PLUS...
MCPP — 1 lb a.i.

COMMENTS: A tank mix. Do not apply in windy conditions where drift can occur. Do not mow grass 2-3 days before or after treatment. Do not use on bentgrass greens, St. Augustinegrass, or centipede turf. Do not irrigate for 4 hrs after application.

P. 2,4-D* — Label rates
...AND...
MCPP
...AND...
DICAMBA*
(Trimec, etc.)

COMMENTS: For broad spectrum control of broadleaf weeds. Use lower rates for bentgrass, hybrid bermudagrass and other sensitive turfgrasses. Nonselective on dichondra. Avoid applying to drought- and heat-stressed turf. Do not irrigate within 24 hrs of application. Newly seeded turf should not be treated until after the second or third mowing. Bentgrass is the most sensitive of the turfgrasses. Read label for further application directions. Do not allow spray drift to contact broadleaf ornamentals or injury may occur.

Q. 2,4-D* — Label rates
...PLUS...

TRICLOPYR (Turflon)	Label rates

COMMENTS: A tank mix used for control of a broad spectrum of broadleaf weeds. Particularly effective for oxalis when other broadleaf weeds are present. Do not use on dichondra, bentgrass, or warm season turfgrasses. Avoid applying to drought or heat stressed turf. Do not irrigate within 24 hour of application. Do not allow drift to contact broadleaf ornamentals or injury may occur.

* Permit required from county agricultural commissioner for purchase or use.

AQUATIC WEED CONTROL

Water features on golf courses are prime targets for noxious aquatic plant growth. Drainage and run-off supplying these areas carry measurable levels of nutrients. Unsightly, overgrown ponds detract from the beauty of a course and may interfere with operation of the irrigation system. Mechanical removal, biological control, habitat manipulation and chemical control are all methods for aquatic weed control. Mechanical and biological control are preferred strategies.

Treatment recommendations and action levels in the aquatic environment, which is not static in nature, are not prudent. Evaluation and recommendation for treatment by the superintendent shall be done on a daily basis.

Aquatic weed control of the Dos Pueblos irrigation system's holding lake, from which irrigation of the course takes place, will follow a non-chemical strategy exclusively. Recommendation for lake management in this case shall incorporate the following (in order of preference):

1. Circulation system to increase water movement.
2. Aeration system to increase the oxygen level.
3. Microbial introduction which limits the nutrient levels present in the lake thus reducing the food supply for algae and aquatic weeds.

To reduce the likelihood of chemical migration into this lake by application of chemicals to turf areas directly adjacent to the lake, a self-imposed buffer zone shall restrict indiscriminant spraying on turf within 10 feet of the pump lake edge. Only spot spraying shall take place in this area.

RODENT CONTROL

Rodent damage occurs any time of the year. However, the extent and nature of damage is dependent upon plant growth stages, rodent breeding and activity cycles. California ground squirrels undergo periodic winter and summer dormancy, but a percentage of the ground squirrel population is active year around. Pocket gophers and moles are active all months of the year. Turf areas are frequently inspected for early signs of rodent activity.

The primary goal of rodent control activity is to limit rodent infestation within turf areas. Rodent control will not occur in natural or native areas. The first line of defense in controlling vertebrate pests shall be the deployment of box and wire traps in infested turf areas. Traps are buried below ground in the rodent burrow and checked daily. Also included in the first line of defense shall be the enhancement of on-site habitat that attracts vertebrate predators such as Barn Owls. The enhancement of habitat for the species listed will increase the predator population on-site. The benefit of this action should help control. the overall pest population on-site. Enhancement of these habits shall be accomplished through the implementation of recommendations provided through the Audubon Cooperative Sanctuary Program as described previously and shown in exhibit "A". Additional Audubon International program information can be obtained via the World Wide Web at www.audubonintl.org.

Rodenţcides will be used only as a last resort and as permitted by the management plan. These materials will include Zinc Phosphide and Aluminum Phosphide. The golf course shall be inspected on a daily basis and infected areas shall be treated immediately upon identification. The golf course shall be inspected daily and rodent carcasses removed appropriately if found.

FERTILIZATION PROGRAM

Research has shown that good fertilizer practices that match fertilizer inputs to plant requirements will achieve high turf quality and also be beneficial to the environment. Through proper irrigation techniques, soil analysis, fertilizer injection and knowledgeable management, the superintendent shall initiate programs that not only promote healthy turfgrasses, but are also compatible with a healthy environment.

Potential Annual Fertilizer Quantities

	N	P	K	S	Fe
GREENS	6-10	3-6	12-15	4-6	1-2
TEES	8-10	4-5	4-5	2	
FAIRWAYS	4-5	4-5	4-5	2	
ROUGHS	2-4	2-4	2-4	2	

Notes:
Amounts expressed in pounds per thousand square feet.
Micronutrients applied based on soil analysis.

Nitrogen Sources	(N)
Milorganite	
Ammonium Nitrate	NH_4NO_3
Ammonium Sulfate	NH_4SO_4
Urea	$CO(NH_2)_2$

Phosphorous Sources	(P)
Phosphoric Acid	H_3PO_4

Potassium Sources	(K)
Sulfate of Potash	K2SO4
Sulfur Sources	(S)
Elemental Sulfur	
Gypsum	
Iron Sources	(Fe)
Ferrous Sulfate	FeSO4

In addition to broadcast fertilization programs incorporating the items on the this page, Dos Pueblos will institute a micro-fertilization program through fertigation as part of the irrigation system. The major benefit to fertigation is low rate application which reduces leaching and eliminates fertilizer application to non targeted areas.

PLAN UPDATES

It is important to note that all information and programs outlined in this document are not of a static nature. Effective programs are ever changing and flexible depending on agronomic conditions. Therefore this plan should be adaptable on a daily basis. This plan is required to be updated annually. The first plan update shall be done prior to occupancy clearance for the golf course, with subsequent annual updates thereafter. All amendments and updates shall be submitted for P&D review and approval prior to implementation of changes. The applicant shall submit a written request for P & D review and approval of any changes in the IPM program throughout the life of the project.

The most current guidelines and changes to the IPM system is supplied by the University of California and can be obtained from the department listed below as well as at the IPM website at www.ipm.ucdavis.edu, on the World Wide Web.

Pest Management Guidelines Coordinator
IPM Education and Publications, University of California
One Shields Avenue
Davis, CA 95616-8620

(530) 752-7691

APPENDIX A

THE AUDUBON COOPERATIVE SANCTUARY SYSTEM

fact sheet

Audubon International
CENTER FOR SUSTAINABLE RESOURCE MANAGEMENT

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Audubon International Web Page: http://www.audubonintl.org

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518-767-9051 or by e-mail: mcliburdi@audubonintl.org

Audubon International

The mission of Audubon International is to improve the quality of life and the environment through research, education, and conservation assistance.

Audubon International is a not-for-profit environmental organization that specializes in sustainable resource management. Audubon International was created to administer and unify programs with a national and international focus including the Audubon Cooperative Sanctuary System, the Audubon Signature Program, the Audubon Cooperative Sanctuary System of Canada, the Siena College-Audubon International Institute, and the Audubon Society of New York State, Inc.

Audubon International and its programs promote sustainable resource management throughout the United States and internationally. The focus of Audubon International is to:

- Protect and enhance the quality of the environment by encouraging responsible stewardship actions specific to wildlife and water stewardship and ecological restoration.
- Encourage, educate, and motivate individuals to take positive, constructive stewardship actions based on the Audubon guidance document, *Principles for Sustainable Resource Management.*
- Promote environmental planning and sustainable land management practices based on sound scientific research.
- Support and expand educational programs, research efforts, and training to achieve greater understanding and participation in the practice of sustainable resource management.

Audubon International accomplishes its mission by administering and coordinating education programs, providing conservation assistance, developing demonstration sites, and conducting scientific research.

The Audubon Movement is comprised of several hundred separate organizations. Audubon International does not speak for any other international, national, regional, state, or local Audubon organizations, nor do those organizations speak for Audubon International.

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The Audubon Cooperative Sanctuary System

• **The Audubon Cooperative Sanctuary System** educates and encourages landowners and land managers to become actively involved in protecting and enhancing wildlife habitats and conserving and sustaining natural resources on their own properties. Programs designed for golf courses, schools, businesses, and backyards provide conservation assistance specific to the unique location, resources, and needs of each site.

The Audubon International Signature Program

• **The Audubon Signature Program** provides comprehensive environmental planning assistance to landowners with projects in the design and development stages. Audubon International staff work with owners, architects, consultants, and managers from the design stages through construction. By offering guidance and technical assistance, Audubon staff help to establish a management program that focuses on sustainable natural resource management. The Signature Program focuses on wildlife conservation and habitat enhancement, water quality management and conservation, waste reduction and management, energy efficiency, and Integrated Pest Management. There are three designations that a property can receive in this program: Bronze, Silver and Gold Signature. The primary difference between the three designations is based on the time at which the project becomes part of the program, whether only a portion of the property or the entire property is included in the project, and the level of Audubon International involvement in the planning, design and oversight of the project. Projects that receive either the Audubon International Bronze or Silver designation or Audubon International Gold Seal of Sustainability are considered internationally significant environmental demonstration sites for sustainable resource management.

The Siena College-Audubon International Institute

• **The Siena College-Audubon International Institute** is a unique partnership between Siena College and Audubon International. The Institute focuses on wildlife and habitat management issues encountered by increasingly rapid development. With teams of Siena College professors and their students, the Research Department currently conducts scientific research to provide a foundation for designing environmentally effective land management practices. In addition, because appropriate environmental planning will help ensure the environmental integrity of habitat and natural resources for future generations, the Planning Department provides biological and technical expertise and environmental planning services.

Audubon Society of New York State, Inc.

• **The Audubon Society of New York State, Inc.** (ASNY) concentrates on environmental policy and land ownership/management. ASNY is a state-based environmental advocacy organization with a major focus on environmental policies and regulations. In addition, ASNY coordinates the NYS Bald Eagle Program, the NYS Loon Conservation Project, and the ASNY Water Watch Program.

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HISTORY OF THE AUDUBON MOVEMENT

During the late 1880s, in response to the vast destruction of birds in the name of fashion, George Bird Grinnell, editor of *Forest and Stream Magazine*, began the first Audubon Society. The fanciful style of wearing bird feathers in hats and bird wings on coats nearly caused the extinction of several species. To change this fashion trend, Grinnelll used his magazine to organize a national bird protection organization. As a boy who was tutored by Lucy Audubon, widow of famed bird artist John James Audubon, Grinnell was greatly influenced by Audubon's passion for birds. Because he believed that Audubon "had done more to teach Americans about birds of their own land than any other who lived," Grinnelll thought that "Audubon" would be a fitting name for the movement.

Grinnell also felt the best way to create change was to encourage the collective action of individuals. He urged women to pressure the fashion industry by signing pledge cards that promised they would refrain from wearing bird feathers. Men promised to shoot birds only for consumption. In order to have the greatest impact and reach as many people as possible, he helped form small, grassroots groups dedicated to bird preservation throughout New York and other states.

During the next five years, thirty-five Audubon Societies were incorporated and later joined to form a loose coalition of independent state groups: The National Association of Audubon Societies. This organization, now known as the Audubon Alliance, is still comprised of independent state Societies including the Audubon Society of New York State.

As with most social and political movements, there were changes in direction, focus, and structure over the years. In the 1940s, a small group of individuals decided to form a separate organization that would focus on issues they felt were beyond the scope of state Audubon Societies. This organization became the National Audubon Society.

AUDUBON SOCIETIES TODAY

Today, there are more than 500 Audubon Societies in the United States. Each of these groups is independent and separately incorporated and each is free to establish its own goals, develop its own programs and take positions regarding environmental issues.

Audubon International as well as the state Audubon Societies of New York, Massachusetts, Maine, New Hampshire, New Jersey, Illinois, Rhode Island, Connecticut, as well as the Audubon Naturalist Society of the Mid-Atlantic States are not affiliated with the National Audubon Society. The diversity of Audubon Societies is not meant to confuse the public. Rather, it serves to broaden public involvement and increase the number of approaches taken to enhance and protect the environment.

Audubon International was created to help expand efforts for sustainable resource management throughout the United States and Internationally. The mission of Audubon International is to improve the quality of the enviroment through research, education, and conservation assistance.

Environmental Report

Audubon International • 46 Rarick Road • Selkirk, New York 12158 • (518) 767-9051

Naturalizing the Golf Course

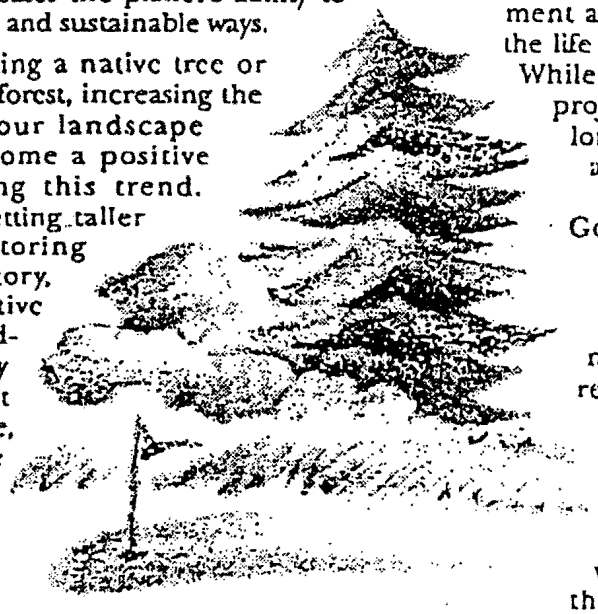
Naturalizing non-play areas on the golf course provides substantial economic and environmental benefits. Whether you have only a few hundred square feet or many acres, a tight budget or lots of money to invest, there are a variety of habitat enhancement projects to suit your site, budget, and maintenance needs. Begin to plan and naturalize now; you'll be surprised by the immediate and long-term positive results.

Why Naturalize?

Enhancing food and cover sources for wildlife will help you to attract and sustain the greatest diversity of wildlife species on your golf course. It's that simple.

But it's also complex. The earth's diversity of plants, insects, amphibians, birds, and in fact, whole ecosystems is diminishing due to human activities and population expansion. This loss of "biodiversity" decreases the planet's ability to function in healthy and sustainable ways.

Whether planting a native tree or planting an entire forest, increasing the naturalness of your landscape helps you to become a positive force in reversing this trend. Projects such as letting taller grasses grow, restoring woodland understory, and choosing native plants when landscaping not only increase the habitat value of your course, they also increase the overall acreage and diversity of wildlife habitat in general.



Maintenance Benefits

Naturalizing areas of the golf course can result in substantial financial and labor savings and a reduction in equipment wear and tear. Once established, natural areas require far fewer inputs such as water, fertilizer, and pesticides. And, since they are essentially maintenance free for most of the year, labor costs can be concentrated where it really matters: the playing surfaces. In addition, these areas reduce equipment and gasoline use which can extend the life of your equipment and save money. While some types of habitat restoration projects can be costly to initiate, the long-term savings become substantial after several seasons.

Golfing Benefits

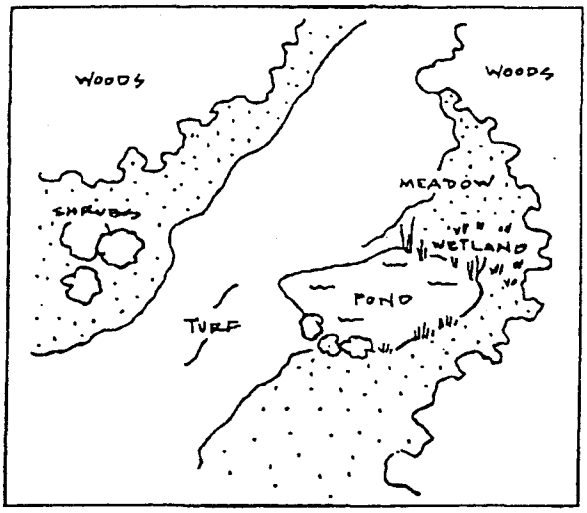
By extending available habitat, naturalization adds distinctive contrast and natural beauty to maintained playing surfaces. A recent National Golf Foundation survey revealed that getting outdoors and reconnecting with nature were among the top reasons why people play golf. Golfers often report that seeing wildlife increases their enjoyment of the game. Most naturalization projects have immediate and noticeable wildlife results for golfers to enjoy.

Facing Concerns

Golf course managers report a variety of concerns that often surface when they choose to naturalize. These must be carefully considered and dealt with if naturalization projects are to be successful. The key is finding a balance between the needs of golfers and the needs of wildlife and managing within those limits.

Slow Play–Slow play not only detracts greatly from the enjoyment of the game, but its economic drain also motivates overly-manicured conditions. Naturalized areas, such as long native grasses or shrubs, can be potential sources for slow play. However, if located properly and a well trained and persistent marshal staff is employed, this problem doesn't have to be an issue.

Conflicting Aesthetics–Some golfers perceive naturalized areas as being unkept and unsightly. While it's difficult to change ingrained attitudes and perceptions, most golfers are won over when they understand the many reasons and benefits of a naturalized landscape. It's critical to inform golfers that you are following a carefully thought out maintenance plan, not ignoring your duties. Education can help create an aesthetic appreciation for nature's beauty and diversity and increase support for your efforts.



Golfer Expectations–Televised golf has created unrealistic pressures and expectations for perfect conditions and highly manicured maintenance practices. As such, golf has deviated from its history as a game of interaction between skill and nature. Naturalization doesn't mean poor playing conditions. In fact, you may find that you have more time to devote to maintaining playing surfaces when you take non-play areas out of routine maintenance. Again, education is key to reconnecting people with the "nature" of the game.

Getting Started

Look at your course with an eye towards providing the basic requirements for wildlife survival: space, food, cover, and water. In addition, wildlife need reproductive sites–safe, relatively secluded areas in which to raise their young. Existing habitat may already provide some of these elements. Naturalization can extend, connect, and build upon existing assets.

Next, consider potential locations and types of projects you want to pursue. If you are new to naturalization, it may be wise to start slowly, learn from initial mistakes, and gain golfer approval prior to undertaking large scale enhancement or restoration projects.

Location–Location is the most important consideration in terms of plant selection, visual appeal, and acceptance by both the players and surrounding property owners. Developing naturalized areas near heavy play or against a neighbor's formalized landscape will be a constant source of problems.

Look for non-play areas that you currently maintain with mowed grass or that are visually unappealing and target these for naturalization. Areas between fairways, under small stands of trees, and along wooded edges may be suitable. These areas do not have to be large–you can start small and expand over time where possible.

Plant Selection–Take into account that most native species evolved to thrive under harsh yet specific conditions. Survey your course and learn more about the native plant communities in your area to determine which species will grow best on your site.

In addition, you can attract more wildlife species sooner by selecting plants which produce both food and cover. Locating plants near water sources will further extend their habitat potential.

Site Preparation and Plant Care–Another important point to consider is that while native species are extremely tough and hardy and will eventually thrive better without inputs at all, they do benefit and establish faster with some site preparation and post-planting care. Mulch, weed barriers, and supplemental irrigation will increase shrub survival rates. Seeding native grass just prior to or during the most likely time for precipitation usually will be enough to ensure good germination. Then by providing some form of mechanical weed control, and a great deal of patience, a naturalized wildlife habitat can be sustained for years.

Naturalization Projects

There are many ways to naturalize; some are easy and some quite involved. Choose as many as you can, recognizing your unique course conditions, maintenance needs, and budget.

• **Leave Dead Trees (Snags) Standing**–One of the simplest things you can do is to leave dead trees standing when they pose no safety hazard. The insects that help break down snags are a valuable food source for birds. Snags also provide nest sites for woodpeckers and other cavity nesting birds.

• **Leave Woodland Understory**–If you "clean up" your woods, you are eliminating valuable food and cover sources for many species. Whenever air circulation is not a concern, maintain diverse levels of growth–from understory plants and shrubs to small trees to canopy trees. Leaf litter, twigs, and downed limbs are also valuable components of a healthy woodland since they return nutrients to and build soil.

• **Designate "No Mow" Areas**–This is an easy way to eliminate maintenance and create habitat. Set aside non-play areas where you can stop mowing. Taller grasses and wildflowers will soon grow to replace the close-cropped turfgrass monoculture. When designating no-mow areas, look for places where taller grasses will complement existing habitat such as woodland edge or pond shoreline. You can also use tall grasses to create corridors that connect isolated habitat areas. This will increase the overall space that is available for wildlife. To keep natural succession from turning your no-mow area into a thicket, mow once a year or every other year.

• **Plant Wildflowers**–Meadow flowers will add beauty to your course that appeals to golfers, birds, and butterflies. There are several methods for establishing wildflowers and many seed sources. It's very important to carefully prepare your seed bed prior to planting to reduce weed competition and ensure the survival of your wildflower plants. Choose seed that is at least regionally adapted. Native wildflower seed mixes are more costly than generic mixes, but contain plants species that preserve our natural history and offer more wildlife value. You can also purchase wildflower plants and add them to no-mow areas or prepared beds. This method often results in greater plant survival and quicker establishment.

• **Create Wildlife Corridors**–As much as possible, connect isolated habitat areas. This will allow wildlife to safely travel throughout the course by minimizing their exposure to predators. It will also help to increase the number of available breeding sites. You can connect areas by extending trees or shrubs, or by leaving unmowed areas between stands of trees.

• **Choose Native Plants**–When making plant selections for trees, shrubs, and flowers, choose native plants that are high in wildlife value. Because native plants are well adapted to your local climate and soil, they will require less maintenance and help you preserve and showcase your area's unique natural heritage.

• **Adopt A Tree Management And Replacement Program**–Mature trees have many scenic and natural benefits on the golf course, yet few courses plan for their eventual demise. It's important to think about and plan for the loss of specimen trees and trees in general throughout the property. If you can start a tree nursery, you will save money and have a ready supply of trees. It may be worthwhile to conduct a tree inventory to help you evaluate the health of what you have and schedule appropriate tree planting each year. Again, choose native trees when making additions and replacements.

• **Add Aquatic and Shoreline Plants to Lakes and Ponds**–Though highly manicured pond edges are still the norm on golf courses, this maintenance approach does allow maximum wildlife benefit. Adding vegetation substantially increases wildlife food and cover sources and can even help to improve water quality. Look for shoreline areas where emergent vegetation, taller grasses, or shrubs can be added. Generally, this can be done in a balanced way that does not jeopardize the game of golf.

• **Undertake Restoration If Needed**–Restoration of wildlife habitat is often needed where habitat has been radically altered, damaged, or lost due to prior land use or development. If you plan to undertake habitat restoration, you will need to research the types of plants that make up the ecological community you want to restore and carefully plan your actions. Outside consultation is generally advised for restoration projects.

Conclusion

There are many benefits to dedicating expanses of the golf course to naturalized habitat. Naturalizing provides needed wildlife food and cover, reduces chemical inputs, and frees up labor dollars that can be spent on cultural management of greens, tees, and fairways. And the personal satisfaction, pride, and excitement gained from creating new habitat areas and watching the results really make it all worthwhile.

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BATS ON THE GOLF COURSE

There are 40 species of bats in North America and none deserve their negative reputation for getting tangled in people's hair, drinking blood, or always carrying rabies. Less than 3% of the bats sampled for rabies are found to carry the virus. In fact, bats can be good neighbors and a vital resource for controlling pests and pollinating flowers.

What about bats?

Bats are furred, warm-blooded mammals with body lengths of three to six inches and wingspans varying from eight to 16 inches. Most bats hunt flying insects and navigate by emitting pulses of sound through the mouth. Their sensitive ears hear the echoes reflected from even tiny insects. This allows them to steer towards prey and avoid obstacles. Bats also have keen eyesight on which they rely for long-distance orientation.

When you are outside at dusk observe the sky for "birds" that flap their wings quickly, fly slowly and erratically and often swoop over water features. Bats may also be found flying around a building or parking lot lights looking for an evening meal.

What do bats eat?

Bats in North America eat primarily insects such as cut worms, corn borer moths, potato beetles, and mosquitoes. A single bat can consume between 500 to 1,000 mosquitos and insects in an hour depending on the species and the size of the bat. Given this appetite, you can easily see why bats are the most important natural controller of insect pests that fly at night. Having a population of bats on your golf course can be a welcome addition to your integrated pest management program.

Do all bats carry rabies?

If a random sample was taken of all bats in a given area, less than 1/2 of one percent would be found to be infected with the rabies virus. However, when bats are brought in to health departments for sampling for rabies, approximately 4% are found to carry the rabies virus. This finding is due to the number of sick bats that are easily brought in to be sampled.

Why is bat conservation important?

Unfortunately, nearly 40% of America's bats are on the Federal Endangered Species List or are candidates for it. Many factors have led to the decline of bat populations. When old buildings and barns are demolished, valuable bat roosting habitats are destroyed as well. The use of insecticides and pesticides are easily ingested by these insect-eating mammals. The popularity of spelunking or "caving" often puts people in bat caves just as young bats are maturing. Often if adult bats are disturbed by humans, they will abandon their young. Because bats usually raise only one pup each year, their populations do not increase quickly. Lastly, the myths about bats do not endear them to the general population.

How can we attract bats?

You can help to ensure the survival of bat species in your area by: 1) supporting bat

conservation efforts to protect existing natural nest sites and, 2) mounting "bat boxes" to provide additional nesting and roosting sites. A bat box is a simple wooden structure, much like a bird nesting box. It can be placed in a variety of locations, but bats prefer sites that are within a quarter mile of streams, lakes, or wetlands. Bat houses are used for nursery colonies, bachelor colonies, and hibernation.

Is it safe to install bat houses on my golf course?

Yes. Bat houses are currently a part of habitat enhancement projects on state parks, golf courses, farms, schoolyards and backyards throughout the country. To allay any fears, be sure to educate golfers about the addition of bat houses on the course. Post bat house information or use your newsletter to explain this project. People generally welcome bats when they know that bats will be a valuable part of your pest management plan.

Refer to the attached bat house construction plans and instructions to successfully attract bats.

BUILDING A SUCCESSFUL BAT BOX

Like cavity-nesting birds, bats have specific requirements for house size and habitat conditions. Fortunately, it doesn't take years to attract bats. If bats are to take up residence, they generally do so in the first or second season after bat house placement. Follow these guidelines for the best results:

The Bat Box

Size- Larger houses seem to be far more likely to be occupied than small ones. Large houses may measure approximately 25" - 36" tall by 10" - 24" wide by 11" deep (see attached instructions).

Wood Type- Pine, cypress, cedar, and exterior plywood are all fine. Interestingly, old wood seems to attract bats sooner -- within the first season after mounting. However, boxes constructed of new wood placed in suitable conditions will work too.

Paint and Stain- Dark stain, black paint, or tar paper increases the absorption of solar heat and helps to keep boxes warm -- a condition northern bats prefer. In fact, temperature is a key factor in bat house use. In northern parts of North America (above 40° latitude), bats prefer temperatures in the 80° to 90° range. However, in southern areas (below 30° latitude), just the opposite seems to be true. White or unstained bat houses help to prevent overheating in the South.

Guano- Placing bat guano in or around the bat house doesn't appear to have a significant impact on whether bats take up residence. It may help to attract bats sooner, but proper house size and location are far more important in attracting bats.

Bat House Placement

Solar Radiation- Bat house exposure to sun is one of the most significant criteria for attracting bats. In Northern areas, make sure your box gets at least four hours of sun per day. In the South, your box should get less than four hours.

Mounting- Mount your box a minimum of 15' to 30' above the ground. Where solar exposure is important, mount your box on a pole for the best success. The side of a building or on a tree will also work, but be sure to look for hanging branches or other obstacles that block sunlight. In general, try to place bat houses in remote areas of the golf course and in places that do not receive high pesticide applications.

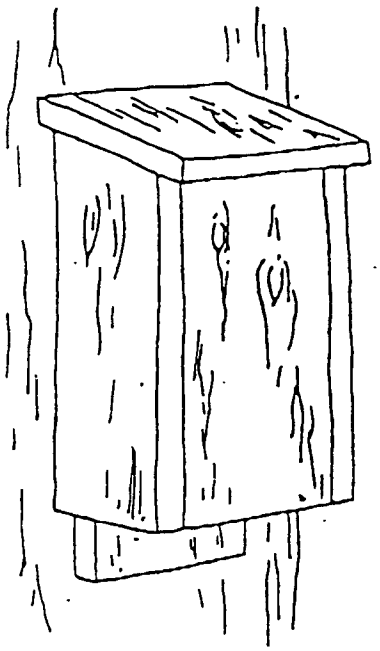
Water Source- If at all possible, place your bat house close to a water source. Bats show a strong preference for habitat that is in close proximity to water. Boxes placed within ¼ mile or less of a stream or river are most successful. Large lakes of three or more acres also attract bats.

Urban Area or Rural- Though they tend to prefer more open land, bats can be attracted to houses placed in both urban and rural areas.

Audubon International 1997

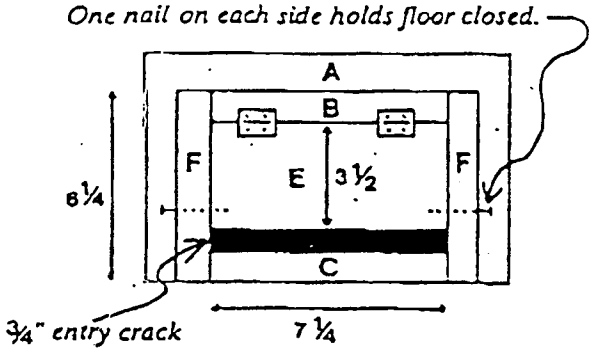
SMALL BAT HOUSE

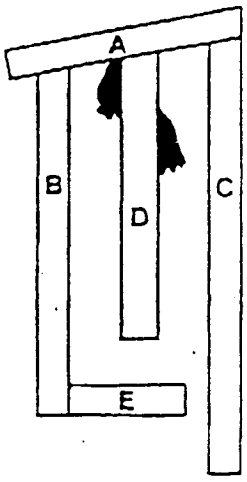
WILL ACCOMMODATE UP TO 30 BATS



BOTTOM VIEW

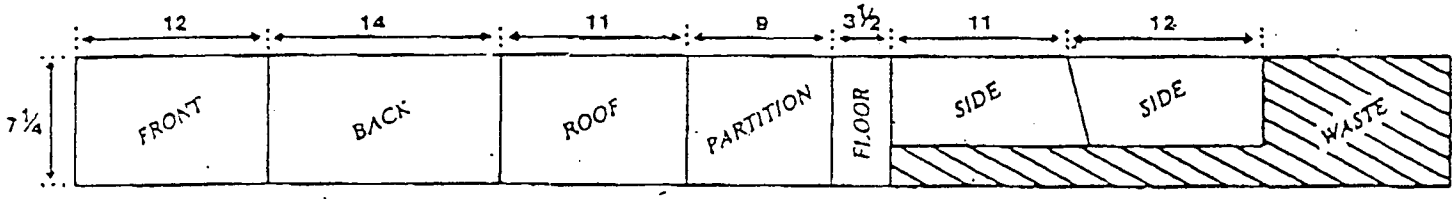
Hinges on floor allow for cleaning.
One nail on each side holds floor closed.





Small Bat House Dimensions

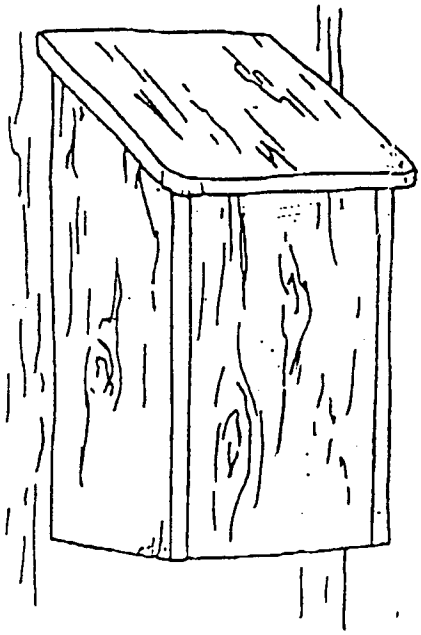
A Roof 7 1/4" x 11" wide
B Front 12" x 7 1/4"" wide
C Back 14" x 7 1/4" wide
D Partition 9" x 7 1/4" wide
E Floor 3 1/2" x 7 1/4" wide
F Sides 6 1/4" wide x 12" at back, 11" at front

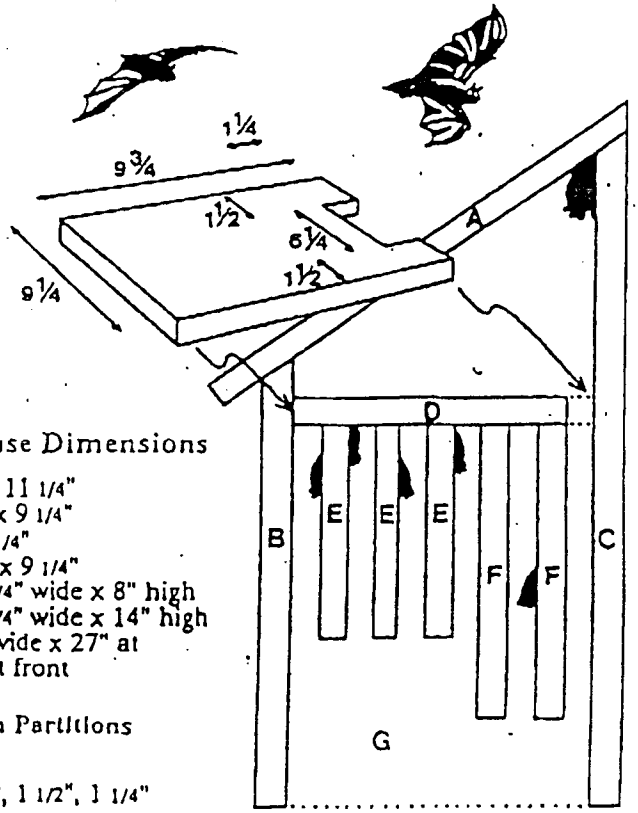


Lumber for Small Bat House: one 1" x 8" x 7'

LARGE BAT HOUSE

WILL ACCOMMODATE UP TO 100 BATS





Large Bat House Dimensions

A Roof 16 1/2" x 11 1/4"
B Front 18 3/4" x 9 1/4"
C Back 27" x 9 1/4"
D Ceiling 9 3/4" x 9 1/4"
E Partitions 9 1/4" wide x 8" high
F Partitions 9 1/4" wide x 14" high
G Sides 11 1/4" wide x 27" at back, 18 3/4" at front

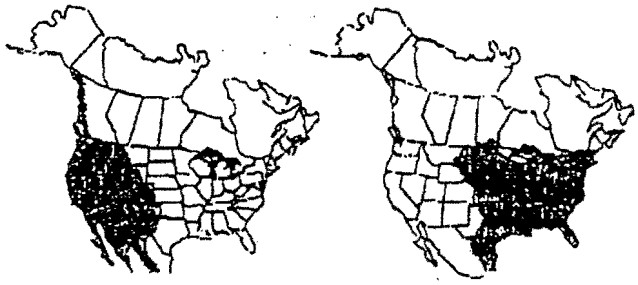
Spacing Between Partitions

Front to Back
3/4", 3/4", 3/4", 1", 1 1/2", 1 1/4"

All dimensions in inches.
Wood should be untreated and interior should not be painted or stained.
Large bat house plans adapted from Bat Conservation International with permission.

Reprinted with permission from the Connecticut Department of Environmental Protection, Wildlife Division

Eastern screech owl and young at nest.
Adult western and eastern screech owls look similar — small owls with yellow eyes and prominent ear tufts. Male and female look alike.

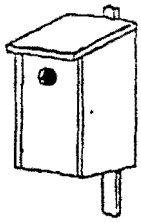


Quick Guide
Eastern Screech Owl
Western Screech Owl

Breeding period: March into July
Territory size: Just the area around the nest site
Nest materials: None
Eggs: 4–6, white
Incubation: 27–30 days, by female only
Nestling phase: About 4 weeks
Fledgling phase: 6–8 weeks
Broods: 1
Migration: Generally a year-round resident

Barn Owl Birdhouse

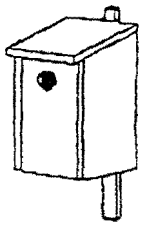
Dimensions
Entrance-hole diameter: 6"–8"
Height of hole above floor: 4"
Inside floor dimensions:
16" wide, 22" deep
Total height of box: 16"



Placement
Habitat: Open farmland
Height: 10'–20' up on a tree, a barn, or a shed

Barred Owl Birdhouse

Dimensions
Entrance-hole diameter: 6"–8"
Height of hole above floor:
14"–18"
Inside floor dimensions:
13" x 13" to 14" x 14"
Total height of box: 22"–28"



Placement
Habitat: Woods or swamps in suburban or rural areas
Height: 10'–20' up on a tree

Daily Schedule

The daytime program for owls is generally to sleep and stay still; some owls, however, are more "day owls" than "night owls." One of these is the barred owl, which you can hear hooting in the middle of a summer day. Barred owls do most of their hunting at night, as do the other owls, but they also make short flights around the nesting area during the day.

Activity for most owls starts when it begins to get dark. The birds stir, stretch, and often regurgitate pellets containing the indigestible fur and bones of animals they caught and ate the previous night. Then they usually go off to hunt, returning before dawn. If they are having trouble finding enough food at night, their hunting may continue into the dawn hours.

Quick Guide
Barn Owl

Breeding period: March into July
Territory size: Just the area around the nest site
Nest materials: Lined with leaves, rootlets, grasses, and other debris
Eggs: 4–5, white to pale buff
Incubation: 30–34 days, by male and female
Nestling phase: 52–56 days
Fledgling phase: 2–3 weeks
Broods: 1–2
Migration: Migrates slightly south from northern areas

Owl Diets

The two largest owls mentioned here, the barn and barred owls, eat meadow voles and other rodents almost exclusively. The three smaller owls have a more varied diet. Screech owls may feed on night-flying insects. When nesting in the city, they may frequent the areas under streetlights to which moths and other insects are attracted.

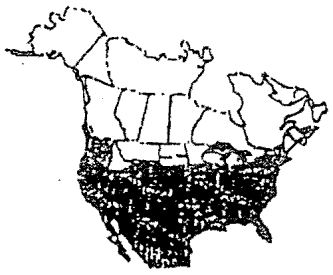
These smaller owls can also eat other small birds that may be roosting on branches at night. Because of this you may not want owl birdhouses right near those of your other birds.

Tree-Climbing Owls

Both barred and screech owls have the ability as nestlings and young fledglings to climb trees. This is a useful trait because they often leave the nest hole before they can fly. If they have been nesting in a tree hole, to get to a perch they just work their way up the trunk, basically crawling, using their beaks, talons, and wings.

This also means that if for some reason they fall out of a tree before they can fly, they will be able to get back up to the safety of the treetop. Barred owl fledglings can climb as high as 50 feet up a tree in 20 minutes.

Barn Owl.
Easily recognized by its white, heart-shaped face. Male and female look alike.

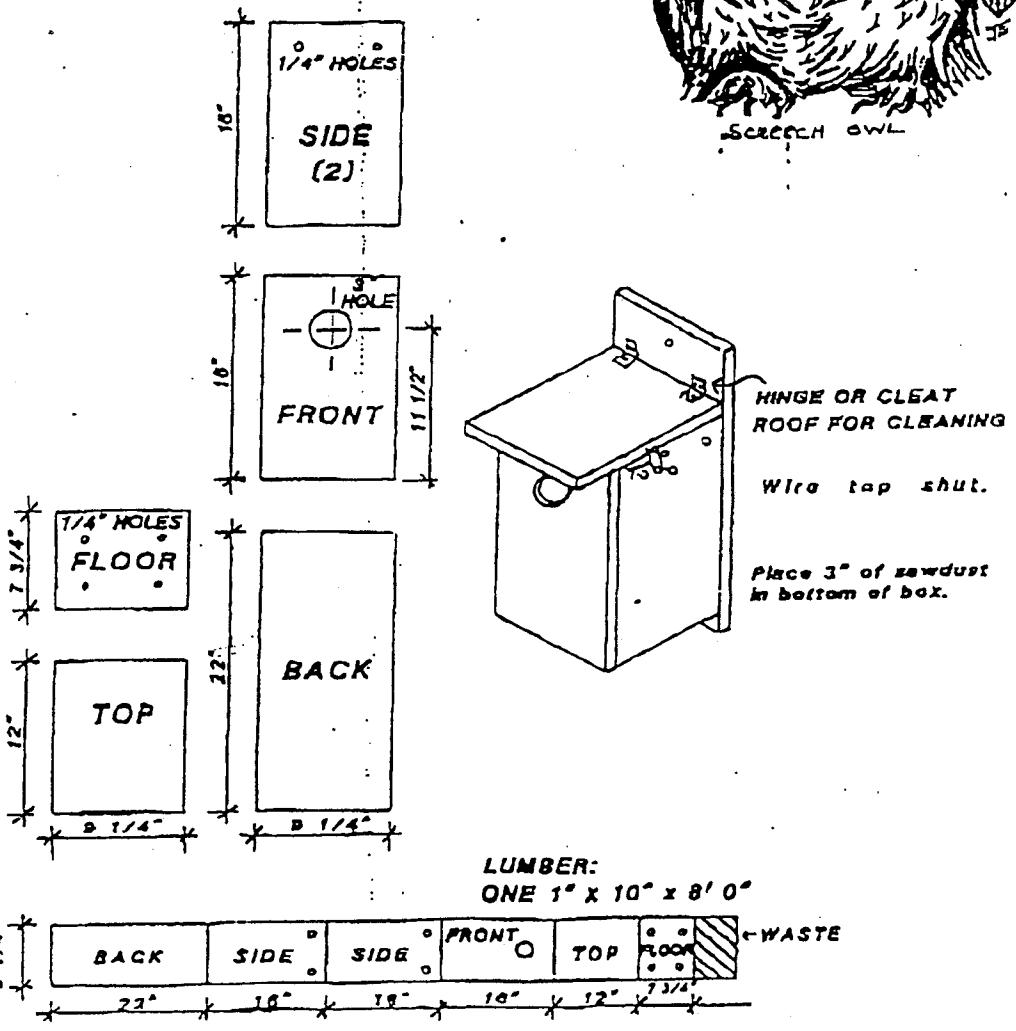


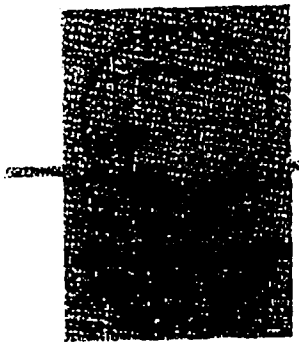
Competing for Nest Holes

Screech and saw-whet owls are so small that they may compete for some of the natural cavities and birdhouses that can be used by other birds. For example, screech owls and saw-whet owls commonly use old flicker nest holes, which are about 2½ inches in diameter. Other birds that might like to use these holes include the great crested and ash-throated flycatchers, American kestrel, purple martin, and red-bellied and red-headed woodpeckers. In fact, screech owls have been reported to nest in purple martin birdhouses.

Northern Screech Owl

NEST BOX





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AMERICAN KESTRELS

The American Kestrel (*Falco sparverius*), formerly known as the Sparrow Hawk, is North America's smallest falcon. About the size of a blue jay, kestrels can often be seen in farm fields and along open roadways, perched on a branch or wire scouting for prey. Both sexes have rusty-colored tails and backs with black barring. The wings of the female also have the rust and black color pattern, while the wings of the male are blue-grey.

Range and Habitat

American Kestrels live in North, Central and South America from the tree line boundary in Alaska and Canada south to Tierra del Fuego. Kestrels prefer open country, and will inhabit unforested mountainsides up to 1300 feet, grasslands, savannas, deserts, farmlands, and even suburban and urban environments.

Migration

Those in the northern parts of the breeding range migrate, while other populations are less migratory. Kestrel movements are not well understood, but information from the recovery of banded birds indicates the northernmost kestrels winter the farthest south (Central America to Panama).

Diet

Kestrels are generalist predators, feeding on large insects such as grasshoppers, small mammals such as voles, birds of sparrow size, and in some places, reptiles and amphibians. Kestrels often hover in flight before swooping to the ground to capture prey.

Breeding and Nest Site Selection

American Kestrels are monogamous. Pairing begins approximately four weeks prior to egg laying. The male establishes a nesting territory and is joined later by the female, who may move among several territorial males before choosing a mate. The male, or sometimes the female, will try to attract a potential mate's attention by exhibiting a series of power dives from high above the territory. When pairs form, courtship feeding where the male presents food to the female becomes frequent.

American Kestrels are almost exclusively cavity nesters and will use a natural hole in a tree, a woodpecker's hole, a nest box, a cavity in a bank or cliff, or an enclosed space in a building. On rare occasions, kestrels may use an old stick nest of another bird, especially the enclosed nests of magpies.

Eggs, Incubation, and Raising Young

Kestrels lay four to five, white to reddish-brown spotted eggs each year. Incubation generally begins with the second to last egg laid, and lasts about one month. While the female incubates the eggs, the male provides her with food. When the young are born, they are tended by both parents until they are ready to leave the nest at 28 to 30 days old. Fledglings continue to be dependent on their parents for food for two to three more weeks.

Ensuring Kestrel Nesting Success

As open space in the United States becomes increasing developed, kestrel habitat and nest sites dwindle. Many cavity-nesting birds now compete heavily for available nest sites. You can help to ensure kestrel nesting success by mounting and monitoring a kestrel nest box in suitable habitat. Farm fields, parks, golf courses, open lots, and highways with grassy rights-of-way are all potential nest sites for kestrels.

The attached nest box design details the appropriate dimensions for American Kestrel Nest Boxes. White pine or cedar is recommended. If you choose to paint the box, use an earth-tone paint to allow boxes to blend in with the environment and only paint the outside of the box.

Attach the box to a post, tree, or side of a building, 10 to 30 feet above the ground. If you are putting up more than one box, space them about one mile from each other to meet kestrel territorial requirements.

Checking and Maintaining Nest Boxes

Nest boxes should be checked at least three or four times each year. The first visit should occur in late winter or early spring before the kestrels begin territory establishment. At this time, clean out the nest box and make any needed repairs. Place three to four inches of wood chips, wood shavings or straw in the bottom of each box for nesting material.

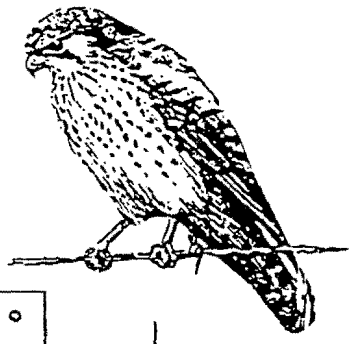
During the nesting season, visit the box two to three times. This will help you to identify whether the box is being used by kestrels. European starlings often nest in kestrel nest boxes. Starlings replace or cover wood chips with grass and other material and lay five, six or seven pale blue eggs. If starlings are found nesting, remove the nest and replace it with a new layer of wood chips.

The only time to avoid checking a kestrel nest box is during the first two weeks of their 30-day incubation period. Kestrels are especially sensitive to disturbance at this time.

To determine whether the young kestrels have successfully left a nest box, one visit should occur within five days of their expected departure. The last visit should be made in late summer after nesting is complete. Remove old nesting material at this time.

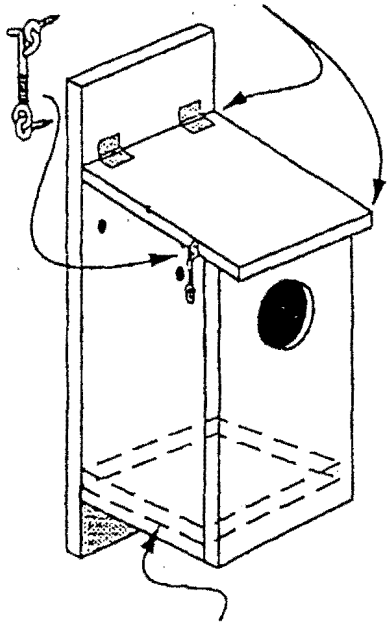
Keep records for each box you put up to help evaluate the success of individual nest boxes and your nest box program. New York Audubon conducts a yearly nest box survey and we appreciate hearing about your results. Look for more information about the survey in our newsletter, Field Notes.

Reference: This report has been adapted from the Iowa Department of Natural Resources Nongame Wildlife Program booklet entitled "Establishing a Nest Box Program for American Kestrels Along an Interstate Highway."

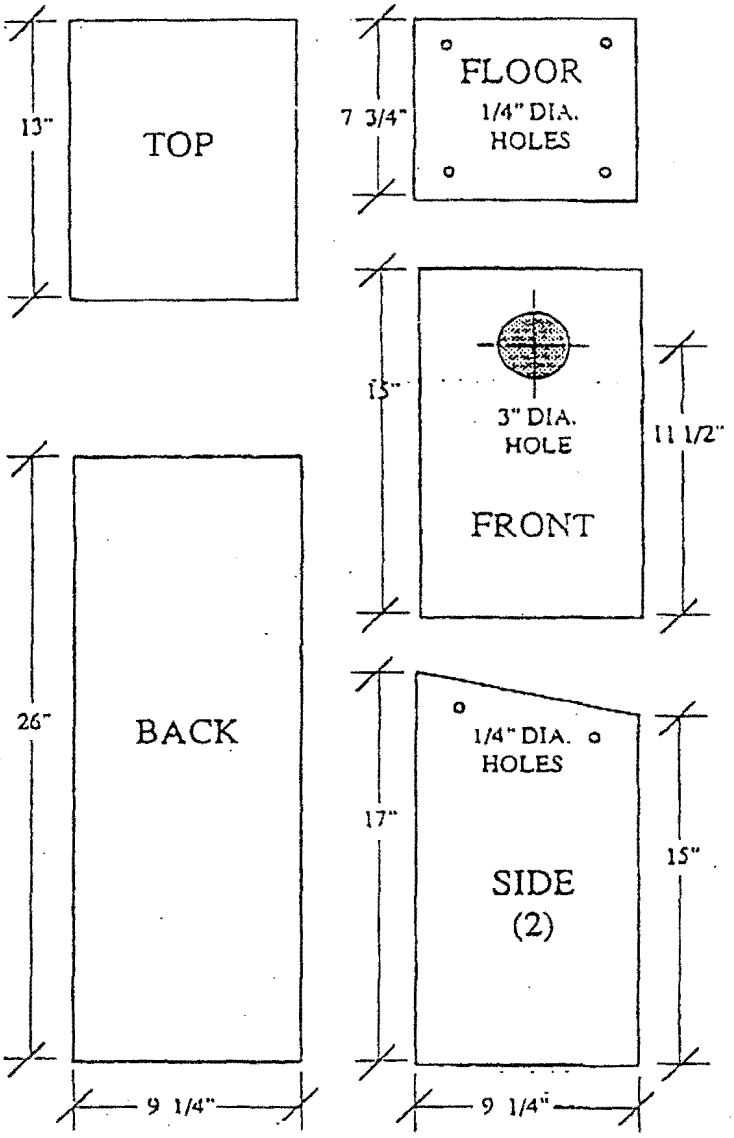


American Kestrel Nest Box

This plan modified from kestrel nest box plan featured in *Woodworking for Wildlife: Homes for Birds and Mammals* (Published by Minnesota DNR; Carrol Henderson, author)



To hold the roof secure and allow for easy cleaning access, hinge the roof and use a spring-loaded safety hook.
Place 3" of wood chips, wood shavings, or straw in bottom of box.



LUMBER: One 1" x 10" x 8' 0", (#2 white pine recommend). Painting the box will increase its useful life.
HARDWARE: Twenty-two 1 1/2" wood screws (#6), two 2" hinges and one 2" spring-loaded safety hook.

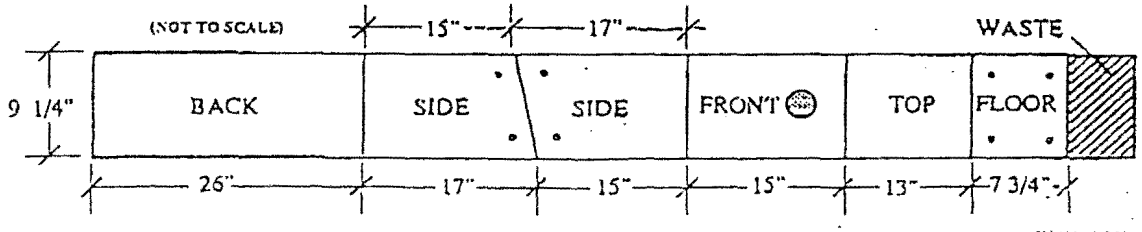


Exhibit 6 Last page, HCP

DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

BIOLOGICAL ENHANCEMENT LANDSCAPE PLAN

INCLUDING: EROSION CONTROL PLAN, NATIVE GRASSLAND MITIGATION PLAN, WETLAND MITIGATION PLAN, SENSITIVE PLANT COMMUNITY PLAN, TREE REPLACEMENT PLAN, EXOTIC PLANT CONTROL PLAN, RESOURCE MANAGEMENT PLAN

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AUGUST 1998
Revised: OCTOBER 1998

EXHIBIT NO. 7
APPLICATION NO.
CDP A-4-STB-93-154-C-A2
ARCO Dos Pueblos Golf Links
October 1998 Edition BELP

TABLE OF CONTENTS

BIOLOGICAL ENHANCEMENT LANDSCAPE PLAN

1.0 INTRODUCTION

This plan addresses protection, revegetation, restoration and landscaping of the disturbed graded areas at the Dos Pueblos Golf Links project. Included in the plan are procedures for seeding and planting, maintenance and monitoring, and the revegetation success criteria for hydroseeding and planting trees and shrubs.

2.0 PRE-CONSTRUCTION

2.1 Native Habitat Protection

2.1.1 Fencing

Prior to construction, all sensitive areas to be preserved will be protected through the installation of temporary protective fencing as required by Permit Condition 11. Protected areas shall include undisturbed barrancas, wetlands, riparian areas, and native grasslands. The location of the protective fencing shall be flagged by the Owner's representative and the installation will be monitored by the County's On-site Environmental Coordinator (OEC).

2.1.2 Specimen Trees

Trees to be retained/removed will be verified against the tree inventory map, dated June 1998, and report by the Owner's representative and the OEC for compliance.

A qualified wildlife biologist shall evaluate all dead or diseased trees proposed for removal for use by raptors or other sensitive bird species, if the trees do not block a playing corridor or have pitch canker or other disease. In the event that these trees are used, or appear to have recently been used, as roost or nesting sites by any sensitive bird species, these trees shall not be removed from the project until the nests have been abandoned. Dead trees which are (or become) a safety hazard to humans and/or occupied structures will be removed.

Trees scheduled to be removed, which are close to sensitive habitats or other vegetation which is to remain, will be selectively removed by a specifically

assigned crew using methods normally employed by the trade to remove trees without disturbing adjacent vegetation. These methods entail climbing trees, or using hydraulic lifts ("Buckets") cutting with chainsaws, and lowering large branches with ropes so as not to disturb adjacent vegetation. Willows to be removed will be removed in conformance with Permit Condition 11, i.e. with hand tools only, unless deemed unfeasible by the OEC. Trees will not be bulldozed in areas where other trees are to remain or near sensitive habitats. Trees will be cut into manageable lengths and removed from the site. Stumps will be removed. See Tree Inventory Report (Table B).

Trees to be removed, which are not near sensitive habitats or other vegetation to remain, will be removed by earth moving equipment during the clearing and grubbing, and grading process and removed from the site.

2.1.3 Pond Turtles/Red-Legged Frogs

A survey for western pond turtles and red-legged frogs shall be conducted by an ~~RMD~~ Planning and Development Department (P&D) approved biologist prior to grading and/or construction occurring in or within 50 feet of Tomate Canyon and Drainage 5 during the wet season, when standing water may be present in the drainages (between November 1 and May 1). If turtles are found, construction shall be prohibited within 50 feet of the standing water between November 1 and May 1. If red-legged frogs are found, mitigation measures recommended by a qualified wildlife biologist shall be implemented.

2.2 Clearing, Grading and Spoil Stockpiling

Brush will be cleared using standard equipment. Grading of areas of Class II soils will be conducted in accordance with Permit Condition 55. Topsoil will be stripped and stockpiled for future use where needed. Topsoil will not be placed on graded slopes steeper that 3:1 because it is likely to erode with irrigation or rainfall. Topsoil will be placed in areas from which it originated. Consideration will be given to the compatibility of growth in the area to be stripped with that in the area to be restored. Soil sampling and analysis will be performed to assure compatibility of soils.

Excavated subsoil will be used as fill soil in other locations to establish pad elevations for the various facility sites. Grading will be balanced on site.

Excavated clay soils, appropriate for future use as a clay liner under the lake, will be stockpiled on site for future use. This will be coordinated with the lake designer.

In general, grading will begin in the vicinity of the storage lake. Slope cutting will start at the top of slopes with installation of drainage ditches, where required, and progress down. The grading for the project will be scheduled to most efficiently satisfy: 1) The Permit Conditions, and 2) Best Construction Practices.

2.3 Site Preparation / Weed Eradication

2.3.1 Site Preparation

All areas to be revegetated will be prepared for planting through proper grading of the areas, removal of non-native/exotic vegetation and weed eradication. All areas will initially be cleared and grubbed of all non-native plant and exotic/invasive weed species as indicated on the plans. The areas will then be tilled/disked to a depth of eight inches to turn over soil and break-up compacted conditions. The majority of the areas to be planted will receive a "grow and kill" treatment described in Section 2.3.3.1. The native grassland revegetation area will receive a soil "greenhouse" procedure to help more thoroughly eradicate weeds prior to seeding with the intended native species. Refer to Section 2.3.3.2.

2.3.2 Native Plant Protection

All existing native plant material intended to remain and be preserved onsite will be protected from potential herbicide overspray (with tarps or other screening/ covers) or accidental removal whenever herbicide is to be used throughout the life of the project. See 2.3.4 Herbicide Application. The project biologist will identify, fence, and/or flag areas and isolated species to be protected.

2.3.3 Weed Removal

Weed removal will be conducted during site preparation procedures, prior to installation of plant material and seeding, and during the plant establishment and

long-term maintenance periods. Weedy, invasive, non-native species will be removed at a time of year to avoid soil erosion and when viable weed seeds are not inadvertently scattered over the site (spring, early summer). Weed species to be removed are described in Section 6.0. Weeding after planting will be conducted primarily by hand unless otherwise authorized. The Contractor will remove weed seedlings before weeds become too large for hand removal. Weed removal via mechanical methods such as weed whipping, mowing and/or disking may occur in certain locations, ~~per~~ with approval of the ~~project~~ County EQAP biologist.

2.3.3.1 Grow and Kill Weed Eradication Before Planting

Those areas of the project site to receive revegetation treatments and which will be irrigated will receive a "grow and kill" weed eradication procedure, ideally in Spring, Summer or Fall. This will include thoroughly irrigating the areas with a minimum 1-inch of water no less than one month prior to commencing planting operations. Weed seeds will be allowed to germinate during this period and a glyphosate, contact herbicide spray, such as "Round-Up" for use in non-aquatic conditions, or "Rodeo" for use in aquatic conditions, will be applied to the germinated weed crop. The herbicide treatment will be applied approximately fourteen days (two weeks) after initiation of irrigation, when significant germination of weed seedlings has occurred. The weed seedlings will then be allowed to die and a second (and possibly third, if necessary) round of irrigation, germination and herbicide applications initiated throughout the remainder of the ~~one month~~ eradication period.

2.3.3.2 Soil "Greenhouse" Procedure

The native grassland revegetation area will receive a soil "greenhouse" procedure to help eradicate weed seeds prior to seeding with the intended native species. This method uses clear or opaque plastic sheets, laid on the soil and weighted down. The plastic traps heat and moisture, creating a greenhouse effect that causes seed held in the soil to sprout. The seedlings continue to grow until suffocated under the plastic. This procedure is used to deplete the seed bank within the soil.

Prior to installing the sheeting the soil will be cleared, cultivated and leveled. Then the soil will be wet via water truck or irrigation system if available. The procedure will involve installing a UV stabilized clear or opaque (not black) plastic sheeting of one to four millimeters thick over the prepared/graded soil surface, anchoring the sheeting in place and burying the edges, and leaving the sheeting in place for a six to eight week period. The sheeting should be in contact with the soil surface to the greatest degree possible. All rips, or gaps in the sheeting should be repaired with tape to maintain a sealed condition. After the six to eight week period is complete the sheeting shall be removed and planting procedures can be implemented. The winter months will be avoided, when temperatures may not be high enough to induce germination.

2.3.4 Herbicide Application

The following herbicides will be applied only when necessary: Rodeo, Roundup or Karmex. Application must be done according to label directions, when wind is <5mph, during periods when no rain is expected for at least 6 hours, when there is no standing water present, by hand sprayers directly on the plant which is to be eradicated. None of the herbicides shall be stored, poured, and refilled within sensitive areas. Herbicide use will be monitored by the project Revegetation Specialist, and may be monitored by the County EQAP biologist. These procedures should also be adequate to protect sensitive vegetation onsite.

3.0 SEEDS AND PROPAGULES

3.1 Hydroseed Mixes

The seed mixes established for this project were based on existing plant communities in the immediate area which generally follow geological formations and varying soil conditons. Existing invasive imported weeds such as mustard and thistle were excluded from the hydroseed mixes as were other highly flammable or "fuel loading" plants.Native bunch grasses (Nassella; Melica), will be included in the hydroseed mix. Nassella will also be planted from plugs (See Section 4.4). Seeds will be purchased from reliable seed companies or other qualified contractors. Seed sources will be ~~from the bioregion~~ from individuals

indigenous to the coastal area from the Santa Ynez river to Carpinteria Marsh, unless unavailable, and with the exception of non-native species, toyon, succulent lupine, and California poppy. Reference 4.4 for planting information.

Table A, Seed Mixes, lists botanical and common seed names, and lbs/acre.

See Section 5.1.2 for Tarplant seed collection.

3.2 Tree and Shrub Propagule Collection

Coast Live Oak (Quercus agrifolia) will be planted from purchased seeds obtained ~~within the bioregion and from container grown stock originating from the bioregion~~ from Eagle Canyon, if feasible; otherwise from coastal drainages between and including Tecalote Canyon and Las Flores Canyon. Acorns for direct planting and propagation shall be collected from as many trees as feasible to maximize genetic variation. Salix spp. (Willow) will be started from cuttings taken on site. Reference Table B, Tree Inventory Report, for quantities and replacement ratios. Ornamental trees and shrubs will be purchased from nurseries.

The following methods will be used to collect propagules (seeds and cuttings):

3.2.1. QUERCUS AGRIFOLIA (Coast Live Oak)

One Coast Live Oak tree will be removed during construction requiring 10 replacement Oaks to be planted at 10:1 ratio. Acorns will be purchased from reliable sources that verify collection from the ~~bioregion~~ area specified above. Acorns will be floated to test for viability. Acorns which float will be discarded. To ensure the best possible success rate for replanting Oak trees, two methods will be used for the acorns. Each method will be used for one half of the total number of trees being replaced.

Method A: One half of the replacement Oaks (5 seedlings) will be planted from acorns placed directly in the ground on a 10:1 basis. This will require the purchase of 50 viable acorns. All acorns will be planted in gopher cages to prevent predation.

Method B: The acorns for the last half of the replacement Oaks (5 seedlings) will be planted directly into 1-gallon and 5-gallon size, long tube containers. These seedlings will be container grown via a contract growing agreement with a native plant nursery for one full year prior to planting in the field. These seedlings will be transplanted to larger, long tube containers as necessary to ensure healthy tap root formations and to guard against root-bound plants. Sufficient quantities of acorns will be grown in containers to ensure 5 healthy container-grown seedlings in the fall following acorn harvest.

Reference Section 4.2 for planting techniques for Methods A and B.

3.2.2. SALIX LASIOPELIS (Arroyo Willow)

22 willows will be removed during construction. Sufficient cuttings will be taken to ensure planting of 110 willows in Riparian areas at a 5:1 ratio.

Willow cuttings shall be taken from the site and directly planted in pre-determined locations, in accordance with the master planting plan. Cuttings shall be collected in the fall, 1998, after the first saturating rainfall (generally by November 15th). Cuttings shall be taken from willows that will be removed. Willow cuttings will be planted within 24 hours. Cuttings will be kept in water or covered with wet burlap, and stored in the shade until planted.

Refer to Section 4.2 for specific planting information.

3.2.3. Ornamental Trees and Shrubs

Healthy non-native trees to be removed will be replaced at a 3:1 ratio. Replacement trees will be purchased from nurseries. Dead, sick or dying trees to ~~will~~ be removed as per Section 2.1.2 ~~but not~~ will not be mitigated. Shrubs will be purchased in containers from nurseries.

4.0 INSTALLATION

4.1 Hydroseed Mixes

The intent of the hydroseeding effort is to provide surface erosion control and revegetation of disturbed areas. Each area will be hydroseeded as soon as possible after grading and site preparation of the area is completed.

The hydroseeding process consists of mixing a mulching fiber (Silva-Fiber or equal), fertilizer (Gro-Power-Plus), tackifier (Ecology-M-Binder), microbial treatment (MAT-SCI), and the specific seed mix as outlined in Table A, with water in a hydroseeding truck. This mixture will be sprayed over the graded and prepared areas using either the nozzle arm affixed to the truck or using a hose which is carried across the slopes by two to three individuals. The mulching fiber contains a temporary green dye to assist the "operator" in seeing that the hydroseed coverage is adequate on the disturbed areas and to assure even application. The sun bleaches out the color in one to two days.

The hydroseed tank and hose(s) will be rinsed with water prior to arrival on the project site. Seed mix will be added to the mixture of water, binder, fibre, etc., in the tank after arrival on site and immediately prior to application to minimize damage to the seeds. Seed bag tags will be retained by the Project Revegetation Specialist.

A temporary, automatic, above-grade irrigation system utilizing low precipitation sprinkler heads will be installed at the hydroseeded areas.

Irrigation will be initiated 24 to 72 hours after hydroseeding in most areas. These areas will be monitored by the Dos Pueblos Golf Links Revegetation Specialist and the OEC to determine success of germination. Any slopes or disturbed areas which receive hydroseed but fail to meet success criteria will be reseeded with the same mix as originally specified. (reference Sections 7.0, Maintenance; 8.0, Monitoring; and 9.0, Revegetation Success Criteria).

The irrigation system will be operated daily until germination is evident (one to three inches growth, typical). At this point, the seedlings will be gradually weaned from supplemental irrigation, with longer watering durations at greater intervals between watering. The weaning process encourages deeper rooting which, in turn, will help the plants to withstand drought and hot, dry wind conditions. Deeper root systems also provide better surface erosion control.

4.2 Tree and Shrub Planting

Tree and shrub planting will occur in the fall of 1999 and 2000. Planting techniques for Coast Live Oak seedlings will be Method A. The method for planting Coast Live Oak acorns which are planted directly after collection is described in Method B. Techniques for planting Willows will be Method C.

4.2.1. Planting Method A - Coast Live Oaks (Seedlings) (Refer to Section 3.2.1)

The nursery-grown seedlings will be hand planted in late fall at favorable locations chosen on site by the Dos Pueblos Golf Links Revegetation Specialist and the OEC. Approximate locations are indicated on the enclosed map (Exhibit C). Each seedling will be planted in a "gopher cage" (wire basket) to discourage predation/root grazing (reference Detail 1). Seedlings will be grouped in naturalistic arrangements where feasible and enclosed in a 42-inch high protective fence (reference Details 2 and 3). The fence will protect seedlings from being trampled and eaten by wildlife. Plant holes will be twice the diameter of the container and a minimum of 6 inches deeper. Holes will be backfilled with native soil and 4 slow release "Gro-Power" fertilizer tablets per seedling. A planting/watering basin with a three inch high berm will be constructed. Basins will be mulched with organic mulch such as tree chippings or native leaf mulch.

A drip irrigation system, using temporary valves will be installed. Each seedling will receive one emitter capable of delivering one gallon per hour.

4.2.2 Planting Method B - Coast Live Oak (Acorns) (Refer to Section 3.2.1)

Viable acorns will be planted directly in the ground in the fall immediately after purchase. A total of 50 acorns will be planted to ensure the growth of a minimum 5 replacement oaks. Acorns will be planted in "plant spots" of 5 acorns each. Each plant spot will be planted in a "gopher cage" (wire basket) (reference Detail 1). Plant spots will be grouped together where feasible and will be enclosed in a 42 inch high protective fence (reference Details 2 and 3).

Plant spot locations will be chosen on site by the Dos Pueblos Golf Links' Revegetation Specialist and by the OEC. Approximate locations are shown on the enclosed map (Exhibit C).

Drip irrigation systems will be installed to supplement natural rainfall with each plant spot receiving one emitter capable of delivering one gallon per hour. Deep waterings will be applied to encourage deep root development.

4.2.3 Planting Method C - Willow

Cuttings shall be from 18 to 24 inches long with diameter of 0.75 to 1.5 inches at the base of the cutting. Cuttings shall be stripped of all but the top few leaves, and shall be immediately placed in a bucket of water. Rooting hormone shall be used prior to planting; either a liquid solution or a powder shall be applied prior to planting. Holes shall be prepared using a dibble or other similar tool to create a small narrow hole. Cuttings shall be placed at least 12 inches deep within the soil, and the soil shall be firmly tamped down around the cuttings to remove air pockets. Cuttings shall then be thoroughly watered following planting.

Cuttings will be placed directly at locations chosen by the Dos Pueblos Golf Links Revegetation Specialist and by the OEC. Cuttings will be installed between November through April. Approximate locations are shown on the enclosed map (Southern Willow Scrub Revegetation Areas, Exhibit C). Protective fencing will not be required for the cuttings. No gopher cages (wire baskets) will be installed

for the cuttings. Temporary drip irrigation will be installed until the cuttings are established.

4.2.4 Planting Method D - Ornamental Trees

The nursery-grown seedlings for other ornamental tree replacements within the project will be hand planted in late fall at favorable locations selected by the Landscape Architect. Approximate locations are indicated on the enclosed "Tree Revegetation Plan" (Exhibit C). Each seedling will be planted in a "gopher cage" (wire basket) to discourage predation/root grazing (reference Detail 1). Seedlings will be grouped in naturalistic arrangements where feasible. Plant holes will be twice the diameter of the container and a minimum 6 inches deeper. Holes will be backfilled with native soil and 4 slow release Gro-Power fertilizer tablets per seedling. A watering basin with a three inch high berm will be constructed. Basins will be mulched with organic mulch such as tree chippings or native leaf mulch. (See Detail 4).

A drip irrigation system, using temporary valves will be installed. Each seedling will receive one emitter capable of delivering one gallon per hour.

4.3 Landscape Screening

Trees and shrubs will be planted north and northwest of Tees 1,3, and 4 to screen Highway 101 and to meet the requirements of Permit Condition 15. See Tree Revegetation, Exhibit C.

4.4 Native Grassland Revegetation Area

4.4.1 Revegetation by Plugs

Seeds will be sown in 2-inch liners and nursery flats in the spring 1999/2000. Seedlings will be allowed to grow in containers for approximately 6 months. Seedlings will be transplanted to larger containers as necessary to guard against root-bound plants. Seedlings will be planted in late fall, 1999/2000 to coincide with the natural cycle (seeds naturally drop in the fall).

Native grassland seedlings will be planted en masse at 12" on center spacing at areas selected by Dos Pueblos Golf Links' Revegetation Specialist and the On-site Environmental Coordinator. The area selected will be enclosed with a protective fence (reference Details 2 and 3). Approximate areas of seedling planting are shown on Exhibit A.

Irrigation will be installed prior to planting.

Seedlings will be encouraged to naturalize following planting. Minimal interference is proposed. Fertilizer will not be added to the plant pit. Seedlings will not be enclosed in gopher cages. Cages of this small size could inhibit root formation.

4.4.2 Revegetation from Seeds

See Section 4.1 for hydroseed installation. Approximate area of native grassland hydroseed area is shown on Exhibit A.

5.0 SENSITIVE PLANT COMMUNITY PLAN

5.1 Southern Tarplant (Hemizonia parryi spp. australis)

One population of southern tarplant occurs in an area planned for golf links construction. This population will be relocated to the area surrounding the vernal pool, lake edge, and area between, excluding the existing disturbed wetlands, through a combination of direct transplanting of mature plants, direct seeding, and planting of tarplant grown from seeds collected from the site. See Sheet LR-4.

5.1.1 Receiver Site Preparation

The 100 foot buffer zone around the existing Vernal Pool is the proposed receiver site for the Southern Tarplant.

The vernal pool is currently surrounded by the non-native, invasive iceplant known as Hottentot fig (*Carpobrotus edulis*). The Hottentot fig will be sprayed with a systemic herbicide suitable for use adjacent to wetland areas, such as Rodeo at a

time of year when there is no standing water. The Dos Pueblos Golf Links biological consultant shall monitor the herbicide application, to be conducted in the summer of 1999. One month after spraying, the site will be checked for completeness of plant eradication, and re-sprayed if necessary. Once the Hottentot fig is thoroughly dead (brown and brittle), ~~approximately 2/3 of~~ the dead material will be removed and disposed of off-site. ~~The remaining 1/3 will be left in place to serve as an organic mulch.~~

5.1.2 Seed and Plant Collection

Seeds will be collected from the parent tarplants within the one population located on site. Southern tarplant goes to seed in the late summer to fall. (Seeds were collected previously in November 1997.) Adult plants will also be dug up and directly re-planted within the receiver site. Adult plants will also be maintained at a nursery location, for continuing use in collecting seeds and propagation. Approximately ¼ of the collected seeds will be placed in long-term storage. Of the remaining seeds, approximately ½ will be grown at the nursery and ½ will be sown directly into the receiver site. The various plots at the receiver site shall be staked and marked for future reference and identification of the revegetation treatments.

5.1.3 Planting Plan

Adult plants retrieved from the parent population will be directly planted within the receiver site in spring and summer 1999. Tarplant seeds will be scattered by hand throughout the receiver site in the late summer through early fall 1998, 1999. Seeds will be placed ~~both within the area containing dead Hottentot fig and~~ in the cleared areas at the Vernal Pool and Lake Edge. See Sheet LR-4. One-half of the receiver site will receive overhead irrigation; the other half will not be irrigated.

6.0 EXOTIC PLANT CONTROL PLAN

6.1 Initial Eradication

Non-native, invasive exotic plants will be removed from the revegetation sites to the extent practicable. A combination of chemical, physical, and mechanical removal will be used to achieve the desired removal. Exotic plant removal within the development areas of the Golf

Links will be removed through physical methods during the initial clearing and grubbing/grading operation.

Plant species to be targeted both initially and during the long-term maintenance monitoring period include those listed below; additional plants may also be controlled if found to be present on the site and/or as directed by the biological monitor.

	SCIENTIFIC NAME	COMMON NAME
	Brassica nigra	Black mustard
	Carpobrotus edulis	Hottentot fig
	Carduus pycnocephalus	Italian thistle
	Centaurea melitensis	Tecolote
	Centaurea solstialis	Star thistles
	Cirsium vulgare	Bull thistle
	Conium maculatum	Poison hemlock
	Cotula coronopifolia	Brass buttons
	Delaireria odorata	Cape ivy (=German ivy)
**	*Eucalyptus species*	Eucalyptus (gum) trees
	Foeniculum vulgare	Sweet fennel
	Marrubium vulgare	Horehound
	Melilotus albus & indicus	White & yellow sweet clover
	Myoporum laetum	Myoporum
	Nicotiana glauca	Tree tobacco
	Pennistemum setaceum	Fountian grass
	Phalaris aquatica	Harding grass
	Picris echioides	Bristly ox-tongue
	Ricinus communis	Castor bean
	Salsola tragus	Russian thistle
	Schinus terebinthifolius	Brazilian pepper
***	*Tamarisk sp.*	Tamarisk
	Xanthium sturmarium	Cocklebur
	Arundo donax	Giant Reed Grass
	Ehrharia calycina	Veldt Grass
***	*Ehrharia erecta*	Ehrharta

** To be controlled only within natural or naturalized areas.
*** To be removed from wetland areas only.

Non-native plant species that will be allowed to remain may include the following: *Avena barbata, Bromus diandrus, B. madritensis, B. hordeaceus, Hordeum species, Lolium multiflorum, Trifolium hirtum.* ~~and the~~ Non-native species of *Vicia spp.* may be allowed to remain unless they appear to exclude growth and spread of native species.

6.2 On-going Eradication

Invasive exotics will be removed on a continuing basis during the long-term maintenance period within the restoration areas. Hand removal and weed-whacking will be the preferred methods. Use of herbicides will be minimized to the degree practical.

6.3 Ice Plant Removal at Bluff Edge

Ice Plant within 30 feet of the Bluff Edge, and along the cliff face where practical, will be sprayed with two successive treatments of Round-Up to kill both the vegetation and roots. The surface vegetation will be removed at the soil level and disposed off-site. Below grade roots will remain in place to minimize disturbance of the bluff.

Ice Plant will be removed on a continuing basis during the long-term maintenance period within the revegetation areas. Hand pulling will be the preferred method of removal. Use of herbicides will be minimized to the degree practical.

7.0 MAINTENANCE

7.1 Hydroseed Area Maintenance

Hydroseeded areas will be irrigated until the germinated species are adequately established and/or the crop has set seed. The goal of project irrigation practices is a gradual weaning of the plant's need for supplemental irrigation from the time of germination to the time of establishment and/or setting seed. After the first cycle of growth and setting seed, no additional irrigation will be supplied. It is anticipated that natural rainfall will bring up the second and subsequent cycles of seed growth.

The hydroseed mixes contain annual grasses which, once established, should be able to compete with obnoxious invasive non-native weeds. Hand weeding of invasive weeds such as mustard, thistle, annual clover and castor bean will be performed for the entire maintenance/monitoring period. After establishment of the replacement grasses (hydroseed mix), no additional weeding is proposed. Invasive weeds are prevalent on all areas surrounding the project site. Seeds from these weeds will blow or wash into the site continually and it is not reasonable to expect complete eradication of the weeds. The use of chemical herbicides should be minimized. Physical methods of removal are preferred.

7.2 Tree and Shrub Maintenance

Maintenance for trees and shrubs will consist of weeding the seedling/watering basins, checking the condition of the protective fences, and supplementing natural rainfall with drip irrigation. Basins will be weeded monthly for the first year and bi-monthly thereafter, or, as deemed necessary by the OEC. Mulch in basins will be replenished after each weeding. Protective fences will be monitored monthly and repaired monthly as required for the first year, and then 4 times per year thereafter until final acceptance. Fences will be removed when trees/shrubs are of an appropriate size to preclude predation, acceptable to the County of Santa Barbara and/or by the end of the maintenance/monitoring period.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the various species. Controllers will be equipped with a rain sensor to ensure that irrigation systems do not operate during or immediately following rainfall.

The intent of the drip irrigation is to help the seedlings establish themselves in the intended revegetation sites. After the first year, irrigation will be gradually tapered off. Each watering will be of longer duration than the last to encourage deep rooting, and the interval between waterings will be gradually increased. Seedlings should be able to be weaned from supplemental irrigation by their third winter in the ground (approximately two years from planting). Reference Permit Condition 5(A)(4).

Slow-release Gro-Power fertilizer tablets will be placed in the planting pit of trees and shrubs at the time of planting. No additional fertilizer is anticipated during the maintenance period.

7.3 Tarplant Maintenance

Maintenance of the southern tarplant planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants. The project biological monitor shall flag all tarplant locations for protection prior to the weeding effort.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

7.4 Native Grasslands Maintenance

Maintenance of the native grassland planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

8.0 MONITORING

8.1 Seeded Areas

8.1.1 Hydroseeded Areas: Native Grassland, Erosion Control Area, Barranca Edge

Hydroseeded areas will be evaluated two to three months after seeding (spring and summer 1999) by the Dos Pueblos Golf Links Revegetation Specialist and the OEC to determine adequacy of germination/coverage, and the need for supplemental seeding. Slopes will be reevaluated the following spring (2000) to determine the success of self-seeding/naturalization. Refer to Revegetation Success Criteria (Table C) for additional information.

8.1.2 Hydroseeded Areas: Riparian and ~~Wetland~~ Southern Willow Scrub

Revegetated/enhanced Riparian and ~~Wetland~~ Southern Willow Scrub areas will be monitored bi-monthly for a two-year period (1999, 2000) by the Dos Pueblos Golf Links Revegetation Specialist and the OEC. These areas will then be monitored on an annual basis for three additional years (2001-2003) for a total five year program. During the first two years after seeding and planting, Riparian and Southern Willow Scrub areas will be evaluated on a bi-monthly basis. The initial focus will be on surface erosion control and weed control (Winter 1999-2000). Beginning in Spring of 2000, the focus will shift to evaluating revegetation success. Evaluation

will occur in Fall of 2000. Refer to the Revegetation Success Criteria (Table C) for additional information.

8.2 Tree and Shrub Monitoring

Trees and shrubs will be monitored for five years (or until final acceptance by the County of Santa Barbara) by the Dos Pueblos Golf Links' Revegetation Specialist and the OEC. Trees and shrubs will be evaluated every three months for the first two years and then yearly, thereafter. Caged trees, particularly oaks, will be monitored a minimum of two years until the cages are removed. Trees and shrubs will be evaluated for growth, health of the seedlings, condition of the planting/watering basin and protective fencing, and weed growth near seedling. Trees ~~and shrubs~~ will be accepted by the County of Santa Barbara on an individual basis when they have reached a height of six feet and the tree has been independent of supplemental water, fertilizer, and herbicide treatments for a minimum of two years. This criteria was established by County as the size at which the plant should be able to withstand predation.

Ornamental trees and shrubs will be planted at a 3:1 replacement ratio with the intent to successfully establish tree and shrub at a minimal 1:1 final replacement ratio; i.e."no-net-loss." When one third of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Willows will be planted at a 5:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal ~~+~~ 4:1 final replacement ratio; ~~i.e. "no-net-loss."~~ When four fifths of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Oaks will be planted at a 10:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal ~~+~~ 5:1 final replacement ratio; ~~i.e. "no-net-loss."~~ When one half of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

~~8.3 Fresh Water Marsh Monitoring~~

~~The newly created Fresh Water Marsh at the lake edge will be monitored monthly for weed invasion and health of plants for the first year (1999), and quarterly thereafter for a total of five years (2000-2003).~~

~~Weeds will be hand-pulled. Dead plants will be replaced with the like plants from liners. The focus of the monitoring effort will be to ensure the creation of a viable, self-regualting fresh water marsh. Refer to Revegetation Success Criteria (TABLE C) for additional information.~~

8.4 Tarplant Monitoring

Permanent monitoring transects will be installed to facilitate long-term monitoring of the southern tarplant receiver site, including photo-documentation stations. Photos will be collected both before and during the initial site preparation and planting phase, and throughout the monitoring period. Monitoring will be conducted on a quarterly basis for the first year, and then on a semi-annual basis thereafter. Monitoring will be conducted in the spring of each year to check for invasion by non-native weedy plant species, and again in the late summer to early fall to check the growth of the southern tarplant. Qualitative and quantitative data shall be collected during the late summer/early fall visits.

8.5 Native Grassland Monitoring

Hydroseeded Native Grassland areas will be monitored as per Section 8.1.1. Native Grassland areas planted from pots will be evaluated monthly for six months for weed invasion and health of seedlings, and quarterly thereafter for a total of five years. Refer to Revegtation Success Criteria (Table C) for additional information.

8.6 Year End Reporting

The Dos Pueblos Golf Links Revegetation Specialist and the OEC shall prepare a year end monitoring report, due at the anniversary date of completion of the installation each year for five years, summarizing the years' maintenance activities, the status of establishment of the seeded and planted areas, achievement of success criteria standards, and the need for

remedial measures. Reports will include photo documentation for all native plant revegetation and restoration areas. The year end report shall be submitted to the County of Santa Barbara and the applicable resource agencies (permitting agencies) for review and approval each year.

9.0 REVEGETATION SUCCESS CRITERIA

Table C, adapted from the Celeron Pipeline Revegetation Plan and the Exxon Las Flores Canyon Revegetation Plan, outline the Revegetation Success Criteria proposed for the Dos Pueblos Golf Links Biological Enhancement Landscape Plan.

10.0 GOLF BALL RECOVERY PROGRAM

Condition 5.e. of the Conditional Use Permit #91-CP-085 for the Dos Pueblos Golf Links project requires the development of a golf ball recovery program for retrieval of balls in drainages, sensitive biological areas (i.e., native restoration areas, wetlands, etc.) and on the beach. In accordance with Condition 5.e., the following program will be implemented:

Course employees who have received training regarding the sensitive environmental habitats onsite, such as drainages, wetlands, native restoration areas, and the harbor seal rookery and haul-out beach, shall be designated to retrieve golf balls from these and other out-of bounds areas that are off-limits to golf course users. The designated employees will enter the out-of-bounds areas on foot on a quarterly basis to retrieve errant balls. Care will be taken to keep disturbance of these areas to a minimum.

In accordance with CUP #91-CP-085 Condition 8.a., access to the harbor seal haul-out and rookery beach shall be prohibited during the seal pupping/breeding season (February 1 to May 31). Golf ball recovery will not take place at the seal haul-out beach during the seal pupping/breeding season.

TABLE A

SEED MIXES

BARRANCA EDGE (Coastal Sage Scrub)

Botanical Name	Common Name	Lbs/Acre
Artemisia californica	California Sagebrush	1
Baccharis piluarlis consanginuea	Coyote Bush	5
Encelia california	California Sunflower	2
Epilobium (Zauschneria) californica	California Fuschia	1
~~Ericameria ericoides ericoides~~	~~Mock Heather~~	~~4~~
Eriogonum fasciculatum	California Buckwheat	10
Eriogonum parvifolium	Coastal Buckwheat	6
Eriophyllum confertiflorum	Golden Yarrow	1
*Heteromeles arbutifolia	Toyon	6
Isocoma menziesii	Coast Goldenbush	2
Leymus condensatus	Giant Wild Rye	6
Lotus scoparius	Deerweed	~~7~~ 9
Mimulus aurantiacus	Monkeyflower	1
Nassella lepida	Slender (foothill) Needle Grass	6
*Rhamnus californica	Californinia Coffee Berry	6
Salvia leuchophylla	Purple Sage	3
Salvia mellifera	Black Sage	3
Scophularia californica	California Beeplant	2
Hazardia squarrosa	Saw-toothed Goldenbush	2
Rhus integrifolia	Lemonade Berry	

* May augment seeding of these species with 1 gallon container plants.

EROSION CONTROL MIX (Transition Areas)

Botanical Name	Common Name	Lbs/Acre
Artemesia californica	California Sagebrush	1
Bromus hordeaceus (B. mollis)	Soft Chess	~~15~~ 16
Bromus madritensis	Foxtail Chess	10
~~Bromus diandrus~~	~~Ripgut Grass~~	~~1~~
Encelia californica	California Encelia	2
~~Ericameria ericoides ericoides~~	~~Mock Heather~~	~~3~~

Eschscholzia californica	California Poppy	2
Isocoma menziesii	Coast Goldenbush	2
Lolium multiflorum	Italian Rye	20
Lotus pursianus	Deerweed	2
Lotus scoparius	Deerweed	2
Lupinus succulentus	Blue Lupine	5
Sisyrinchium bellum	Blue-eyed Grass	2
Trifolium hirtum	Rose Clover	30

RIPARIAN

Botanical Name	Common Name	Lbs/Acre
Artemesia douglasii	Mugwort	1
Festuca megalura	Zorro Fescue	12
Mimulus longiflorus	Monkey Flower	0.5
Rosa californica	California Rosebush	5
Salvia spathacea	Hummingbird Sage	1
Sambucus mexicana	Elderberry	3
~~Symphoricarpus mollis~~	~~Snowberry~~	~~5~~
Venegasia carpesioides	Canyon Sunflower	3
Clematis ligusticifolia	Creek Clematis	1

SOUTHERN WILLOW SCRUB

Botanical Name	Common Name	Lbs/Acre
Seeds:		
Artemesia douglasiana	Mugwort (seed)	1
Nassella lepida	Slender (foothill) Needle Grass (seed)	10
Mimulus guttatus	Yellow Marsh Morningflower (seed)	3
Pluchea sericea	Arrow Weed (seed)	4
*Sambucus mexicana	Mexican Elderberry	4
Cuttings:		
Baccharis salicifolia	Mulefat (direct cut & stick)	
Salix lasiolepis	Arroyo Willow (direct cut & stick)	

* May augment seeding with 1 gallon container plants

NATIVE GRASSLAND

Botanical Name	Common Name	Lbs/Acre

A mixture of seeding and use of liners for these species:

* Melica imperfecta	Coast Range Melic	8

* Nassella lepida	Slender (foothill) Needle Grass	6
* Nassella pulchra	Purple Needle Grass	18

* To be hydroseeded and planted from plugs. See Revegetation Plan (Exhibit C).

~~**FRESH WATER MARSH (Note: All from liners-no seed)**~~

~~Botanical Name~~	~~Common Name~~
~~Anemopsis californica~~	~~Yerba Mansa~~
~~Eleocharis macrostachya~~	~~Common Spikerush~~
~~Juncus bufonius~~	~~Toad Rush~~
~~Juncus balticus~~	~~Baltic Rush~~
~~Juncus textilis~~	~~Basket Rush~~
~~Mimulus guttatus~~	~~Yellow Marsh Monkeyflower~~
~~Scirpus acutus~~	~~Common Tule~~
~~Scirpus microcarpus~~	~~Small-fruited Bulrush~~
~~Scirpus robutus~~	~~Prairie Bulrush~~

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98

Prepared by Jackie Bowland and Trish Burgess, Interface Planning and Counseling
Includes all trees on-site except Willows in Tomate Creek and Eagle Canyon*
Revised by the Office of Katie O'Reilly Rogers

** DBH = Diameter measured average breast height (four feet above grade)
(***) Grove I – of 40 trees, 25 will be removed

TREE ID	TREE SPECIES	NUMBER OF TRUNKS	TRUNK DIAMETER (INCHES) @ DBH**	STATUS (NO COMMENT INDICATES TREE TO REMAIN)
5	Pine	1	12	
6	Pine	1	11	REMOVE (G/F)
7A	Pine	1	9 w/ sapling	REMOVE (G/F)
7B	Cypress	1	12	REMOVE (G/F)
7C	Eucalyptus	1	8	REMOVE (G/F)
8	Cypress	1	20	
9	Cypress	1	18	
10	Cypress	1	N/A	REMOVE – STUMP
11A	Cypress	3	36	
11B	Eucalyptus	1	14	
12	Cypress	1	36	
13	Cypress	1	24	
14	Cypress	1	36	
15	Cypress	1	24	
16	Cypress	1	16	
17A	Cypress	1	20	
17B	Cypress	1	12	
18	Pine	1	12	REMOVE – STUMP
19A	Eucalyptus	1	24	REMOVE
19B	Eucalyptus	1	24	REMOVE – SICK/DEAD
20	# Not Used			
21	Cypress	2	20; 10	REMOVE (F)
22	# Not Used			
23A	Cypress	1	24	
23B	Cypress	1	30	REMOVE (F)
23C	Cypress	1	30	
24	Cypress	1	30	
25	Cypress	1	12	
26	Cypress	4	30	REMOVE (F)
27	Cypress	1	26 w/ sapling	
28	Eucalyptus	1	6	REMOVE (F)
29	# Not Used			
30	Decorative	1	8	
31A	Eucalyptus	1	9	
31B	Eucalyptus	1	12	
32	Decorative	1	18	
33	Eucalyptus	1	18	
34	Pine	1	22	
35	Pine	1	16	
36	Pine	1	14	
37A	Eucalyptus	2	36	

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TREE INVENTORY
DOS PUEBLOS GOLF LINKS
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37B	Eucalyptus	1	8	
37C	Decorative	1	8	
37D	Eucalyptus	1	8	REMOVE (F)
38A	Pine	1	24	REMOVE (G)
38B	Eucalyptus	1	12	REMOVE (G)
39A	Eucalyptus	5	30	
39B	Eucalyptus	1	8	
39C	Eucalyptus	1	12	
39D	Eucalyptus	1	12	REMOVE (G)
40A	Decorative	1	26	
40B	Decorative	1	12	
40C	Decorative	1	12	
41	Cypress	1	18	REMOVE (F)
42	Cypress	4	10;11;16;15	
43A	Cypress	1	23	REMOVE (F)
43B	Cypress	1	18	REMOVE (F)
43C	Eucalyptus	1	12	REMOVE (F)
43D	Eucalyptus	1	18	REMOVE (F)
44A	Cypress	1	30	REMOVE – SICK/DEAD
44B	Eucalyptus	1	12	REMOVE (F)
44C	Eucalyptus	5	Fallen	REMOVE – SICK
44D	Eucalyptus	1	Split Apart	REMOVE – SICK
45	Cypress	1	28	REMOVE (F)
46	Eucalyptus	1	20	REMOVE (F)
47	Eucalyptus	1	30	REMOVE (F)
48	Eucalyptus	6	Sprouts	REMOVE – SICK/DEAD
49	Eucalyptus	1	20	REMOVE – SICK/DEAD
50	Eucalyptus	1	24	REMOVE – SICK/DEAD
51A	Eucalyptus	1	30	REMOVE (F)
51B	Cypress	1	40	REMOVE (F)
52	Ca. Pepper	1	8;10	REMOVE (F)
53	Eucalyptus	1	30	REMOVE – SICK/DEAD
54	Cypress	1	28	REMOVE (F)
55	Eucalyptus	1	22	
56	Eucalyptus	1	9	
57	Eucalyptus	1	35	
58	Eucalyptus	1	23 Blown Over	REMOVE – SICK
59	Cypress	1	20	REMOVE – SICK
60	Eucalyptus	2	Large number of Stumps sprouting	REMOVE – SICK
61A	Cypress	1	20	
61B	Cypress	1	18	
62	Cypress	1	20	
63	Cypress	1	20	
64	Cypress	2	26	REMOVE (G/F)
65	Cypress	1	28	
66	Eucalyptus	1	35	REMOVE – SICK
67	Cypress	1	36	REMOVE (F)
68	Eucalyptus	1	20	REMOVE – SICK
69	Cypress	1	30	REMOVE (F)
70	Cypress	3	Broken Apart	REMOVE (F)

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71	Eucalyptus	1	18	REMOVE – SICK
72	Cypress	1	30	REMOVE (F)
73	Cypress	1	12	REMOVE (F)
74	Eucalyptus	1	18	REMOVE (F)
75	Eucalyptus Gone	3	26;10;8	REMOVE – GONE
76	Cypress	1	34	REMOVE (F)
77A	Eucalyptus	1	20	REMOVE (F)
77B	Eucalyptus	1	6;8	REMOVE (F)
77C	Eucalyptus	1	12;6	REMOVE (F)
78	Cypress	1	40	REMOVE (F)
79A	Cypress	1	30 Split Apart	REMOVE (F)
79B	Cypress	1	12	REMOVE (F)
80	Eucalyptus	1	20	REMOVE (F)
81	Cypress	3	20;12;9	REMOVE (F)
82	Cypress	1	36	REMOVE (F)
83	Cypress	1	40	REMOVE (F)
84	Eucalyptus	1	26	REMOVE (F)
85	Pine	2	70% Dead	REMOVE (F)
86	Eucalyptus	1	18	REMOVE (F)
87	Cypress	1	28	REMOVE (F)
88	Cypress	1	24	REMOVE (F)
89	Cypress	1	12	
90	Cypress	1	8	
91	Cypress	1	11	
92	Cypress	1	12	
93	Cypress	1	28	
94	Cypress	1	25	
95	Cypress	1	12	
96	Cypress	1	16	
97	Cypress	1	26	
98	Cypress	1	8	
99	Cypress	5	9;9;12;10;11	
100	Cypress	1	10	
101A	Cypress	1	24	
101B	Cypress	1	4 Trunks	REMOVE – SICK
102	Cypress	1	22	
103A	Cypress	1	24	
103B	Cypress	1	22	
103C	Cypress	1	30	
104	Cypress	1	30	
105	Cypress	1	24	
106	Cypress	1	20	REMOVE (G)
107	Cypress	1	12	REMOVE (G)
108	Cypress	2	16	REMOVE (G/F)
109	Cypress	1	26	REMOVE – SICK
110	Cypress	2	14;18	REMOVE (G/F)
111	Cypress	1	24 Prune Out Blight	
112	Cypress	1	32	
113	Cypress	1	30	REMOVE (G)
114	Cypress	1	32	REMOVE (G)
115	Cypress	1	34	REMOVE (G)

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116	Cypress	1	20	REMOVE (G)
117	Cypress	1	24	REMOVE (G)
118	Redwood	2	11,11	REMOVE (G/F)
119	Cypress	2	36	REMOVE (G/F)
120	Cypress	1	30	REMOVE (G/F)
121	Cypress	1	22	REMOVE (F)
122	Pine	3	10;12;11	REMOVE (G)
123	Pine	2	10'12	REMOVE (G)
124	Pine	2	10'12	REMOVE (G)
125	Pine	6	Blown over	REMOVE – DEAD
126	Pine	2	9;12	
127	Cypress	2	10;12	
128	Pine	3	12;10;16	
129	Pine	3	10;11;16	
130	Pine	2	12;9	
131	Pine	3	10;12;16	
132	Pine	2	24;18	
133	Pine	2	10;8	
134	Pine	3	10;8;9	
135	Pine	2	24;19	
136	Eucalyptus	1	11	REMOVE (F)
137	Eucalyptus	5	6;6;6;7;8	REMOVE (F)
138	Eucalyptus	1	6	REMOVE (F)
139	Eucalyptus	2	11;8	REMOVE (F)
140	Eucalyptus	1	10	REMOVE (F)
141	Eucalyptus	1	10	REMOVE (F)
142	Pine	2	12;10	
143	Pine	2	14;9	
144	Pine	2	9;10	
145	Pine	6	10;10;10;8;6;11	
146	Pine	4	8;10;12;9	
147	Pine	3	9;6;8	
148	Cypress	5	18;14;10;10;16	REMOVE (F)
149	Cypress	1	10	REMOVE (F)
150	Cypress	1	10	REMOVE (F)
151	Cypress	1	10	REMOVE (F)
152	Eucalyptus	1	10	REMOVE (F)
153	Eucalyptus	2	20;16	REMOVE (F)
154	Cypress	3	18;12;10	REMOVE (F)
155	Eucalyptus	2	18;16	
156	Eucalyptus	2	18;11;w/7 saplings	
157	Eucalyptus	1	18	
158	Eucalyptus	2	10;18	
159	Pine	2	12;10	
160	Pine	2	10;11	
161	Pine	1	21	
162	Pine	2	12;16	
163	Pine	3	10;10;8	
164	Pine	4	4	
165	Cypress	2	8;6	REMOVE (G)
166	Cypress	1	10	REMOVE (G)

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167	Pine	3	10;10;12	REMOVE (G)
168	Pine	3	10;10;12	REMOVE (G)
169	Pine	3	10;10;14	REMOVE (G)
170	Pine	4	16;10;9;11	REMOVE (G)
171	Pine	2	11;9	REMOVE (G)
172	Pine	3	12;16;10	REMOVE (G)
173	Pine	4	10;9;11;14	REMOVE (G)
174	Cypress	6	9;10;18;6;11;10	REMOVE (G/F)
175	Pine	1	22	REMOVE (G/F)
176	Pine	2	18;12	
177	Pine	5	16;11;10;18;9	
178	Pine	2	16;17	REMOVE (G/F)
179	Pine	2	Dead	REMOVE – DEAD
180	Pine	4	Dead	REMOVE – DEAD
181	Pine	1	Dead	REMOVE – DEAD
182	Pine	3	Dead	REMOVE – DEAD
183	Pine	1	28	REMOVE (G/F)
184	Pine	3	18;10;16	REMOVE (G/F)
185	Pine	2	14;10	REMOVE (G/F)
186	Pine	2	10;16	REMOVE (G/F)
187	Pine	2	12;14	REMOVE (G/F)
188	Pine	2	16;10	
189	Pine	2	20;16	
190	Pine	2	18;14	
191	Pine	2	16;11	
192	Willow	1	9	REMOVE – MANY DEAD TRUNKS
193	Willow	4	9;10;16;12	
194	Willow	3	12;18;21	
195	Willow	4	16;9;8;6	
196	Willow	3	9;8;10	
197	Willow	2	14	REMOVE
198	Willow	2	12;16	REMOVE
199A	Willow	3	16;10;20	
199B	Willow	1	14	
200	Willow	2	16;12	REMOVE
201	Willow	1	23	REMOVE
202	Willow	4	28;16;19;20	REMOVE
203	Willow	2	16;12	
204	Willow	2	12	
205	Willow	3	8;10;6	
206	Willow	2	8;10	
207	Willow	2	10;8	
208	Willow	3	16;10;18	
209	Willow	2	10;18	REMOVE
210	Willow	1	10	REMOVE
211	Willow	4	18;11;9;16	REMOVE
212	Willow	3	16;10;18	REMOVE
213	Willow	3	16;12;10	REMOVE
214	Willow	2	10;18	REMOVE
215	Willow	2	26;10	REMOVE

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216	Willow	4	6	REMOVE
217	Willow	2	8;10	
218	Willow	2	6;10	
219	Willow	3	18;10;9	
220	Willow	4	18;12;9;10	
221	Willow	3	8;10;11	
222	Willow	2	12;10	
223	Willow	2	12;10	
224	Willow	4	16;20;11;11	
225	Willow	4	10;18;9;12	
226	Willow	3	16;20;12	
227	Willow	5	10;6;6;10;11	
228	Willow	3	6;6;8	
229	Willow	1	6	
230	Willow	3	9;10;6	
231	Willow	3	18;9;11	REMOVE (G)
232	Willow	3	6;6;9	REMOVE (G)
233	Willow	4	8;11;6;6	
234	Willow	1	6	
235	Willow	2	6;4	
236	Willow	4	8;16;6;6	
237	Willow	1	7	
238	Willow	2	8;10	
239	Willow	7	16;9;6;10;14;8;9	
240	Willow	1	8	
241	Willow	1	6	
242	Willow	1	8	
243	Willow	1	6	
244	Willow	3	12;10;8	
245	Willow	1	6	
246	Willow	1	8	
247	Willow	1	6	
248	Willow	1	8	
249	Willow	4	6;6;4;8	
250	Willow	2	9;6	
251	Willow	2	12;8	
252	Willow	2	18;9	
253	Willow	2	6;8	
254	Willow	1	8	
255	Willow	2	6;6	
256	Willow	3	6;6;6	
257	Willow	3	6;6;6	
258	Willow	4	6;8;5;9	
259	Willow	6	6;6;6;5;7;6	
260	Willow	3	6;4;6	
261	Willow	2	7;6	
262	Willow	2	6;14	
263	Willow	4	10;9;7;11	
264	Willow	6 main trunks	6;10;7;9;11;18	
265	Eucalyptus	1	8	
266	Eucalyptus	1	16	

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267	Willow	1	26	
268	Eucalyptus	6	38;22;28;16;14;18	
269	Eucalyptus	1	18	
270	Eucalyptus	4	39;26;18;14	
271	Eucalyptus	1	14	REMOVE (G)
272	Willow	1	6	
273	Willow	2	24;11	
274	Willow	2	18;10	
275	Willow	1	8	
276	Willow	1	12	
277	Willow	7	9;11;10;11;7;9;8	
278	Willow	1	20	
279	Willow	1	16	
280	Willow	1	16	
281	Willow	2	9;9	
282	Willow	2	8;9	
283	Willow	3	6;10;14	
284	Willow	1	16	
285	Willow	1	6	
286	Willow	3	10;10;9	
287	Willow	1	9	
288	Willow	1	10	
289	Willow	2	9;8	
290	Willow	1	12	
291	Willow	4	6;8;9;6	
292	Willow	2	12;11	
293	Willow	1	11	
294	Willow	3	8;9;6	
295	Willow	2	6;8	
296	Willow	2	6;5	
297	Willow	2	6;11	
298	Willow	1	9	
299	Willow	1	6	
300	Willow	2	17;12	
301	Willow	2	6;8	
302	Willow	2	7;6	
303	Willow	4	6;7;6;5	
304	Eucalyptus	3	11;12;7	REMOVE
305	Oak	1	10	
306	Cypress	1	24	
307	Eucalyptus	1	12	
308	Eucalyptus	2	10; 11	
309	Eucalyptus	1	16	
310	Eucalyptus	4	6; 6; 9; 8	
311	Eucalyptus	4	9; 8; 6; 6	
312	Eucalyptus	3	9; 12; 6	
313	Eucalyptus	4	6; 10; 9; 6	
314	Eucalyptus	1	9	
315	Eucalyptus	1	11	
316	Eucalyptus	1	15	
317	Eucalyptus	1	16	

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318	Eucalyptus	4	6; 6; 9; 9	
319	Eucalyptus	1	10	REMOVE (G/F)
320	Eucalyptus	5	18; 16; 13; 10; 12	REMOVE (G/F)
321	Eucalyptus	1	24	REMOVE (G/F)
322	Eucalyptus	2	21; 9	REMOVE (G/F)
323	Eucalyptus	1	20	REMOVE (G/F)
324	Eucalyptus	1	20	REMOVE (G/F)
325	Eucalyptus	1	24	REMOVE
326A	Eucalyptus	8	16; 10; 12; 9; 15; 10; 11; 11	REMOVE (G/F)
326B	Eucalyptus	1	12	REMOVE (G/F)
326C	Eucalyptus	1	12	REMOVE (G/F)
326D	Eucalyptus	1	12	REMOVE (G/F)
326E	Eucalyptus	1	12	REMOVE (G/F)
326F	Eucalyptus	1	10	REMOVE (G/F)
326G	Eucalyptus	1	10	REMOVE (G/F)
327	Eucalyptus	2	12; 12	REMOVE (G/F)
328	Eucalyptus	4	12; 10; 8; 9	REMOVE (G/F)
329	Eucalyptus	1	26	REMOVE (G/F)
330	Eucalyptus	1	12	REMOVE
331	Eucalyptus	1	14	REMOVE
332	Eucalyptus	1	18; 12	REMOVE
333	Cypress	1	21	REMOVE (G)
334	Cypress	3	15; 12; 9	REMOVE (G/F)
335	Pine	1	23	REMOVE (G)
336	Pine	1	22	REMOVE – SICK
337	Pine	4	14; 22; 20; 21	REMOVE – SICK
338	Pine	2	21	REMOVE – SICK
339	Pine	1	22	REMOVE – SICK
340	Pine	1	22	REMOVE – SICK
341	Pine	1	26	REMOVE – SICK
342	Pine	3	18; 17; 20	REMOVE – SICK
343	Decorative	1	19	REMOVE – SICK
344	Decorative	1	17	REMOVE
345	Pine	1	52	REMOVE
346	Decorative	1	19	REMOVE – SICK
347	Decorative	1	16; 12; 24	REMOVE - SICK
348	Cypress	1	26	REMOVE
349	Decorative	2	24; 10	REMOVE
350	Pine	1	7	REMOVE – SICK
351	Pine	1	58	REMOVE – DEAD
352	Cypress	1	10	REMOVE (G)
353	Cypress	1	36	
354	Cypress	1	58	
355	Willow	3	3;4;6	
356	Willow	1	11	
357	Willow	1	10	
358	Willow	1	9	
359	Willow	1	8	
360	Willow	1	9	
361	Willow	4	7;10;6;9	

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98

362	Pine	3	16;10;12	REMOVE (G)
363	Pine	2	10;12	REMOVE (G)
364	Pine	2	12;10	REMOVE – DEAD
365	Cypress	3	10;15;18	REMOVE (G/F)
366	Cypress	1	15	REMOVE (G/F)
367	Tamarisk	2	23;12	
368	Tamarisk	2	24;14	
369	Tamarisk	1	18	
370	Tamarisk	1	14	
371	Tamarisk	Multiple	12 to 20; suckers	
372	Tamarisk	Multiple	8 to 23; suckers	
373	Tamarisk	Multiple	9 to 18; suckers	
374	Tamarisk	Multiple	6 to 25; suckers	
375	Prunus	Multiple	2 to 6; suckers	
376	Cypress	4	15;8;6;7	REMOVE (G)
377	Cypress	1	13	REMOVE (G)
378	Cypress	6	9;9;13;6;12;16	REMOVE (G)
379	Pine	3	9;11;11	REMOVE (G)
380	Cypress	6	11;8;7;8;6;13	REMOVE (G)
381	Pine	1	23	REMOVE (G)
382	# Not Used			
383	Coast Live Oak	4	48;52;36;28	
384	Coast Live Oak	2	7;6; several ≤ 2" trunks or stems	REMOVE (G)
385	Eucalyptus	48		
386	Eucalyptus	48		
387	Decorative	8		REMOVE (G)
388	Decorative	8		REMOVE (G)
389	Decorative	10		REMOVE (G)
390	Decorative	7		REMOVE (G)
391	Decorative	12		REMOVE (G)
392	Pine	10		REMOVE
393	Pine	28		REMOVE – SICK
394	Eucalyptus	27		REMOVE (G)
395	Eucalyptus	32		REMOVE (G)
396	Decorative	14		REMOVE (G)
397	Eucalyptus	36		REMOVE (G)
398	Decorative	15		REMOVE (G)
399	Decorative	24		
400	Decorative	18		REMOVE (G)
401	Decorative	8		REMOVE (G)
402	Decorative	14		REMOVE (G)
403	Decorative	8		REMOVE (G)
404	Decorative	10		REMOVE (G)
Grove A	Eucalyptus	≈12 Trees	6 to 10	
Grove B	Eucalyptus	≈50 Trees	6 to 12 w/ saplings	
Grove C	Eucalyptus	≈50 Trees	4 to 11 w/ saplings	

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98

Grove D	Eucalyptus	14 trees over 6"; saplings & smaller trees present 9 mult-trunks	15;9;11;6;8 and ranging from 2 to 6	REMOVE
Grove E	Eucalyptus	≈20 + saplings & crown sproutings	Ranging from 6 to 26	REMOVE (F)
Grove F	Tamarisk	6 trees	16 to 30	REMOVE
Grove G	Tamarisk	10 trees	9 to 26	REMOVE
Grove H	Tamarisk	16 trees	10 to 20	REMOVE
Grove I**	Tamarisk	40 trees	10 to 25	REMOVE
Grove J	Eucalyptus	≈159 trees	6 to 18 w/ saplings	
Grove K	Cypress & Decoratives	1	30	REMOVE
Grove L	INDIVIDUAL TREES CURRENTLY LISTED			
Grove M	Eucalyptus forest	100 trees	Single & multi-trunk; ≤ 1" to 14" w/ saplings.	
Grove N	Willow	30 – 40 trees	Multi-trunk & saplings; ≤ 1" to 10"; sprouting from horizontal branches.	
Grove O	Willow	10 trees	Multi-trunk & saplings; ≤ ½" to 3"	
Grove P	Willow	20-30 trees	Multi-trunk & saplings; ≤ ½" to 12", sprouting from horizontal branches.	
Grove Q	Decoratives	4		REMOVE (G) – SICK
Grove R	Decoratives	6	Plus or Minus 12" w/ sapplings	REMOVE (G)

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98

SUMMARY:

DESCRIPTION:	QUANTITY OF TREES TO BE REMOVED:	MITIGATION:
WILLOWS	15	75
OAK	1	10
NON-NATIVES	170	510
TOTAL	**186**	**595**

STATUS LEGEND

REMOVE (G):	REMOVE DUE TO GRADING
REMOVE (F):	REMOVE, TREE LOCATED IN PROPOSED FAIRWAY
REMOVE (G/F):	REMOVE DUE TO GRADING AND LOCATION IN PROPOSED FAIRWAY
(NO COMMENT):	TREE TO REMAIN

NOTES

1. TAMARISK TREES ARE NOT COUNTED OR MITIGATED.
2. SICK, DYING OR DEAD TREES NOT MITIGATED.
3. DECORATIVE LANDSCAPE TREES / SHRUBS ARE NOT MITIGATED.

TABLE C

REVEGETATION SUCCESS CRITERIA: HYDROSEEDING

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate 1 month after hydroseeding	Interferes with germination or coverage	Hand pull/Weed whip (Herbicide may be used if acceptable by the biological monitor)
	Evaluate at end of first growing cycle	Interferes with revegetation	Hand pull/weed whip (Herbicide may be used if acceptable by the biological monitor)
Hydroseeded Native Grassland, Erosion Control, Barranca Edge	Evaluate 2-3 months after seeding	>70% cover by visual observation	Acceptable*
		>40% cover, stable	Wait until 2nd year
		<40% cover	Reseed
Hydroseeded Riparian/~~Wetland~~ Southern Willow Scrub Areas	Evaluate 6 months after seeding	>70% cover by visual observation	Continue to monitor
	Evaluate 24 months after seeding	>75% cover	Acceptable*
		<70%	Reseed
	Evaluate yearly for 3 additional years	>80% cover	Acceptable*

*Indicates partial release of Revegetation Bond.

REVEGETATION SUCCESS CRITERIA: TREES & SHRUBS

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for one year	Weeds in basins	Hand pull; replenish mulch
	Evaluate 4 times/year(years 2-5) until acceptance	Weeds in basins	Hand pull; replenish mulch
Protective Fencing	Evaluate monthly for 1 year	Broken or collapsed fence	Repair Fence
	Evaluate 4 times/year(years 2-5) until acceptance	Broken or collapsed fence	Repair Fence
		Fencing/Caging interferes with development of normal growth form.	Re-locate affected branch to promote normal, healthy growth form, anchor to cage (if needed) with non-binding Nursrty tape, or clip small section of cage/fence to free branch.
Irrigation	Months 1 & 2	Approximate Irrigation Schedule **	1x/week, 4 hrs each session
	Months 3 - 6	" "	2x/month, 8 hrs each session
	Months 7 - 12	" "	1x/month, 12 hrs each session
	Months 13 - 24	" "	Monitor, water as needed. Likely scenario: 1x/month in summer/fall only. 12-20 hrs each session.

Tree/Shrub	Evaluate at end of each growing season	1 healthy seedling (per plant removed)	Continue to monitor
		0 seedling	Replant
	Evaluate at the end of 5th year	1 healthy 6-foot non-native tree/ shrub established for each tree removed	Accept-able *
		5 healthy 6-foot oak/native trees established for each oak/native tree removed ***	
		4 healthy 6-foot willow trees established for each willow tree removed ***	
		0 tree/shrub	Replant
	Monitor growth & success	Replant until 1 healthy 6-foot non-native tree/ shrub established for each tree removed	Accept-able *
		Replant until 5 healthy 6-foot oak/native trees established for each oak/native tree removed ***	
		Replant until 4 healthy 6-foot willow trees established for each willow tree removed ***	

*Indicates partial release of Revegetation Bond.

** Irrigation scheduling shall be coordinated between the landscape contractor and the biological monitor to assure adequate watering and to facilitate weaning off irrigation by the end of the maintenance period.

*** Each tree has attained six feet in height, is in healthy condition verified by an arborist or biologist acceptable to the County, has been independent of supplemental water, fertilizer, pesticide and fungal treatments, protection from herbivores, and other maintenance for a minimum of two full years. At acceptance by the County for release, trees shall exhibit sufficient spacing to allow them to grow to maturity in a normal manner.

REVEGETATION SUCCESS CRITERIA: SOUTHERN TARPLANT

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for 1st year; quarterly for years 2-5	Invasive weeds interfering with growth of tarplant	Hand pull; re-spray Hottentot fig with herbicide "Rodeo"
Seeded Tarplant	Evaluate quarterly after seeding for one year	>70% cover by visual observation with at least 75% of plants in flower and/ or producing fruit.	Continue to monitor
		<60% cover	Reseed in fall
Planted Tarplant	Evaluate quarterly after planting for one year	1 healthy transplant/ each removed	Continue to monitor
	Evaluate semi-annually for 4 additional years	Survival of approximate number of plants same as original population	Acceptable *

*Indicates partial release of Revegetation Bond.

REVEGETATION SUCCESS CRITERIA: NATIVE GRASSLAND FROM POTS

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for 6 months	Invasive weeds interfering with growth of Nassella	Hand pull/weed whip (Herbicide may be used if acceptable by the biological monitor)
	Evaluate quarterly for 5 years	Invasive weeds interfering with growth of Nassella	Hand pull/weed whip (Herbicide may be used if acceptable by the biological monitor)
Fence	Evaluate 2x/year until acceptable	Collapsed fence	Repair Fence
		Acceptance of Native Grassland by the County of Santa Barbara	Remove Fence
Seedlings	Evaluate monthly for 6 months	Dry or wilting plants	Hand water as necessary
	Evaluate quarterly for 5 years or until acceptance by the County of Santa Barbara	>80% cover by visual observation	Accept-able*
		<70% cover	Replant

*Indicates partial release of Revegetation Bond.

~~REVEGETATION SUCCESS CRITERIA: FRESH WATER MARSH~~

~~Feature~~	~~Performance Criterion~~	~~Findings~~	~~Action~~
~~Weed Invasion~~	~~Evaluate monthly for 1" year; quarterly for years 2-5~~	~~Invasive weeds interfering with growth of plants~~	~~Hand pull;~~

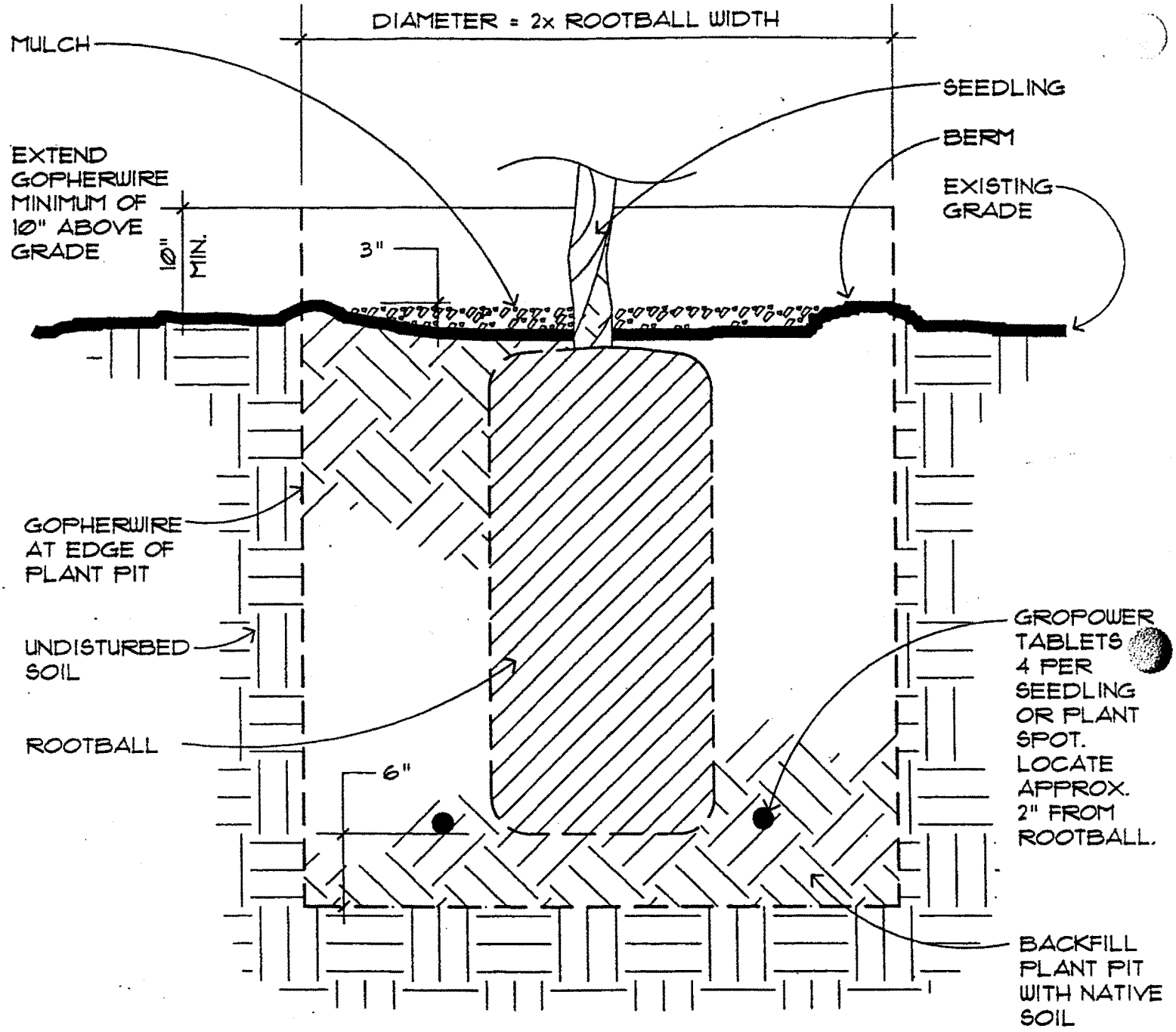
Marsh Plants	Evaluate quarterly after planting for one year	Healthy plants	Continue to monitor
		Dead Plants	Replace with same species
	Evaluate semi-annually for 4 additional years	>80% survival	Acceptable *

*Indicates partial release of Revegetation Bond.

TABLE D

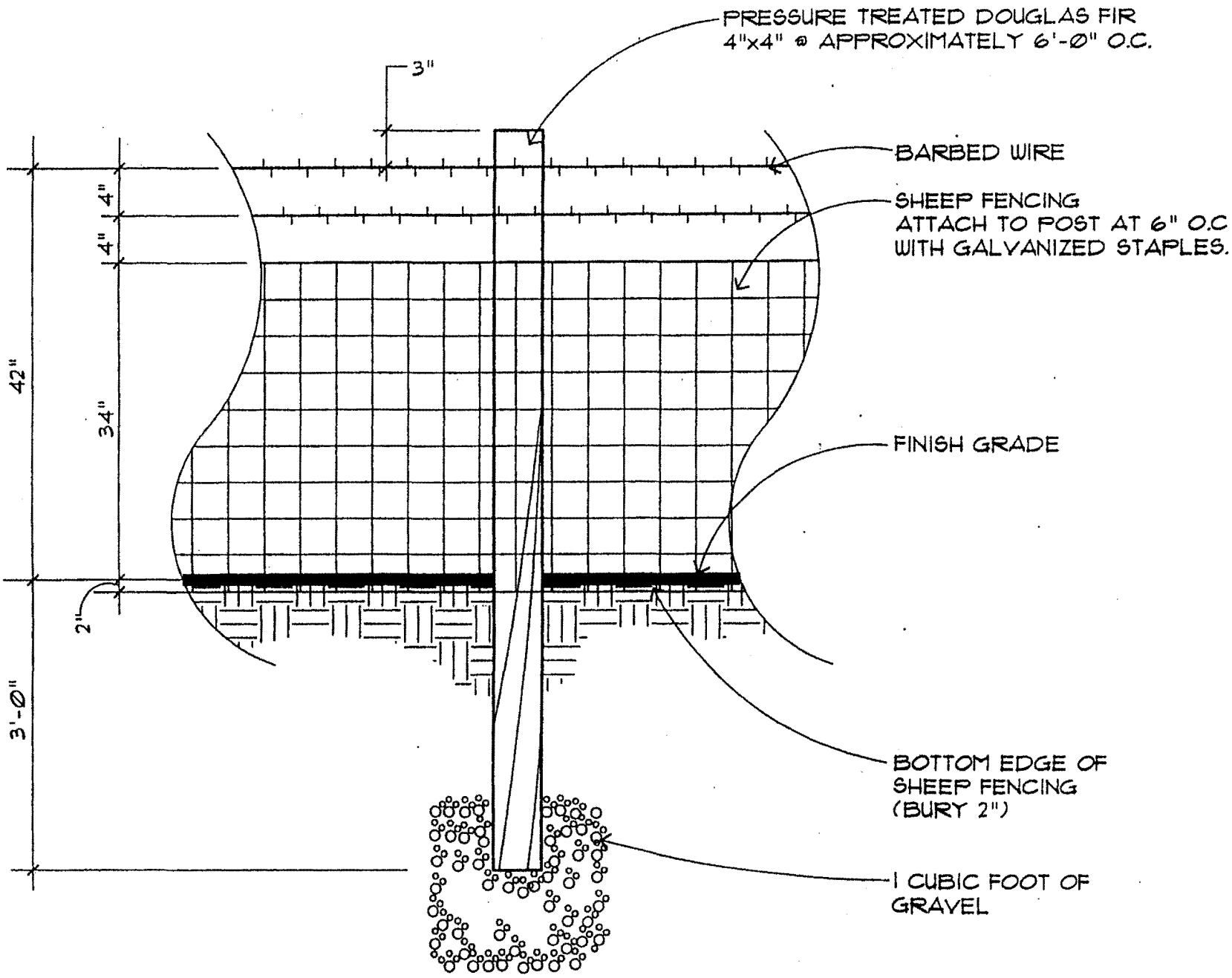
IMPACTS AND MITIGATIONS

Habitat Type	Proposed Impacts (square feet)	Proposed Mitigation (square feet)	Required Mitigation Ratio	Actual Mitigation Ratio
Southern Willow Scrub by Area	~~8,431~~ 8,326	49,956	6:1 (Areal)	6:1 (Areal)
Disturbed Wetland ~~(to be mitigated as recreated Fresh Water Marsh)~~	~~3,893~~ 0	~~5,880~~ 0	1.5:1	~~1.5:1~~ N/A
Fresh Water Marsh	0	0	2:1	N/A
Native Grassland	~~11,360~~ 8,105	64,656	~~3:1~~ 4:1	~~5.7:1~~ 8:1
Temporary Impacts				
Southern Willow Scrub	75	75	1:1	1:1
Freshwater Marsh	88	88	1:1	1:1
TREES				
Ornamental	(See TABLE B)		3:1	3:1
Willow	(See TABLE B)		5:1	5:1
Oak	(See TABLE B)		10:1	10:1



1 GOPHER CAGE (WIRE BASKET)

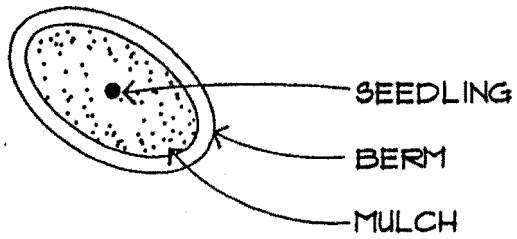
SCALE: NTS

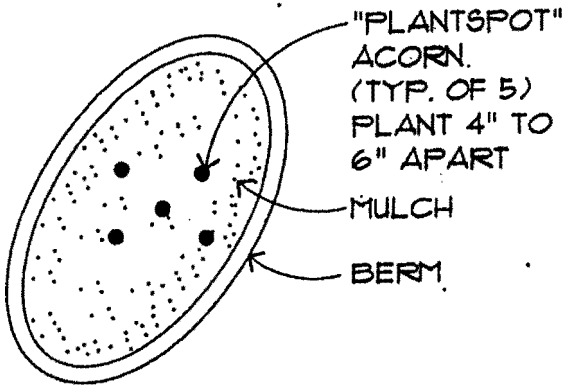


PROTECTIVE FENCE - SECTION

2

SC. : NTS





NOTE:
NUMBER OF SEEDLINGS & PLANTSPOTS WILL VARY WITHIN EACH FENCE. FENCE DIMENSIONS WILL VARY WITH NUMBER OF SEEDLINGS PLANTED WITHIN ENCLOSURE & WITH THE LIMITS OF THE TERRAIN.

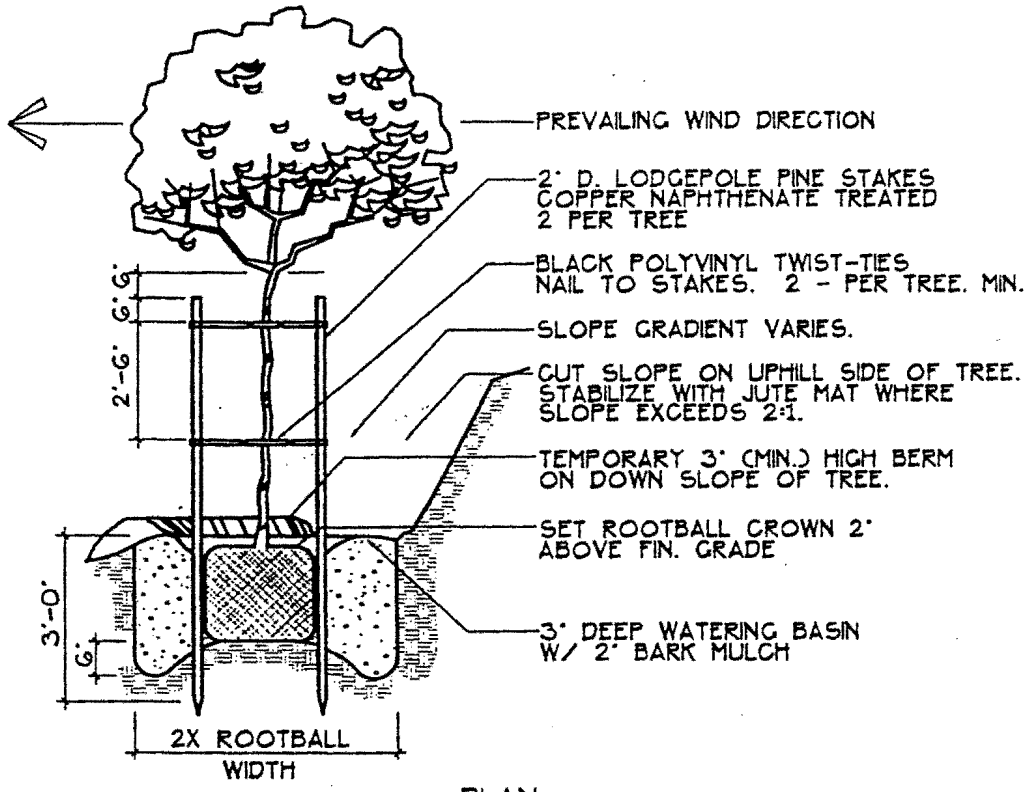
4x4 PTDF AT APPROXIMATELY 6'-0" O.C.

FENCING - REF. DETAIL 2

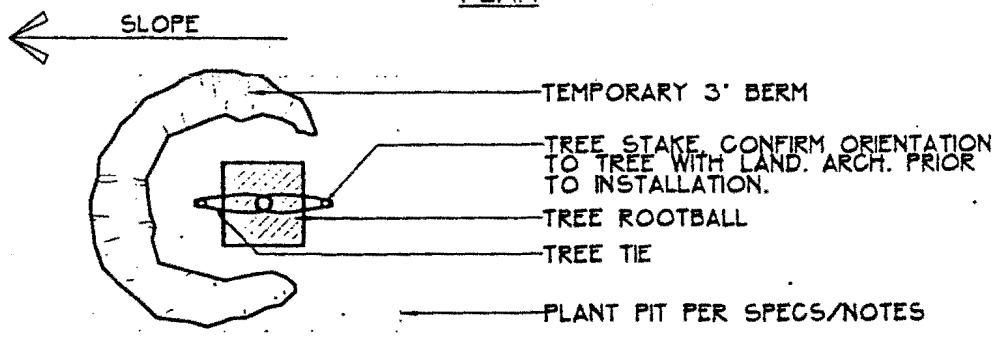
PROTECTIVE FENCE AND BASIN - PLAN

3

SCALE: NTS



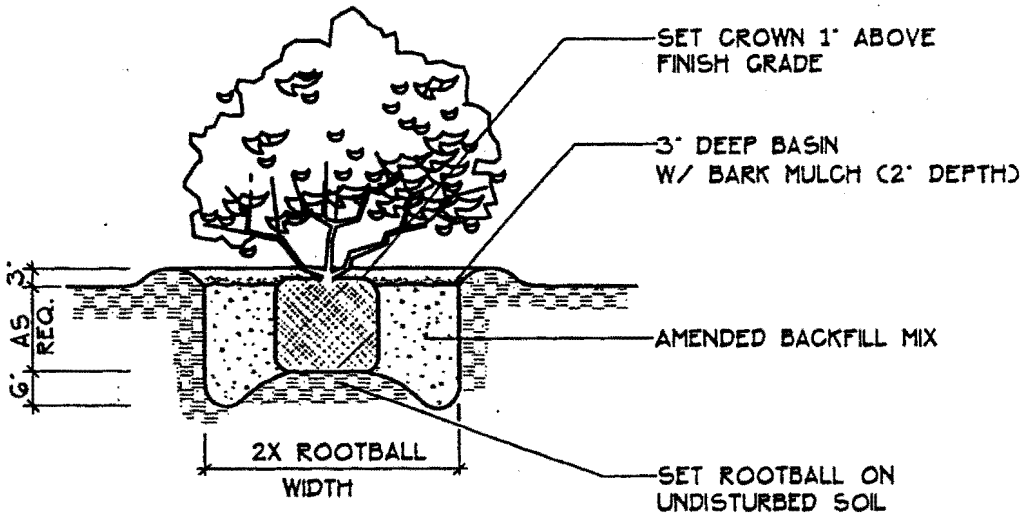
PLAN



SECTION

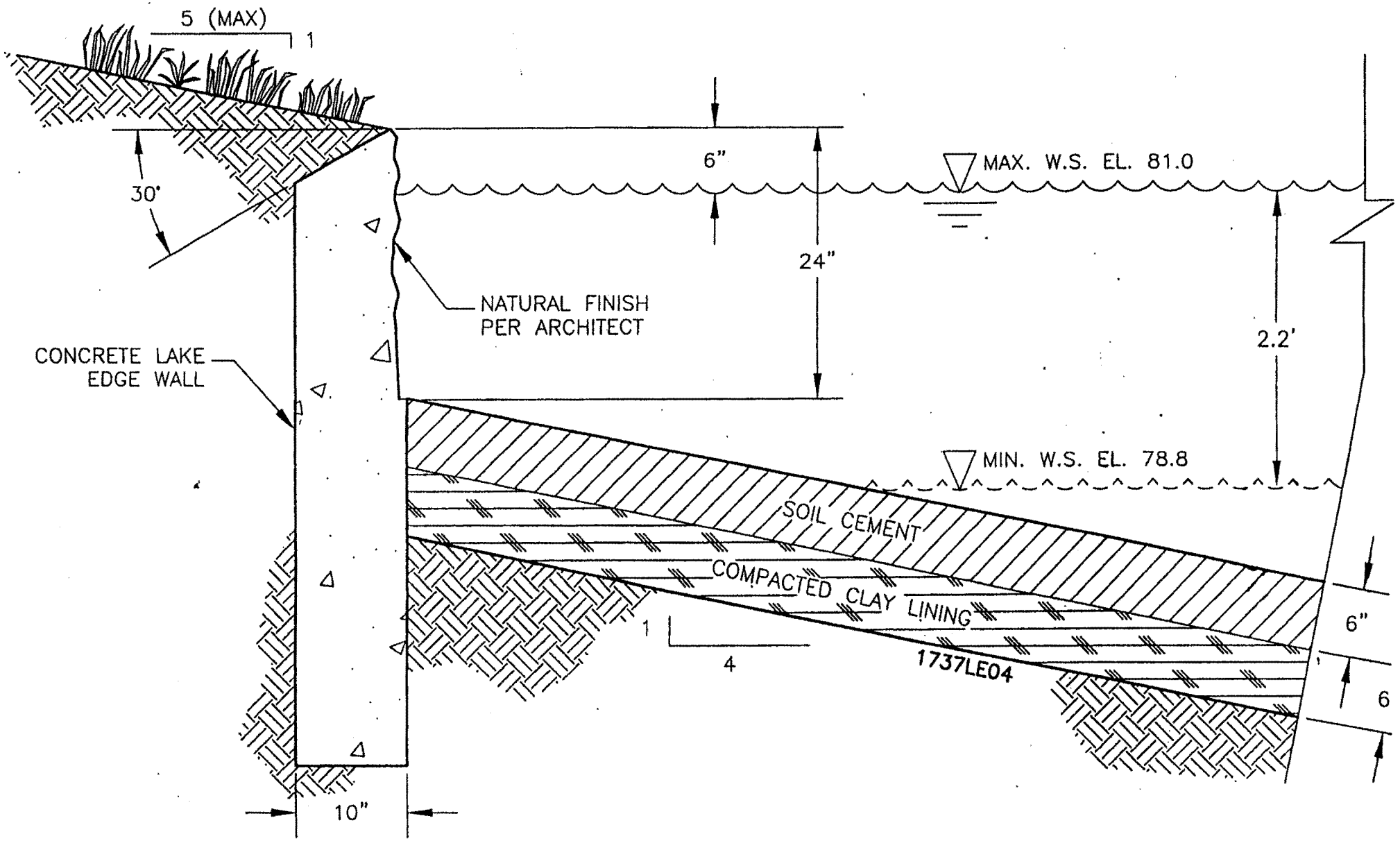
4 TREE PLANTING / SLOPE

SCALE: N



5 CONTAINER STOCK

SCALE: NTS



TYPICAL LAKE EDGE-SECTION

7

SCALE NTS

November 20, 2002

Received via email 11/20/02 w/out "Enclosure Exhibits"

Ms. Melanie Hale
Coastal Analyst
California Coastal Commission
89 California Street, Suite 200
Ventura, CA 93001

EXHIBIT NO. 8
APPLICATION NO. A-4-STB-93-154-CC-A2
Further Amendment to project description

SUBJECT: Transmittal of Revised Project Description
Dos Pueblos Golf Links
Extension of Time A-4-STB-93-154-E1

Dear Ms. Hale:

Please accept this revised project description, which set forth accommodations have in the project in response to the recommendations of Dr. Jeffrey B. Froke.

WE REQUEST THAT THIS LETTER BE INCLUDED IN THE STAFF REPORT AND THAT THE PROJECT DESCRIPTION REFLECT THE REVISED PROJECT AS DESCRIBED HEREIN.

Dr. Froke's reports focus on two elements of improvement to the golf course. The first is the increase in foraging areas for the White-Tailed Kites through enhancement of areas of the golf course not devoted to golf. This is depicted in Exhibit 1. Secondly, we have proposed a number of enhancements to the golf course to accomplish the following objectives:

1. Human awareness – We propose golfer education to protect against unnecessary encroachment into kite nesting areas, including the use of out-of-bounds areas where no ball retrieval is allowed when kites are present.
2. Landscape elements – We propose rough areas that are to be planted with species of plants to assure the best prospects for the kites, as enumerated in Exhibit 2.
3. Nest and perch site creation – We propose specific additional nest and perch site creation to enhance additional use of the area by kites.
4. Rodent tolerance and management – A series of measures is proposed to both preserve rodent populations during removal of invasive species and construction, and preserve rodent populations during operation and management of the golf course, including but not limited to trapping as opposed to rodenticides, mowing and irrigation protocols, and prohibition of poison baits.
5. Chemical restrictions – It is proposed that chemical and pesticide use on the Par 3 golf course be restricted to bonafide emergency situations. On the 18-hole course all pesticide use will be tightly restricted to managed turf areas except for limited use of herbicides to

manage non-native plant infestations in either in-play or out of play rough and natural habitat areas.

These changes represent a significant departure from the Agronomic Turf Management Plan that offer a significant improvement in the operation of the Courses, with corresponding reductions in environmental impact. Taken together with water quality report modifications previously revised into this project, we believe that all issues identified have been resolved in favor of a finding of consistency with the Local Coastal Program on this appealed permit.

We would expect staff to fashion a condition of approval to be met prior to issuance of this permit that would modify the current Agronomic Turf Pest Management Program to incorporate these revisions. Such a condition would not involve impermissible delegation of these elements since the parameters of the modifications have already been set.

Please utilize this revised project description in your report. Please call me if you have questions.

Sincerely,

M. Andriette Culbertson
President

Enclosures

Exhibit 1 – Kite Foraging Enhancement Areas
Exhibit 2 – Description of revisions to project for kite enhancement, chemical restrictions, nest/perch enhancement, and rodenticide prohibition

c: Chuck Damm
Ralph Faust, Esq.
Sandy Goldberg, Esq.

CULBERTSON, ADAMS & ASSOCIATES
PLANNING CONSULTANTS

June 4, 2002

Ms. Melanie Hale
California Coastal Commission
79 South California Street, Suite 200
Ventura, California 93001

RE: Dos Pueblos Golf Links
Memorialization of Project Description Changes Previously Transmitted

Dear Ms. Hale:

The purpose of this letter is to memorialize changes to our Project Description for adjustments made either at the request of staff or as a result of technical refinements to the plan. All of these changes have been previously submitted to staff.

1. **Reclaimed Water Pond** – We propose to return this pond to the shape originally approved by the Commission. In our February 28, 2002 Revised Project Description[1], the pond was altered in shape to accommodate better controls. At the time, staff had believed a cover was necessary to prevent red-legged frogs from entering the pond. However, in consultation with a staff-recommended biologist, it was determined that a cover would be ill advised, and that a rim adjustment (rough textured surface) would be safer for red-legged frogs if they happened upon the pond. However, according to a report prepared by Dr. Galen Rathbun dated March 5, 2002, he believes the pond would not be attractive to red-legged frogs due to the unstable water level and the lack of emergent vegetation for cover and egg attachment. The original design with "organic curves" is more attractive to trail users and golfers alike. Attachment A is an exhibit showing the change and the cross-section of the pond edge. This was previously submitted to your office on April 29, 2002.

2. **Minor Hole(s) Realignment – Par 3 Course** – We are proposing a slight westerly shift of Hole 3 in the Par 3 course. We also are proposing to move the tee for Hole 4 slightly north. Both realignments are to establish a minimum 50-foot setback from a grove of eucalyptus trees hosting a wintering area for Monarch butterflies. This is the setback called for in the LCP Policy 9-231 (CZO Section 35-97.12.2). A plan showing this change was originally provided on April 29, 2002.

[1] To avoid possible confusion, except for the shape of the reclaimed water pond, no other portion of the 2/28/02 revised project description letter is modified and amended by this letter.

3. **Water Quality** – On February 28, 2002, we submitted a revised plan adjusting the Par 3 golf course to accommodate a then-new water quality program. Staff requested that we specifically amend our project description to request a run of riprap to prevent the rerouted water from scouring the drainage as it enters. This is required by Condition 28 and occurs throughout the golf course where necessary to prevent erosion. The riprap improvements elsewhere in the golf course were approved in 1998 in accordance with conditions of approval in the 1994 CDP requiring detailed grading and drainage plans prior to construction. The riprap addition described herein is shown on Attachment A, which was previously submitted on April 29, 2002.

4. **Southern Tarplant** – Tarplant was first recorded on the site in the 1992 EIR. One occurrence was noted along the access road west of the railroad. During the summer of 1998, an additional subpopulation near the warehouse and loading rack on the northeast portion of the site was observed (approximately 4,500 individuals). This unusual increase was due to the above-average rainfall in the area during the winter of 1997-98. Surveys have been conducted annually in subsequent years, and the result was a total of six populations on-site.

   Dudek & Associates conducted the successive surveys in 1999, 2000 and 2002. The tarplant population was 372, 482, and 436 individuals, respectively. This population consisted of fascicled tarplant, southern tarplant, and tarweed. No Gaviota tarplant was observed in any of the surveys conducted between 1991 and 2002.

   The proposed mitigation for the revegetation of the existing tarplant on-site includes a restoration site of 64,834 sq.ft. (1.49 ac.) in the vicinity of the vernal pool at the southwest end of the railroad bridge. This habitat is appropriate for this species, according to biologists who have reviewed the plan. Included in the mitigation suggested by the biologists is using seed rather than nursery propagation and reducing the competition from undesirable plants to allow for successful revegetation.

Sincerely,

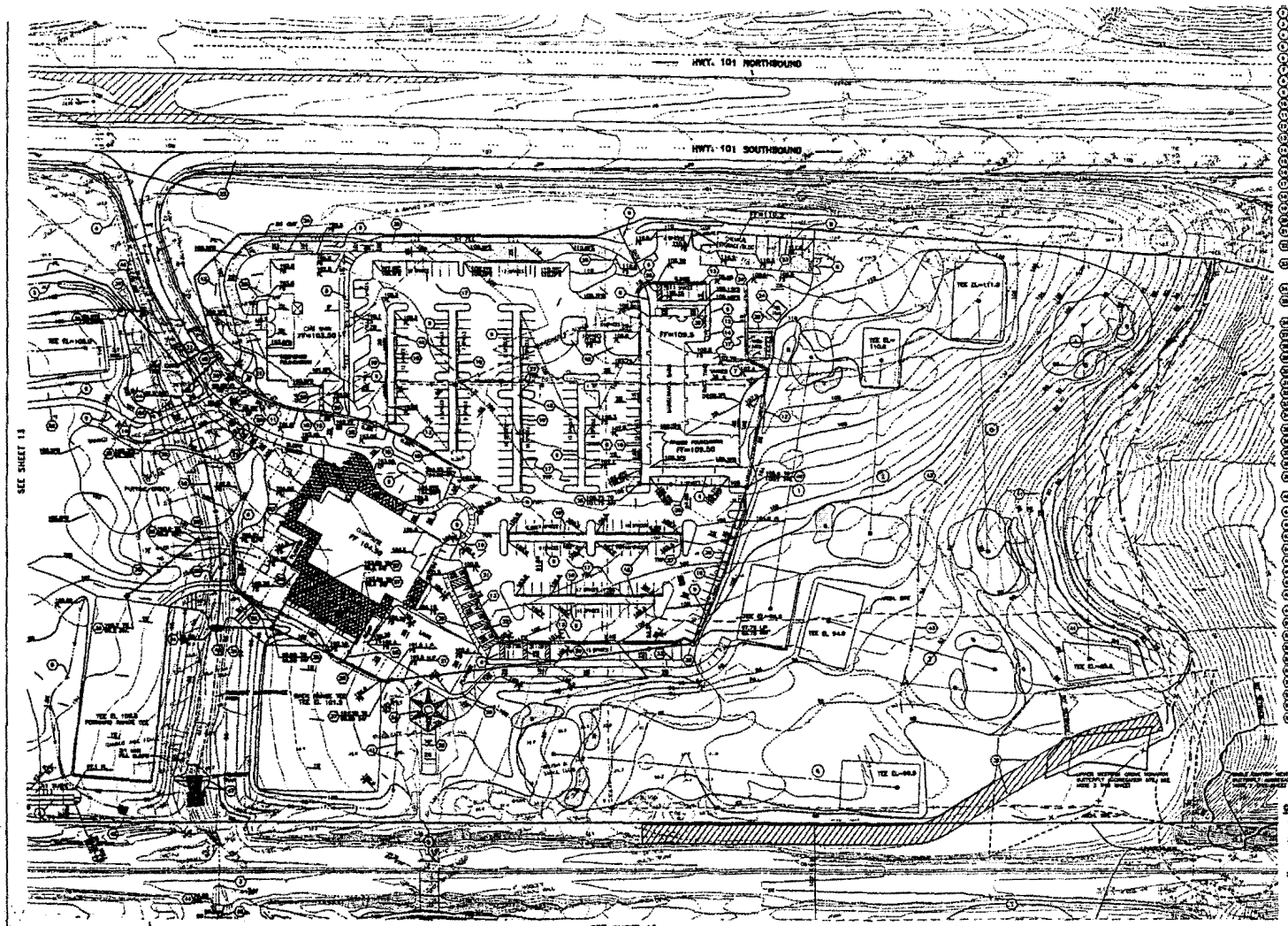
M. Andriette Culbertson

M. Andriette Culbertson
President

CCC-Hale 6-4.doc

Attachments
A Grading and Drainage Plan, page G 12
B Grading and Drainage Plan, page G 11

EXHIBIT NO. 9
APPLICATION NO.
B 2 of 2



MONARCH BUTTERFLY AGGREGATION SITES NOTES

1. EAGLE CANYON MONARCH AGGREGATION SITE AS DEPICTED APPROXIMATELY IN "MONARCH BUTTERFLY AGGREGATION ASSESSMENT 2004 EAGLE CANYON, 2004–2005 SEASON", ALISAL/CAVE AND SEAGLE, INC. JUNE 2005, REVISED NOVEMBER 2005.
2. MONARCH BUTTERFLY AGGREGATION SITE(S) AS DEPICTED IN "MONARCH BUTTERFLY AGGREGATION ASSESSMENT 2004 EAGLE CANYON, 2004–2005 SEASON", ALISAL/CAVE AND SEAGLE, INC. JUNE 2005, SHALL BE PROTECTED AS DESCRIBED IN THE MONARCH BUTTERFLY AGGREGATION MANAGEMENT PLAN FOR EAGLE CANYON, 2004–2005 SEASON", ALISAL/CAVE AND SEAGLE, INC. JUNE 2005.

GENERAL NOTES

1. IN THE CLUB HOUSE AREA ALL EXISTING FACILITIES AS DEPICTED ON THE TOPOGRAPHIC MAP WERE FIELD SURVEYED BY OWNER, A PORTION OF THE EASTERN U.C. TRAILHEAD SHALL REMAIN AND FILL OVER. SEE TYPICAL SECTION OF THE PROPOSED PARKING AREA FOR ADDITIONAL INFORMATION.
2. NOTICE TO RAPTORS: TO AVOID IMPACTS TO NESTING RAPTORS, NO GRADING SHALL OCCUR WITHIN 500 FEET OF THE EUCALYPTUS GROVE LOCATED IN EAGLE CANYON BETWEEN OCTOBER 1 AND JANUARY 31.

LEGEND

SILT FENCE
EXISTING LIGHT
PROPERTY LINE
SUBDIVISION BOUNDARY

APPROVED BY:
COUNTY OF SANTA BARBARA, CALIFORNIA

PLANNING & DEVELOPMENT, DIVISION OF

PUBLIC WORKS DIRECTOR

FLOOD CONTROL ENGINEER

DATE

GRADING WITHIN ARCHAEOLOGICAL SITES

1. ARCHAEOLOGICAL SITES SHALL BE FLAGGED AND THE LIMITS OF THE ARCHAEOLOGICAL SITES STAKED. COUNTY REPRESENTATIVE SHALL BE/BE LOCATED PRIOR TO COMMENCING.
2. ALL EARTH DISTURBING WORK SHALL NOT OCCUR WITHIN 50 FEET OF AN ARCHAEOLOGICAL SITE UNTIL A PHASE II ARCHAEOLOGICAL EVALUATION HAS BEEN COMPLETED AND A REPORT PREPARED PURSUANT TO COUNTY ARCHAEOLOGICAL GUIDELINES. AN ARCHAEOLOGIST APPROVED BY THE COUNTY ENVIRONMENTAL COORDINATOR SHALL BE ON SITE DURING GRADING. GRADING SHALL BE MONITORED AND APPROVED BY THE PHASE II ARCHAEOLOGIST.
3. ANY ARCHAEOLOGICAL SITE DISCOVERED DURING GRADING SHALL BE FLAGGED TO THE LIMITS OF EXCAVATION. GRADING ACTIVITIES OF ARCHAEOLOGICALLY SENSITIVE MATERIALS SHALL BE MONITORED BY A QUALIFIED ARCHAEOLOGIST APPROVED BY THE COUNTY ENVIRONMENTAL COORDINATOR. IF ARCHAEOLOGICAL SITES ARE DISCOVERED THAT WERE NOT IDENTIFIED IN THE PHASE II ARCHAEOLOGICAL REPORT, PLANNING OF THE FILL OVER THE ARCHAEOLOGICAL SITES SHALL BE RECONSIDERED BY A PHASE II ARCHAEOLOGIST AND A MARINE ARCHAEOLOGY REPRESENTATIVE (SUBMISSION 20).

INDEX MAP

PROPOSED

REFERENCES	REVISIONS	NO.	DATE
GRADING PLAN 2001 PLAN DRAIN PLAN ARCHIVE PLAN WORK PHASE MAPS, ARCHIVES BASE TOPOGRAPHY DATED: 5/13/05			

Cowen & Associates, Inc.
HOFFPAUIR PLANNING DESIGN

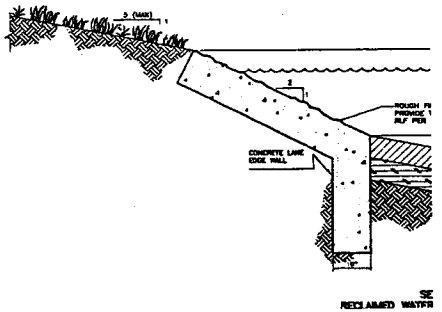
Penfield & Smith
ENGINEERS • SURVEYORS

GRADING AND DRAINAGE PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

WORK ORDER 12823.08
SHEET 011 of 50
U.S. COUNTY PLS

EX 9 modified

TYPICAL INFILTRATION SWALE A



CULBERTSON, ADAMS & ASSOCIATES
PLANNING CONSULTANTS

February 28, 2002

Ms. Melanie Hale
Coastal Analyst
California Coastal Commission
89 California Street, Suite 200
Ventura, CA 93001

SUBJECT: Transmittal of Revised Project Description
Dos Pueblos Golf Links
Extension of Time A-4-STB-93-154-E1

Dear Ms. Hale:

Please accept this revised project description which brings accommodations that we have in the project in response to staff input and the 10(a). You will find our description as Attachment A. Please call me if you have questions.

Sincerely,

M. Andriette Culbertson
President

Enclosure
Attachment A

c: Chuck Damm
Ralph Faust, Esq.
Sandy Goldberg, Esq.

85 Argonaut, Suite 220, Aliso Viejo, California 92656-4105 • (949) 581-2888 • Fax (949)

EXHIBIT NO. 9B
APPLICATION NO.
A-4-STB-93-154-CC-H2
Project description
revisions

Revised Project Description

Revisions for Changed Circumstances

The project is exactly as described in the CCC-granted permit with the exception of those adjustments made necessary by the changed circumstances (red legged frog and tidewater goby), the water quality adjustments to drainage (more specifically described below), the incorporation of the features previously considered in the amendment request and the modifications considered in the appealed permits from 1999.

The 10(a) Permit – Red-Legged Frog and Tidewater Goby

On January 16, 2002 the USFWS issued two 10(a) Incidental Take Permits for the red-legged frog (RLF) and the tidewater goby (TWG) to CPH Dos Pueblos Associates, LLC and ARCO Environmental Remediation, respectively. Both CPH Dos Pueblos Associates, LLC and ARCO Environmental Remediations are the applicants in this matter (hereinafter "applicants"). On January 17, 2002, complete copies of the permits were transmitted to your CCC offices in Ventura. The permits do not require the alteration of the golf course in any way. However, the 10(a) permit for the Golf Links does require the relocation of a previously CCC-approved beach access so that the public access will not cross breeding habitat for the RLF and the TWG. The permit also lists 14 special terms and conditions based on the Habitat Conservation Plan, including but not limited to construction controls, monitoring, an aggressive series of controls on fertilizer and pesticide application, a long-term conservation easement for Eagle Canyon, and other such measures aimed at protecting the RLF and the TWG's breeding habitat and continued survival.

The applicants have adjusted the Offer to Dedicate ("OTD") and legal description related to the access in order to memorialize the necessary changes, as requested at the November 27, 2001 meeting with CCC staff. This revised legal description addresses only changes to Parcel 2 ("Eagle Canyon Beach Trail") to describe the revised access location. All conditions precedent to a return to the CCC for this project imposed by the CCC in June 1999 have been met.

During the review process for this permit proceeding for changed circumstances, CCC staff has inquired as to the potential for the golf course reclaimed water pond presenting an attractive nuisance to the frogs in terms of use, breeding, egg loss (from confusion that the pond can be used as breeding habitat). This was considered a concern addressed by the USFWS in their permits. The reclaimed water pond design has been altered in shape to accommodate better controls, and pending further direction from staff, we may add further modifications. The surface area of the new design is completely within the area of the former pond. The depth and capacity of the pond is unchanged.

Summary of Adjustments to Accommodate the Species

Several adjustments to the development project were made to maintain and enhance the survival of RLF and TWG on the site, as follows:

1. **Eagle Canyon Coastal Access Relocation and Pipeline Construction** – The public vertical access point approved by the Commission in 1994 crosses breeding habitat of the RLF and the TWG. This was unknown at the time the permit was granted. Therefore, the public vertical access point has been relocated farther seaward and is to be by means of a stairway, not a decomposed granite path and boardwalk as was originally approved. The USFWS imposed stringent monitoring and construction conditions on the construction of the access and the previously approved remediation of the pipelines in the Eagle Canyon area.

   Furthermore, the HCP requires monitoring and training of construction personnel during both the remediation and the golf course construction to avoid unnecessary impacts to the RLF or the TWG.

2. **Chemical Use** - A stringent chemical use program has been imposed by the USFWS on the entire site, and this program is geared towards minimizing effects on RLF and TWG. It is important to note that this program was approved before the water quality program now proposed by the applicant (see *Infra*), and therefore does not take into account the beneficial effects of the diversion of nuisance and small/moderate stormwater from the Eagle Canyon area. This diversion virtually eliminates the issue of harm to the RLF or the TWG, as only highly diluted water is permitted to enter the Eagle Canyon area.

   The potential for RLF to be exposed to chemicals during any migration onto the golf course is extremely remote. As noted by Dr. Bulger, the available evidence indicates that the vast majority of frogs do not travel beyond the buffer distance of 250 feet, a zone where no chemicals are to be applied. To the extent that frogs are induced to travel beyond this point for any reason, the chemical use plan (known as the Agronomic Turf Management and Integrated Pest Management Plan or "ATMIPM") and included in the HCP identifies "preferred use" chemicals known to be less toxic to amphibians and fish. In addition, the ATMIPM calls for the eradication of predators to the frogs that are often attracted to golf courses – like bullfrogs. An aspect of the plan also calls for minimization of herbicides (sometimes used in golf courses to control the proliferation of unwanted grasses) by adapting the unwanted grasses into desirable turf through hybridization. Golf operations are limited to daylight hours, and since the RLF are nocturnal, this eliminates much of the potential for human conflict.

   Pesticide application is also addressed in the ATMIPM. Pesticides and herbicides, to the extent they are used, must be applied only at certain times:

   - during the rainy season, not within 24 hours of forecasted rain or within 24 hours of rainfall;
   - herbicides/pesticides are to be applied only after morning dew has evaporated or before evening dew has set;
   - no spraying of chemical when wind conditions exceed 5 miles per hour;
   - within landscape buffer and revegetation areas, herbicides will be hand-applied and only specific herbicides (Roundup, Rodeo, Karmex) will be used.

   Other aspects of the HCP warrant mention. The Biological Enhancement Landscape Plan, or "BELP," focuses on native plant protection and was previously approved by the Commission. It has been modified to incorporate "RLF-friendly" measures, special plant monitoring, and regulations on golf ball recovery in drainages, among other things. The

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BELP was a part of the originally approved 1994 permit, but was enhanced to add mitigation for RLF during the Section 10(a) permit proceeding.

Revisions for Changed Circumstances with Respect to Wetlands On-Site

During the course of developing a soil remediation plan for the abandonment of the oil and gas facilities on the project site, additional wetlands developed on the site as a result of extremely high amounts of rainfall due to El Niño and the compression of soils from the heavy equipment. The depressions were bermed tank farms – i.e., where the large oil tanks were located. The berms were placed around the edges of the tank farm to contain any spills. Thus, these new disturbed wetlands are flat, rectangular pads with berms around the edges. Two other small wetlands were found – one small area near the pond, and one to the far west, which has been partially destroyed by erosion. These are in a location where development was approved as part of the original Coastal Development Permit. These wetlands are scattered throughout portions of the site, are generally small (less than a few hundred square feet), and appear to be seasonal in nature. Based upon previous surveys of the site, it is believed that these wetlands developed in response to the 1998 El Niño rains, and may not persist in normal or drought years. Although it could be argued that these are not wetlands worthy of retention, the proposed project modifications alter the layout of the golf course and appurtenant facilities to avoid all of these newly identified wetlands (see project alterations described above).

These wetlands can be specifically described as follows:

1. 0.17 acre of disturbed wetlands at the two tank farm sites, which will be removed in the process of soil remediation, will be restored and enhanced.

2. The concrete headwall near drainage #7, originally proposed to be removed in the course of site remediation, will instead be left in place. Consequently, there will be no wetland impact incurred in this area. Furthermore, a 100-foot buffer will be provided through a minor course reconfiguration. Remedial grading to repair the eroded gully and to correct site drainage to ensure the continuation of the small "headwall" wetland will be performed. This remedial grading will require approximately 110 cubic yards of cut and 650 cubic yards of fill, all of which is figured into the overall Commission-approved earthwork volume of up to 154,470 cubic yards.

Revisions for New Proposal – Water Quality Program

The applicant has proposed a water quality program as a part of its revised project description. This water quality program is in addition to the water quality restrictions previously imposed by the Commission and by the USFWS. The program has been prepared by Geosyntec Consultants.

The report evaluated the design and restrictions of the golf course and compared the water quality program to guidelines currently in effect at other agencies. Among the regulations reviewed were those for the County of Santa Clara and the State of Colorado. The report also evaluated the construction and post-construction BMPs, and offered recommendations for improvement. The applicant incorporated all recommendations into the project. The report also made note of the fact

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that the site is not, and has not been, in a pristine natural condition. The site was used for oil production since the 1920s.

In evaluating the applicant's proposal to divert nuisance flows and small and moderate storm flows from Eagle Canyon Creek, the report noted that Eagle Canyon Creek drains a 2,937-acre watershed, of which the proposed project contributes 11 acres, or less than .04%. While this contribution in itself is small, the report found that diversion of nuisance flows (such as irrigation returns) as well as small and moderate (up to 2-year) storm flows from Eagle Canyon Creek would greatly contribute to minimizing any harmful effects from development. Although the applicant had originally proposed a storage pond to accomplish this result, concerns about providing an attractive nuisance to the RLF caused the design to be changed to an equally effective bio-swale. Furthermore, the incorporation of parking lot and building bio-swales, and containment and treatment of runoff from solid waste and compost areas significantly reduced the contaminants that would otherwise be contributed by the golf course, even if these contaminants would not have been significant. It was also noted that the grading of the border areas of the fairways would channel flows into landscaped areas, using these areas as pollutant-removal areas.

The railroad bisects the site and contributes an unknown amount of chemicals to the watersheds on the site. In order to distinguish the difference between the golf course and the railroad in terms of pollutants, Commission staff suggested, and the applicant incorporated, an additional grab sample point downstream of the railroad in Eagle Canyon. The data from this testing point will be incorporated into the monitoring reports provided.

With these improvements acknowledged, Geosyntec Consultants concludes in their report:

> "With implementation of these measures together with previously proposed water quality protection and enhancement measures (including diverting runoff away from Eagle Creek), the Dos Pueblos Golf Course water quality program should prove to be highly protective of water quality and will likely serve as a model for future golf courses as a state of the art water quality design."

With respect to conformity with the certified LCP, the following can be said of LCP policies:

> Policy 3-16: "Sediment basins (including debris basins, desilting basins, or silt traps) shall be installed on the project site in conjunction with the initial grading operations and maintained throughout the development process to remove sediment from runoff waters. All sediment shall be retained on site unless removed to an appropriate dumping location."

> Policy 3-18: "Provisions shall be made to conduct surface water to storm drains or suitable watercourses to prevent erosion. Drainage devices shall be designed to accommodate increased runoff resulting from modified soil and surface conditions as a result of development. . . ."

> Policy 3-19: "Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste, shall not be discharged into or alongside coastal streams or wetlands either during or after construction."

The LCP policies do not contemplate a program as comprehensive as that suggested by the applicant, probably due to the limited knowledge of water quality techniques at the time of certification. However, this program can be found well in excess of the compliance called for, and is therefore consistent with the LCP.

The specific project changes made to incorporate water quality improvements are described below.

1. ***Diversion of Golf Course Drainage***

Eagle Canyon drains a total watershed of 2,937 acres of which approximately 11 acres are located on the project site. This means that the portion of the golf course site that drains to Eagle Canyon constitutes only about .004% of the total watershed. Given that Highway 101 and the railroad also drain into this watershed, the project represents an infinitesimally small contribution, particularly considering the aggressive post-construction water quality practices imposed by the USFWS.

However, in the interests of further protection for Eagle Canyon, the applicant for the Golf Links proposes to redirect the area south of the railroad currently draining to Eagle Canyon from the golf course away from Eagle Canyon and to other drainages of lower sensitivity. This will be accomplished for all storms at the two-year intensity and below, as well as for nuisance flows.

Because the golf course is divided by the railroad, the drainage characteristics on either side of the railroad are different. On the north side of the railroad, all storms below the two-year level, and all nuisance flows, will be diverted from Eagle Canyon into a bio-swale. South of the railroad, all storms and nuisance flows will be diverted. It is not possible to divert all storms north of the railroad due to topographic and archaeological site disturbance constraints.

Plans showing this diversion were submitted to the Commission on November 27, 2001 and updated plans in the form of Exhibits 4 and 6 are submitted as an update. At the field trip of January 23, 2002, concern was expressed for the possibility of frogs entering the diversion/water quality pond and coming to harm, or laying eggs that would possibly be destroyed. Due to this concern, the diversion system has been redesigned without a diversion pond. Its salutary effects will be the same, but the pond will not be necessary to accomplish the water quality goals, and a bio-swale and buffers will be used instead. Plans showing this change are attached. Following receipt of comments from water quality staff of the CCC on the report submitted on January 21, 2002, the Water Quality Report (Geosyntec, January 2002) would be revised to show the change as well.

2. ***Parking Lot Modifications***

The portion of the clubhouse and the public access parking lot that was designed to drain towards Eagle Canyon has been modified in the interests of water quality. The parking lot drainage has been rerouted away from Eagle Canyon, even though in the approved permit sand filters were already treating it.

The result of these modifications is that only storm flows exceeding the two-year storm will reach Eagle Canyon from the developed portions of the golf course. In storms above this intensity, the very large size of this watershed ensures that the contribution from the Dos Pueblos Golf Course is negligible.

3. ***Additional Water Quality Modifications***

In conjunction with the water quality study, the applicant undertook additional structural changes to the golf course design. These include the use of parking lot bio-swales, the routing of building runoff and surrounding public areas to bio-swales, and containment and treatment of runoff from solid waste storage areas and compost piles.

In response to a suggestion by CCC staff, the applicant has added a water quality monitoring station in Eagle Canyon Creek just downstream of the railroad in order to distinguish pollutants from the railroad from those of the golf course, if any.

Revisions to Incorporate Changes to the Project in the Appealed Permits – Minor Modifications

The following elements of the project description have been modified from the original project description:

1. Acreage: The project was originally described as encompassing 202 acres with an approximately 4-acre area of the site described as "Not a Part" of the site. This 4-acre area was completely surrounded by the project but owned by another party; it has recently been acquired by the applicants and will be merged into the southern portion of the two parcels and incorporated into the golf course. Additionally, a recent land survey indicated that this area is in fact 2 acres larger than previously thought; thus, the new project area includes the newly acquired 6 acres for a total project site area of approximately 208 acres.

2. The access point for the exit and entrance road has been moved 150 feet west of the original position in response to the more precise engineering available after the 1994 permit was granted.

3. Cart path: The cart path will be standard concrete, not earthen.

4. Bridges: The original project description indicated that there would be a total of 6 bridges, which was inconsistent with the site plans, which showed a total of 13 bridges. The revised proposed plan eliminates 2 of these bridges, bringing the total to 11. The project description and revised plans now reflect this reduced number.

5. Existing facilities: The project description was originally written before abandonment of the existing remaining oil and gas facilities had occurred. The current project description reflects the current status of the site.

6. Atrium: The atrium of the building plans has been eliminated as part of the architectural design changes.

7. Lake volume: The original project description indicated that the water storage lake had a volume of 4 acre-feet, while Special Condition #~~10 of the~~ Conditional Use Permit (91-CP-085) correctly estimated the lake to be approximately 5 acre-feet. The modifications described above do not substantially change this lake volume.

8. Pump house: The pump house was not explicitly included in the project description or plans, although it is essential for the use of the lake as an irrigation water supply. It is explicitly included as part of the amended project description and plans.

9. Cart barn: Due to the relocation of the cart barn off the California Department of Transportation right-of-way, the lot line adjustment will not be necessary.

10. No soil remediation activities will be conducted seaward of the railroad tracks during the rainy season.

11. The Tomate Canyon wetland mitigation area monitoring period will be extended from the previously required three years to five years or until the performance standard is achieved, whichever is later.

12. All mitigation measures set forth in the Biological Assessment submitted with this revision to the amendment request will be implemented to preserve and enhance the California red-legged frog habitat and potential tidewater goby habitat in Eagle Canyon.

13. Miscellaneous course refinements have resulted in the following adjustments

    a. Renumbered Holes (with no physical changes)

    Hole #6 changed to Hole #10
    Hole #7 changed to Hole #11
    Hole #8 changed to Hole #12
    Hole #10 changed to Hole #7

    b. Former Hole #11 is relocated to the east of drainage #7 and south of the Coastal Trail and renumbered Hole #6. This change avoids the green being located in the newly created wetlands as well as a 100-foot buffer.

    c. Former Hole #12 is renumbered Hole #8 and utilizes the tee for former Hole #11, west of drainage #7, which has been reduced in size. An additional tee for the new Hole #8 would be placed southwest of the green for new Hole #7. New Hole #8 is reworked to avoid the 100-foot wetland buffer.

    d. Former Hole #13 renumbered Hole #9 would be shortened 20 yards, and the accompanying green would be relocated approximately 200 feet southeast.

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CULBERTSON, ADAMS & ASSOCIATES
PLANNING CONSULTANTS

April 5, 2002

Ms. Melanie Hale
Coastal Analyst
California Coastal Commission
89 California Street, Suite 200
Ventura, CA 93001

SUBJECT: Transmittal of Revised Project Description
Dos Pueblos Golf Links
Extension of Time A-4-STB-93-154-E1; Clarification of applicant position on shoreline protective devices

Dear Ms. Hale:

This office represents the applicant in the above referenced matter. Please accept this revised project description to clarify the position of the applicant with respect to shoreline protective devices.

It has been called to our attention that concern has been expressed regarding any future request for shoreline protective devices to safeguard the golf course against erosion. No such device has been requested to date.

Our geotechnical information indicates that such devices are not necessary for our golf course proposal, now or in the future. However, to clarify and insure that our position is properly understood, we propose a deed restriction waiving the right of ourselves, or our successors in interest, to request such devices in the future. We would also request that, inasmuch as we are proposing to waive our right to request such devices, that if in the future there is a threat to the golf course, that an amendment be favorably considered by the Commission to re-route the golf course to avoid adverse effects from any unforeseen problems. This proposed revision to the project description is subject to agreement on the final language of the deed restriction. We would be pleased to work with staff on the wording.

Please call me if you have questions.

Sincerely,

M. Andriette Culbertson

M. Andriette Culbertson
President

EXHIBIT NO. 9c
APPLICATION NO.
A-4-STB-93-154-E1-A2
Proj. descr. amend re: no shoreline protective devices

85 Argonaut, Suite 220, Aliso Viejo, California 92656-4105 • (949) 581-2888 • Fax (949) 581-3599
6 of 51

c: Peter Douglas
Chuck Damm
Ralph Faust, Esq.
Sandy Goldberg, Esq.

Ex. 9c
PS-2
4

1991 Application to S.B. County

Our conclusion is based on a two day reconnaissance level site inspection of the property and surrounding area, the analysis of historic aerial photos of the vicinity, and a review of relevant geologic literature and maps, cross sections, and a detailed computer seismic analysis. We reserve the right to review and comment on the final Development Plan of the project and to reassess any potential geologic constraints that may become apparent at that time.

RECOMMENDATIONS

The following recommendations are offered as a means of reducing the potential for geologic hazards that could affect the project site:

1) **STRUCTURAL SETBACK:** The sea cliff retreat process is a geologic hazard that can not be easily mitigated. A structural setback from the top of bluff is therefore recommended. Assuming a design life of the proposed structures of 75 years and an average rate of past retreat of 4.8 inches per year, a minimum setback from the current existing top of the sea cliff of 30 feet should be adequate. However, to provide a "margin of safety" for the critical structural components of the project that considers possible unforeseen increased rates of retreat in the future, we recommend that the above described setback constraint be increased by 25 feet. Therefore, we recommended a minimum critical facility setback of 55 feet north of the existing top of slope. This setback recommendation includes any structure that is to be permanently occupied. This includes large buildings, reservoirs, paved roads, and septic systems. Turf, greens, tees, patios, decks, pathways, dirt roads, and other non-permanent structures are subject to a "non-permanent structural" setback recommendation of 30 feet. We have graphically shown this setback on Figure 2 (see **LOCAL GEOLOGIC MAP**). The setback line as shown on Figure 2 will need to be redefined when a more detailed topographic base map is available. *

graphically shown / redefined

2) **DRAINAGE:** Erosion of the bluff top is occurring due to the passage of uncontrolled surface water runoff and removal of bedrock material at the base of the slope by wave action. It is our opinion that the sea cliff retreat process can be retarded over the short and intermediate term (years to decades) by implementation of an engineered drainage control system. The system should be designed to capture all of the surface runoff water generated from the development of the property and conduct it in a controlled manner to the base of the sea cliffs or an appropriate area within the major drainage swales. Specifically, runoff from all impervious surfaces such as roofs, driveways, walkways, etc. should be

Ex. 9C attachment/staff
A-12

directed into an engineered drainage control system. The primary goal of this recommendation is to prevent any surface runoff from causing erosion of the sea cliffs or steep slopes adjacent to the creek corridors. The sea cliff can be further protected by development of a small berm in combination with a lined interceptor ditch located near the top of the cliff. This ditch should act to capture all surface runoff water and direct it away from the steep slopes to a more appropriate disposal area.

The importance of inspection and long term maintenance of the drainage system cannot be overemphasized. A Civil Engineer should be consulted to determine the adequacy of the drain pipe design to transport peak flows of runoff water. The entire drain system should be cleaned and inspected on a regular basis to insure it is functioning correctly. Minimizing the amount of concentrated runoff onto highly pervious soil or shallow earth material (Older Alluvium) is essential in reducing the amount of ground saturation. Keeping the ground in a state of undersaturation will likewise reduce the potential for erosion and slope instability difficulties.

3) <u>VEGETATION AND IRRIGATION:</u> A relatively inexpensive means of increasing slope stability and maintaining the subsurface earth materials in a state of undersaturation is to encourage the growth of deep rooted, drought tolerant plant species. While much of the existing vegetation on the cliff face is adequate for this purpose, the ice plant present in some areas is not particularly beneficial. While ice plant can provide excellent ground cover on gentle slopes, it accumulates large quantities of water above the ground surface, dramatically increasing the surface weight and decreasing any margin of safety in its soil support capacity. We therefore suggest that the ice plant gradually be removed from the cliff face and replaced with a more appropriate plant variety. Spraying or other non-destructive methods should be undertaken to remove the ice plant.

We further recommended that irrigation of the turf areas be kept to a minimum. High water use, low water demand hybrid varieties of lawn should be considered in the landscape plan. Plant varieties to be used along the edge of the fairways should also be drought and salt tolerant. Installation of water percolation and soil moisture measurement devices should be undertaken in order to monitor the amount of water that is entering the deeper portions of the soil profile. Water should be applied at a rate that represents only the consumptive use of the plants being irrigated. The accumulation of excess water within the Older Alluvium should be kept to a minimum. A landscaping specialist should be consulted for specific landscaping recommendations.

AB Ex. 9c Attachment 1 staff

Implementation of an engineered drainage plan and proper irrigation practices of the landscaping should have a net benefit (reduction) to the overall erosion control and cliff retreat process.

~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~ ~~~

If you have any questions regarding this investigation or other geologic matters, please feel free to contact us.

Sincerely,

Rick Hoffman
Certified Engineering Geologist
State of California
RG #3740 EG #1135

Leslie A. Turrini
Project Geologist

Enclosures

cc: Mr. Witt Hollis, ARCO Oil and Gas Company
Mr. Ken Marshall, Interface Planning

Ex 9c. / Attachment PS-3 / Staff
~~Ex.~~
414
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REFERENCES
ARCO Project

Blake, Thomas F., 1991 update. Computer Services and Software EQFault, EQ Search, EQFrisk, 1989.

Buchanan-Banks, J.M., E.H. Pampeyan, H.C. Wagner, D.S. McCulloch, 1978. Preliminary Map Showing Recency of Faulting in Coastal South-Central California: USGS Miscellaneous Field Studies MF-910.

Campbell, R.H., S.C. Wolf, R.E. Hunter, H.C. Wagner, A. Junger, and J.G. Vedder, 1975. Geologic Map and Sections, Santa Barbara Channel Region, California. USGS Open File Map, 75-123.

Dames and Moore, (Arthur G. Sylvester and Arthur C. Darrow), 1984. Activity of the Central Reach of the Santa Ynez Fault: Continuation of Investigation: USGS Contract No. 14-08-0001-21367.

Dames and Moore, July 1975. Draft Environmental Impact Report, Proposed Dos Pueblos Marine Terminal, Naples, California. Prepared for the County of Santa Barbara.

Dibblee, Thomas, W. Jr., 1987. Geologic Map of the Dos Pueblos Quadrangle.

Dibblee, Thomas, W. Jr., 1950. "Geology of Southwestern Santa Barbara County, California". California Division of Mines and Geology, Bulletin 150.

Dibblee, Thomas, W. Jr., 1966. "Geology of the Central Santa Ynez Mountains, Santa Barbara County, California". California Division of Mines and Geology, Bulletin 186.

Federal Emergency Management Agency, Flood Insurance Rate Map, Community Panel Number 060331-0725-C, Panel 725 of 975. Revised September 27, 1985.

Geosystem Consultants, September, 1988. Draft Report, Preliminary Soil Quality Investigation, Dos Pueblos Facility, Santa Barbara County. Prepared for Arco Oil and Gas Company.

Geotechnical Consultants, Inc., 1974. Preliminary Geotechnical Investigation, Proposed Dos Pueblos Marine Terminal, Santa Barbara County, California. Prepared for the Burmah Oil and Gas Company.

Hart, Earl W., 1985. "Fault-Rupture Hazard Zones in California, Alquist-Priolo Special Studies Zones Act of 1972, Revised." Department of Conservation, Division of Mines and Geology, Special Publication 42.

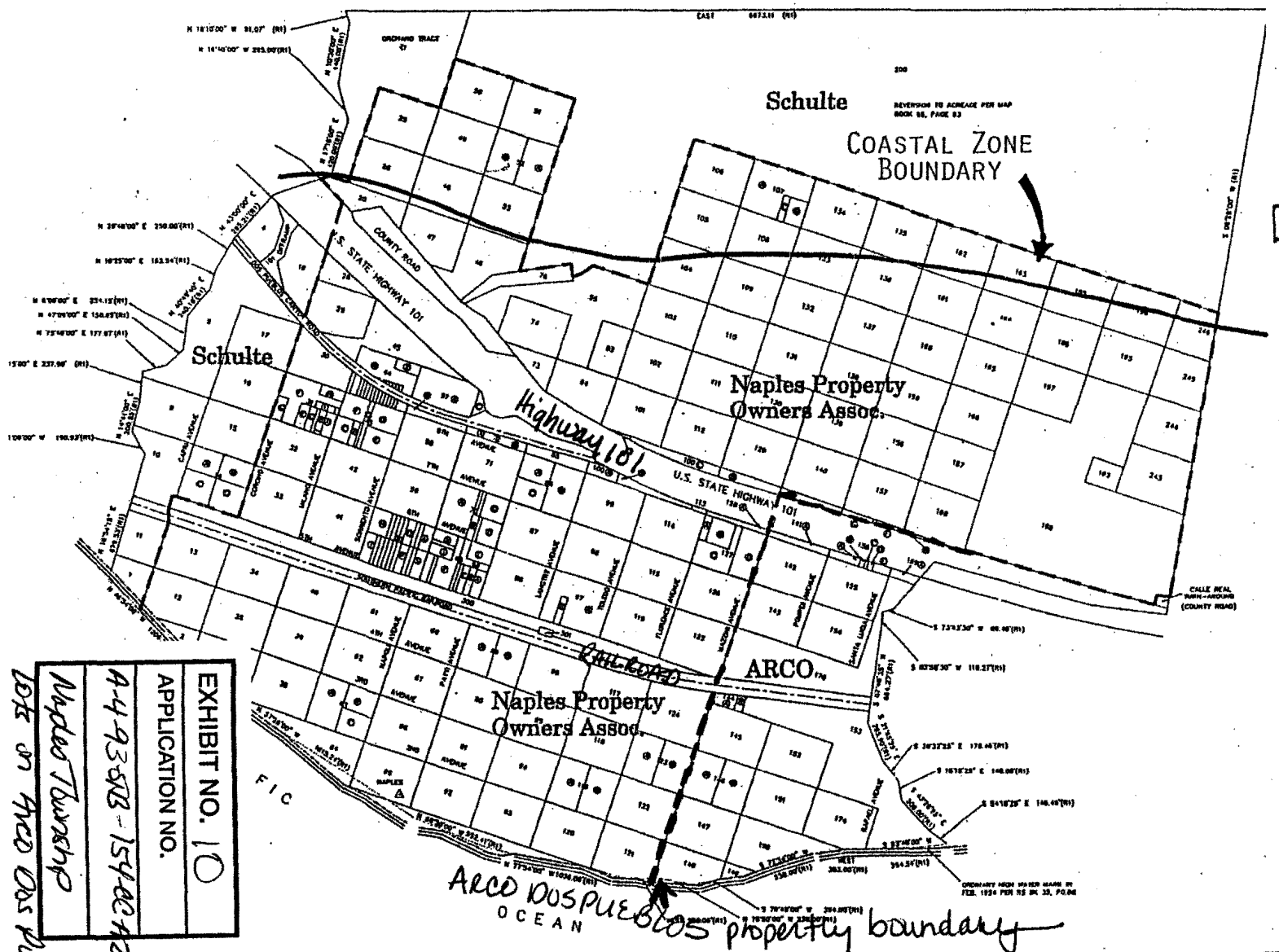

EXHIBIT NO. 10
APPLICATION NO.
A-4-93-88-154 AC 12
Naples Townsp
Lots in ARCO Dos Pueblos Site

NAPLES

LOT COUNT

NPOA	233
ARCO	25
SCHULTE	15

273 TOTAL

GRAPHIC SCALE

OFFICIAL MAP OF THE TOWN OF NAPLES

IN THE RANCHO LOS DOS PUEBLOS
AS PER BOOK A, PAGE 334 OF PATENTS
FILED IN THE OFFICE OF THE COUNTY RECORDER
COUNTY OF SANTA BARBARA, STATE OF CALIFORNIA

SEPTEMBER 12, 1995

Policy 2-13: The existing townsite of Naples is within a designated rural area and is remote from urban services. The County shall discourage residential development of existing lots. The County shall encourage and assist the property owner(s) in transferring development rights from the Naples townsite to an appropriate site within a designated urban area which is suitable for residential development. If the County determines that transferring development rights is not feasible, the land use designation of AG-II-100 should be re-evaluated.

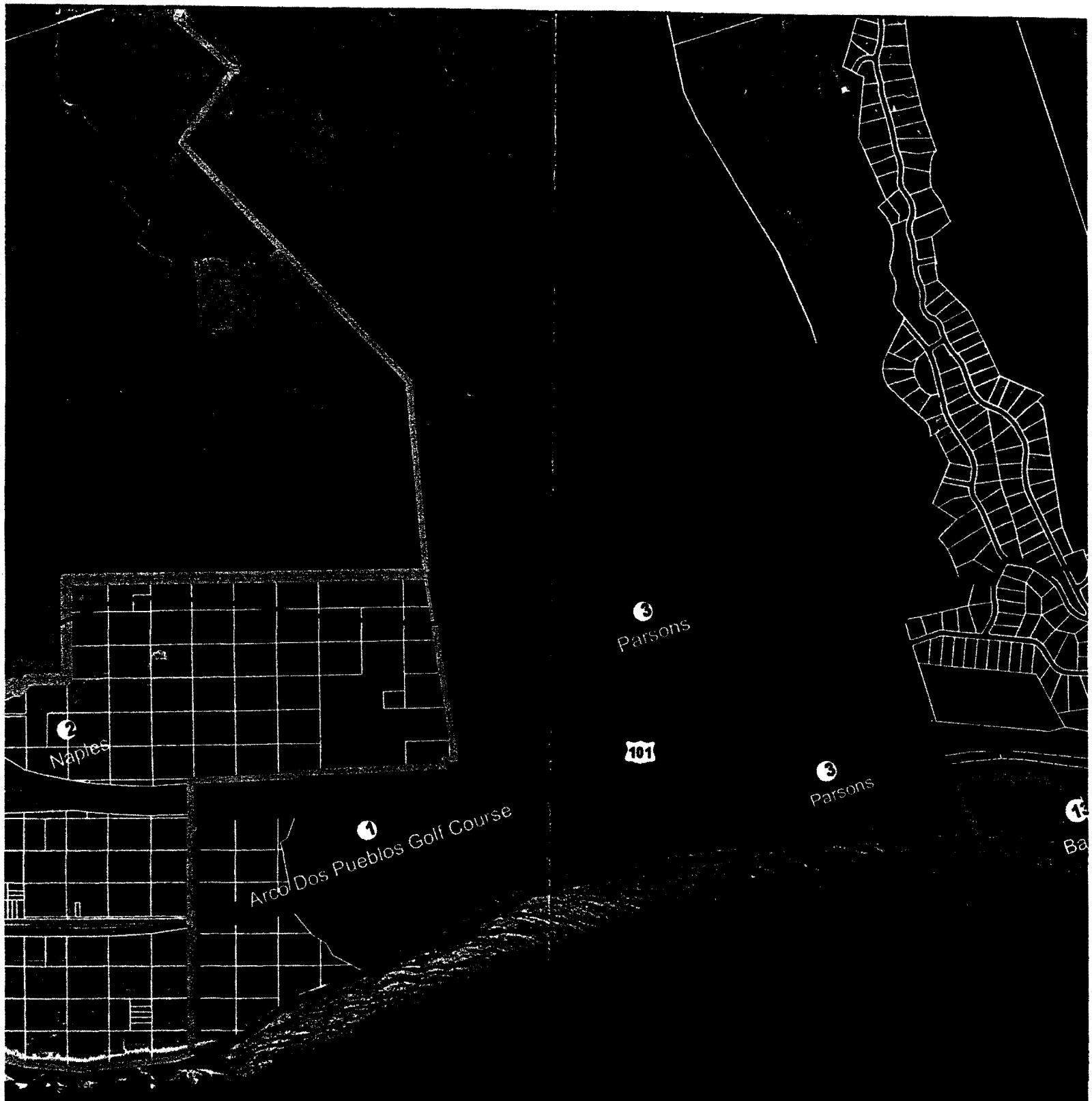

EXHIBIT NO. 11

APPLICATION NO.

A-4-93-STB-154-A2

Aerial View of Parcel Map

Makar Properties, LLC
P.O. Box 2521 /1420 ½ Laguna
Santa Barbara, CA 93120-2521/93101
Phone: 805.899.8635
Fax: 805.899.8645

MakarPropertiesLLC

letter of transmittal

To: Melanie Hale
California Coastal Commission
South Central Coast Office
89 S. California St., Suite 200
Ventura, CA

HAND-DELIVERED

From: R. W. Hollis, Jr. **Date:** 11/5/02

Re: Dos Pueblos Golf Links
California Dept. of Fish & Game Sec. 1603
Streambed Alteration Permit Extension

CC: W: enclosure: Andi Culbertson, Steve Kaufmann and Sandy Weissbard

Please find enclosed a copy of the extension of the Section 1603 Permit for the Dos Pueblos Golf Links Project. The permit has been extended to June 11, 2003.

2 pages

EXHIBIT NO. 12
APPLICATION NO.
A-4-STB-93-134-CC-A2
Extension Streambed Alt. Agree.
CDFG

Department of Fish and Game
4949 Viewridge Avenue
San Diego, CA 92123

Streambed Alteration Program
Tel. #: (858) 636-3160
Fax #: (858) 467-4299

Natalie

REQUEST TO EXTEND STREAM/LAKE ALTERATION AGREEMENT

Pursuant to Section 1600 *et seq.*, I, as operator (or representative thereof) request the Department of Fish and Game to extend

Agreement # 5-474-98 regarding activities within or adjacent to Eagle Canyon Creek & several unnamed stream channels (Water), in Santa Barbara County.

Original Termination Date: January 1, 2000. Extended to June 1, 2002.

Number of Extensions Specified in the Agreement: May be extended for up to five years from the date of termination of the agreement

Project Description: Construction of an 18-hole golf course, 9-hole par three course, and associated support and structures/buildings.

Specific portions of project construction which will not be/were not completed by date specified in the agreement: Project construction has not yet commenced.

Reasons project will not be/was not completed by date specified in the Agreement (include status of mitigation): Since receipt of the previous extension, we have received a Section 10(a)(1)(B) Incidental Take Permit from the USFWS and are on the California Coastal Commission's June 2002 hearing agenda pursuant to a previous appeal that was delayed due to the USFWS permit process.

New termination date requested: June 1, 2004

I agree to abide by all terms and conditions of the above specified Agreement and understand that additional terms and conditions may be required by the Department if conditions affecting wildlife have changed.

SIGNATURE: Sherri Miller for R.W. Hollis DATE: May 17, 2002

PRINT NAME: Sherri Miller for R. W. Hollis TEL. # (760) 942-5147

ADDRESS: 605 Third Street, Encinitas, CA 92024

FEE ENCLOSED: $127.25 (Refer to fee schedule for appropriate fee.)

ENCLOSE A COPY OF THE ORIGINAL AGREEMENT AND FEE WITH YOUR REQUEST

FOR OFFICE USE ONLY

EXTENSION: APPROVED DATE: 6/3/02 BY: [illegible]

NEW AGREEMENT EXPIRATION DATE: 6/1/03

(A copy of this extension must be kept on site along with the original agreement during, all periods of work)

Exp. 12

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400

MEMORANDUM

FROM: John Dixon, Ph.D.
Ecologist / Wetland Coordinator

TO: Melanie Hale

SUBJECT: Dos Pueblos White-Tailed Kites

DATE: November 19, 2002

Documents reviewed:

Vanderwier, J.M. Raptor survey for Dos Pueblos golf links. A letter report to R. Whitt Hollis, Jr. (Makar Properties) dated November 26, 2001,

Storrer, J. Summary of white-tailed kite (Elanus leucurus) observations on 16 May 2002 – Dos Pueblos golf course property. A letter report to K. Getler (S.B. County P&D Energy Division) dated May 17, 2002.

Storrer, J. Summary of white-tailed kite (Elanus leucurus) observations on 30 May 2002 – Dos Pueblos golf course property. A letter report to K. Getler (S.B. County P&D Energy Division) dated June 3, 2002.

Evans, M.U. Dos Pueblos Golf Links, Goleta, Santa Barbara County, California, White-Tailed Kite Nesting Survey. A report by Pacific Southwest Biological Services to Culbertson, Adams, and Associates dated June 7, 2002.

Froke, J.B. Conservation of White-Tailed Kites at Dos Pueblos Golf Links in Santa Barbara County, California. A report to Culbertson, Adams & Associates dated October 10, 2002.

Site visit:

On November 4, 2002 I visited the Dos Pueblos site with Dr. Jeff Froke, and Mr. John Storrer (biological consultant to the County of Santa Barbara). We discussed issues relating to the white-tailed kite, examined the clumps of trees that have been used by kites in the past, and visited areas that could potentially be planted with trees for the use of kites.

EXHIBIT NO. 13
APPLICATION NO. A-4-STB-93-154-CC-A2
Report of Dr. John Dixon
CCC Staff Ecologist White-Tailed Kites

White-tailed kites have been documented using the site of the proposed Dos Pueblos golf course from 1999 through 2002. The intensity of observations and the usefulness of the resulting data have varied greatly from year to year, with the most extensive and detailed observations taking place in 2002. White-tailed kites were observed foraging and perching in 1999; 2 pair of kites were seen at the site in 2000 and 1 pair was engaging in nesting activities, 4 individuals were observed on site in fall 2001, and in 2002 1 pair fledged 5 young and a second pair was observed engaging in nesting activities, but no young were seen. These data demonstrate use of the site by white-tailed kites for at least 4 years and, hence, probable use in the future if conditions remain the same. One or two nesting pairs are significant numbers at the local or county level. It is important to try to maintain the reproductive output represented by these birds.

The proposed development puts the reproduction of one or two pairs of kites at risk because it could potentially result in the loss of 200 acres of foraging habitat and of many of the trees that have been, or potentially could be, utilized for nesting and perching by kites. The argument is often put forward in such situations that the birds would simply move elsewhere and continue their normal activities. In any particular case, this scenario might be within the realm of possibility. In the present instance, for example, the kites also forage to some extent on surrounding lands and there are other potential nest sites in the vicinity. However, this is a very risky assumption, because it is abundantly clear that, cumulatively, loss of habitat translates to loss of birds even though it is extraordinarily difficult to demonstrate in any specific instance. Brian Walton of the U.C. Santa Cruz Predatory Bird Research Group wrote to the Commission on the issue as follows[1]: "It is not accurate, in fact, that individual raptors when impacted by development simply move elsewhere and everyone survives." "This philosophy would be analogous to thinking that if you tore down one of two adjacent apartment buildings, that all the residents would simply move into the remaining building and live two families to an apartment. The density of raptors is dependent on a variety of things, so birds cannot actually just get denser in adjacent areas by moving off development sites." Prudence dictates that the safest course of action is to try to protect and maintain the kites at the sites where they are currently breeding successfully.

There are at least 3 important considerations that must be taken into account by any plan to maintain the kites on site: 1. Provision of suitable nesting and perching habitat; 2. Protection from excessive disturbance, especially around the nesting habitat; and, 3. Provision of an adequate foraging base. In the 2002 nesting survey (Evans, 2002), it is stated that, "...suitable nesting trees, nearby perching trees, and foraging areas, both around the nest site and farther away are all key elements in the local survival of a pair of Kites." Dr. Froke addresses these issues and makes recommendations for a golf course management plan intended to provide the necessary resources.

For successful nesting to take place, suitable nesting trees must be present within the near vicinity (from the kites' point of view) of adequate foraging areas. White-tailed kites

[1] Letter from Brian J. Walton (Coordinator, U.C.S.C. Predatory Bird Research Group) to Peter Imhoff (Coastal Planner, CCC) dated September 15, 2002.

have been observed to nest in a variety of native and non-native trees, including coast live oaks, Monterey pines, cypress, and Eucalyptus. The nests are generally 20 to 50 feet or so from the ground and somewhat cryptic. Groups of trees are much preferred over isolated trees. The surrounding trees not only place the nests out of direct view, but also provide perching opportunities for courtship and sentinel activities.

Based on a tree inventory prepared by Interface Planning and Counseling, there are something on the order of 985 trees on the site, of which some 326 are planned to be removed, including 12 of the 15 trees used for nesting and related activities in 2002. Most of the remaining trees probably are suitably close to foraging grounds and will continue to be so situated if Dr. Frokes' recommendations for native vegetation and rodent friendly management practices are followed and successful. However, there has been no analysis as to the proportion of remaining trees that will be in suitable for nesting (i.e., trees of appropriate height and configuration that are in appropriate clusters and adequately buffered from disturbance) after the development. Dr. Froke recommends creating a number of nesting groves utilizing some existing trees and in some areas augmenting them by transplanting some adult trees and deeply planting others that would probably die but would act as snags, which might be used for perching but probably not for nesting. New trees would also be planted to maintain a suitable grove in the future.

It is also important that nesting and foraging kites be protected from excessive disturbance. Nesting behavior, especially in the early stages, is most susceptible to disturbance. Experienced raptor biologists recommend anywhere from about 50 m to 100 m or more, depending on the types of disturbance expected and on the individual biologist's personal experiences[2]. Dr. Froke states that, "Nesting birds can be expected to tolerate low-frequency and non-disruptive activities to within 150-200 feet of their nest tree (better small grove)." At this site and for the planned development, I recommend that 200-ft (61-m) buffers be established around any existing nesting tree ESHA and any groves created and maintained as potential nesting sites as part of the golf course plan.

There is also concern that golfing activities might disrupt foraging behavior and that kites might not utilize foraging habitat that is sandwiched between fairways. Dr. Froke presents evidence (and I observed in his presence) that white-tailed kites forage effectively in such areas on golf courses in the Monterey area. In those cases, the kites either have a genetic predisposition for tolerating the level of disturbance associated with golf courses or have habituated to golfing activities. It is difficult to generalize from Dr. Froke's observations of the behavior of two pairs of kites, which adds to the uncertainty of maintaining kites at the site in the face of the planned development. However, most specialists seem to agree that the most important factor influencing movement patterns, distribution, and behavior of white-tailed kites is the availability of suitable prey. The proposed management plan to enhance small rodent populations

[2]For example, white-tailed kites in the Thousand Oaks area are much more easily disturbed than individuals of the same species in the Goleta or Humbolt areas. Morgan Ball, personal communication to John Dixon on November 19, 2002.

and to maintain a type of vegetation that is conducive to kite foraging within the "roughs" is an important step towards preserving white-tailed kites at this site. The establishment of appropriate native vegetation has a high probability of success and this vegetation will no doubt support a rodent fauna. However, kites in this area are California vole specialists and no data have been presented to demonstrate that restored native grasslands will favor that species. If successful at supporting vole populations, the proposed planting and management plan will increase the attractiveness of the project site to kites. The planting plan recommended by Dr. Froke will also provide perching opportunities near the foraging habitats. These factors increase the likelihood that white-tailed kites would continue to breed at the site. However, significant uncertainty exists regarding the adaptability of most kites to the proposed level of disturbance, the suitability of the trees that will remain after development for nesting and associated activities, and the likelihood that the roughs will support large populations of California voles. Therefore, in terms of continued white-tailed kite use, the proposed development, and the management plan recommended by Dr. Froke, must still be viewed as experimental.

You have asked me to address the issue of ESHA on the site in the context of white-tailed kites. Section 30107.5 of the Coastal Act includes as ESHA those habitats which are especially valuable because of their role in the ecosystem. At Dos Pueblos, trees that are used for nesting activities by white-tailed kites, a California Fully Protected Species, clearly meet this part of the definition because suitable nesting trees and nearby perching trees are a necessary prerequisite for the successful reproduction of this sensitive species on the site. In other similar cases, the Commission has designated as ESHA trees that provide important habitat to individual birds of sensitive species; for example, a discrete grove of Eucalyptus trees used for nesting, perching, and roosting by several species of raptors at Bolsa Chica was designated ESHA. In addition, Section 35-97.14 of the Local Coastal Plan protects white-tailed kite roosting and nesting areas.

Although there is no question that the some of the trees at Dos Pueblos provide an ecological service to white-tailed kites that qualify them as ESHA, identifying the ESHA footprint at the Dos Pueblos site is difficult for several reasons. First, trees potentially suitable for nesting and perching are scattered over much of the site and do not form discrete clumps or groves distant from other suitable tree habitat. Second, white-tailed kites often, perhaps typically, do not return to the same tree to nest each year. For example, Holmgren and Ball[3] found that the distances between successive nests in the Goleta Slough area varied from around 33 m to nearly 400m. On the other hand, kites have been observed to use the same tree in three successive years at the U. C. Santa Barbara campus[4]. Whether kites return to the same or different trees may be a function of the relative availability of suitable nesting trees at a given site. At Dos Pueblos, based on the kites' usual behavioral pattern, it appears probable that the exact trees that were used for nesting in 2002 will not be used in 2003. Some other trees, perhaps

[3] M.A. Holmgren & M. Ball. Distances between kite nests within and between seasons at a long-term territory. Data and maps submitted to the CCC on June 6, 2002.

[4] M. A. Holmgren, personal communication to J. Dixon November 8, 2002.

close by - perhaps distant, are more likely candidates. Finally, we have no knowledge of which trees or groups of trees have been most used historically. Designating all trees as ESHA would protect the important habitat with certainty, however it is difficult to justify in the case of particular trees for which there is no history of use. An alternative with a strong empirical rationale is to protect all trees with a history of use and adjacent trees. The adjacent trees are important because they are potential nest trees, they provide perches for critical activities related to courtship and nest protection, and they define a grove of trees, a configuration that is generally necessary to provide a suitable nest site.

In my opinion, it is appropriate to designate as ESHA all trees that fall within the smallest radius circles, centered on each documented 2002 nest tree, that contain all the immediately adjacent trees for which important use was documented. In addition, designate as ESHA all trees with white-tailed kite nests from previous years and those adjacent trees within the average radius observed in 2002. Finally designate as ESHA each of the more distant trees for which important use was documented in the 2002 nesting season. All trees within the circles around the observed nest trees should be given a 200-foot buffer; the distant trees with documented use should be given a 100-foot (30-m) buffer. These buffers are necessary to prevent abandonment of nests or interference with courtship, nesting, and foraging activities.

During 2002, kites nested in Trees 67 (eastern pair) and 127 (western pair). Other trees were also used for important activities. For example, in a discussion of the observed use of trees near the eastern nest site (trees 81,82,83,113, & 117), the applicant's consultant wrote, "These trees seemed essential for performing courtship-related activities and for serving as sentinel perches...."[5] The western pair were also observed to use trees (128,149,153-155,157,187,&188) other than the nest tree in their routine activities. Nest-building activity was also observed in 2000 in Tree 83[6].

For nest tree 67, a circle with a radius of 256 feet (78 m)[7] would contain trees 81-83. For nest tree 127, a circle with a radius of 322 feet (98 m) would contain trees 128, 149, 153-155, & 157. So, in 2002 a circle with an average radius of 289 feet (88 m), centered on the nest tree, contained all the other trees with observed important use. Therefore, following the above protocol, the ESHA would include all trees within 256 feet of Tree 67, all trees within 322 feet of Tree 127, and all trees within 289 feet of Tree 83. In addition, ESHA would include trees 113, 117, 187 and 188. It is very probable that this protocol underestimates the number of trees that have actually been used by kites historically and underestimates the number of trees that would be used in the future in the absence of development, but it is based on existing data that documents use, avoids arbitrariness, and protects groups of trees.

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[5] M.U. Evans. Dos Pueblos Golf Links, Goleta, Santa Barbara County, California, White-Tailed Kite Nesting Survey. A report by Pacific Southwest Biological Services to Culbertson, Adams, and Associates dated June 7, 2002.

[6] J. Storrer. Letter to K. Getler (S.B. County P&D Energy Division) dated June 3, 2002.

[7] Radii estimated by scaling distances from the tree map provided by the applicant.

In certain instances, there also is an ecological basis and a Commission precedent for designating as ESHA foraging habitat for raptors. However, in the present case I don't think there is a strong basis for identifying which of the potential foraging areas within the region are most important for white-tailed kites or for establishing boundaries that delineate foraging ESHA. On the other hand, a significant amount of foraging area must be provided on site in order for the development to be consistent with section 30240(b) of the Coastal Act which requires that, "Development in areas adjacent to environmentally sensitive habitat areas...shall be compatible with the continuance of those habitat...areas." In the above report, Dr. Froke recommends changes in the project design that would result in approximately 80 - 100 acres of the project site being managed in a way intended to promote robust populations of voles that are the major prey of white-tailed kites. If the management plan is successful and if the rodent habitats scattered about the golf course are all utilized by kites, the managed foraging habitats on the project site should support one or two pairs of white-tailed kites.

DUDEK
& ASSOCIATES, INC.
Professional Teams for Complex Projects

Engineering, Planning,
Environmental Sciences and
Management Services

Corporate Office:
605 Third Street
Encinitas, California 92024
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Fax 760.632.0164

November 26, 2001

1737-08

Mr. R. Whitt Hollis, Jr.
Makar Properties, Inc.
P.O. Box 2521
Santa Barbara, California 93120

Subject: ***Raptor Survey for Dos Pueblos Golf Links***

Dear Mr. Hollis:

This report documents the results of a raptor survey conducted by Dudek and Associates, Inc. (DUDEK) at the approximately 208-acre Dos Pueblos Golf Links project area. The project site is located in an unincorporated area of Santa Barbara County, California.

INTRODUCTION

The purpose of this letter report is to determine if there are any significant changes (*e.g.*, changed circumstances) relating to raptor use on the Dos Pueblos Golf Links site from the original environmental review in 1993 (92-EIR-16) to current conditions. The site's current physical conditions remain substantially unchanged as compared to the physical conditions recorded in 1991 and 1992 (Interface Planning and Counseling Corporation, October 15 1991; Bowland and Ferren 1992), and in the 1993 EIR prepared for the project.

Habitats onsite (eucalyptus and Monterey cypress groves, riparian woodland, Venturan coastal sage scrub, and native and non-native grasslands) are typical of those which could potentially support a variety of raptor species. Similar conditions exist in surrounding lands. To the north (across Highway 101) is open non-native grassland habitat with windrow/native trees; to the south the Pacific Ocean; to the west for at least a mile is coastal terrace with grassland and windrow/native trees; and to the east is native and non-native woodland habitat associated with Eagle Canyon Creek.

METHODS

The survey was conducted by walking the site and observing bird activity from selected vantage points. All raptors observed during the survey were identified and recorded on a 1 inch = 100 feet s
As part of the survey, the bird's behavior and the habitat or tree species being used were rec

trees were visually searched using binoculars in order to detect potential raptor nests. Nesting activities and nest detection could not be definitively determined due to the timing of the surveys outside of the breeding season. As the white-tailed kite (*Elanus leucurus*) is a California fully-protected species, a main focus of the survey effort was to determine if suitable foraging, roosting, and/or nesting habitat is present onsite and if white-tailed kites are present. Surveys were conducted under the following conditions:

Date	Biologist	Temp (°F)	Wind (mph)	Sky Conditions	Time
9-20-01	Vanderwier	~62-65	1-3 at 0950; 3-6 at 1130	Skies completely obscured by marine layer; clearing to 60% by 1130; clear by 1400	0950-1130 1230-1630
9-21-01	Vanderwier	~60-68	1-3 at 0830; 3-6 at 1100	Skies completely obscured by marine layer; clearing to sunny skies by 1130	0830-1145 1215-1730

RESULTS

Four species of raptor were identified: red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), and white-tailed kite. No raptor nests were confirmed onsite; however, the density of trees in Eagle Canyon Creek and some of the eucalyptus groves and willow scrub significantly restricted viewing for that purpose. Eagle Canyon Creek does provide the type of trees and cover which would be the most likely locations of nests for white-tailed kites, red-shouldered hawks, and red-tailed hawks. All bird species observed during the surveys are presented in *Appendix A*. The following text provides life history and site-specific information on each of these species.

Red-tailed Hawk: This hawk is the most common and widespread member of the genus Buteo. Red-tailed hawks range Alaska and northern Canada, east to Nova Scotia and southward to Panama. In California, this species is a year-round resident, although most common from September to April. While not migratory, red-tailed hawks will adjust seasonally to areas of the most abundant prey. Habitat is variable and includes woodlands with nearby, open land, grasslands, marshes, and deserts. They nest in a variety of situations: tall trees (sycamores, cottonwoods, oaks, eucalyptus), desert saguaros, on rocky cliffs, and in shrubs or small trees (mesquite, paloverde). They will also use nests abandoned by golden eagles or ravens. Primary prey items are small mammals (80 to 90% of their diet), but they will eat snakes and lizards as well. Prey base has been thought to govern habitat use more than available nesting sites.

Red-tailed hawks (individuals) were observed in four locations onsite, mostly in the eastern two-thirds of the site. This species was observed west of Eagle Canyon south of the railroad, between Drainages 3 and 4 south of the railroad, along Drainage 4 north of the railroad, and along Tomate Canyon north of the railroad. It is likely that they forage over grasslands and Venturan coastal sage scrub throughout the site and perch in eucalyptus and/or Monterey cypress trees. Red-tailed hawks were also observed roosting immediately offsite in eucalyptus trees to the west and foraging over offsite grasslands to the west and north.

Red-shouldered Hawk: The red-shouldered hawk has a much smaller distribution than does the red-tailed hawk. It is found as far north as Manitoba and New Brunswick, south to the Gulf Coast. They are absent from much of the central United States, but are resident in California in the Coast Ranges, Central Valley, and all along the coast. They use mature riparian and oak woodlands for breeding and nesting activities. Red-shouldered hawk nests are typically located near the main trunk of the tree, 20 to 60 feet above the ground. No tree preference is shown but often nests are found in deciduous and coniferous trees (*e.g.*, oak, willow, sycamore, and cottonwoods). Prey items include rodents and other small mammals, snakes, frogs, insects, and, occasionally, small birds.

Red-shouldered hawks (individuals) were observed at two locations onsite. This species was observed east of Tomate Canyon south of the railroad and east of Drainage 1 north of the railroad, perched in eucalyptus or pine trees and appeared to be surveying foraging habitat in adjacent grasslands.

American Kestrel: The American kestrel is found throughout most of North America, occurring along the borders of woodlands, open fields, pastures with scattered trees, and in urban areas. This small raptor nests in hollows in trees, holes in cliffs, and even nest boxes. Prey items include small birds and rodents, as well as insects. It is a resident in California although withdraws from montane regions in winter.

American kestrels were recorded at four locations onsite during the survey, most often perching on anthropogenic structures (*e.g.*, pvc pipes in grassland areas) and foraging over nearby open habitat. This species was observed west of Eagle Canyon north of the railroad, east of Drainage 3 south of the railroad, west of Tomate Canyon south of the railroad, and east of Drainage 7 south of the railroad. It is likely that American kestrels use most of the site for both perching and foraging.

White-tailed Kite (*Elanus leucurus*): The white-tailed kite is found in low elevation, open grasslands, savannah, agricultural areas, wetlands, and riparian/oak woodlands. They roost and perch in trees with dense canopies; the tree species being less important than vegetation structure and prey abundance. Although threatened with extinction in North America during the early twentieth century, the white-tailed

1460
Ex. 14 of 3

kite has recovered since then. Its range in the United States has expanded from small portions of California, Texas, and Florida to Oregon and Washington, as well as into middle America. Prior to the 1960s, the white-tailed kite occurred in low numbers across much of its range; however, since that time the population status and range for this species have improved markedly. The white-tailed kite has also colonized habitats throughout much of Central America, and has been recorded as far south as Buenos Aires. The breeding range stronghold in North America is California, with nearly all areas up to the western Sierra Nevada foothills and southeast deserts being occupied. These kites are common in the Central Valley of California and along the entire length of the coast. The white-tailed kite is a year-round resident in California coastal and valley lowlands, rarely being found away from agricultural areas. While a resident, this species is believed to be nomadic during low abundance of one of its primary food items, California voles. It is also a communal rooster in the non-breeding season. Nests are typically located 15 to 55 feet above the ground in oak, willow, eucalyptus, and cottonwood trees. The same nests are often used in successive years.

Four white-tailed kites were observed as two groups of two (presumably pairs); all four were adult birds. One pair was observed east of Drainage 4 south of the railroad and one pair was observed along Tomate Canyon north of the railroad. These pairs were observed both days perching in a variety of trees (but most often Monterey cypress) and foraging over grasslands in the western half of the site, both north and south of the railroad tracks. While review of the literature reveals that these birds will nest in a variety of tall trees, it is most likely that if they nest onsite it would be within southern willow scrub or the riparian forest associated with Eagle Canyon Creek. A single kite was also observed "kiting" over the southbound lanes of Highway 101, foraging in the Caltrans right-of-way in the early afternoon of September 21.

DISCUSSION

The density of raptors observed onsite appears to be low given the number of trees and open nature of the 208-acre site. This is likely due to the timing of the survey (non-breeding) and the recent past use of the site as an oil and gas storage and processing facility. Management of the oil and gas storage and processing facility sought to control or eradicate many of the naturally-occurring small mammals and rodents which would serve as a prey base for raptors. No ground squirrels were observed during the two-day survey and ground squirrel/gopher burrows were not abundant onsite.

The raptors identified as part of this survey are, for the most part, fairly tolerant of disturbance. All species can be observed foraging in urban settings and along roadsides (including freeways). Nest sites are naturally more sensitive to human intrusion; however, golf courses are, for the most part, a passive land use.

The maintenance of native and non-native grassland in the golf course roughs and erosion control areas, as well as habitat conserved in the drainages onsite, could continue to provide onsite foraging opportunities for raptors. In the surrounding area, grasslands are abundant.

White-tailed kites need big, open spaces in which to forage. In Long Beach, foraging territories of 29 hectares have been recorded, with foraging territories of up to 44 hectares being recorded in San Diego County. This species does not appear to be reticent to cross highways or fly fairly large distances (up to 1.9 kilometers) from their nest or perch sites to foraging areas.

The 1993 EIR notes that the proposed project would result in a reduction of raptor foraging habitat (non-native grassland and coastal sage scrub), as well as the loss of potential raptor nesting and roosting habitat in trees. The EIR does consider that impacts to foraging habitat would be partially offset by the wildlife habitat associated with the native planting mitigation areas and that the impacts to nesting and roosting habitat could be mitigated through the replacement of the trees at a ratio of 3:1.

When comparing the current physical conditions onsite to those recorded in 1991 and 1992 (as presented in the 1993 EIR), it is apparent that conditions onsite have not changed substantially (see attached DUDEK letter report regarding recent vegetation surveys onsite). Moreover, the proposed project design remains substantially unchanged with two minor exceptions. The abandonment of the oil and gas facilities, which resulted in the creation of disturbed wetlands areas, has resulted in minor design changes to avoid these disturbed wetlands areas. There was also a minor shift in the vertical access trail to avoid impacts to federally-listed species in Eagle Canyon. In addition, this survey noted a low density of raptors. Considering the above information, it is DUDEK's opinion that the project has not significantly changed (*i.e.*, there are no changed circumstances) relative to raptor use on the Dos Pueblos Golf Links site from the original environmental review in 1993 (92-EIR-16) to present.

Att. 14 pg. 5
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If you have any questions regarding the survey or the contents of this letter, please do not hesitate to contact me at DUDEK's Encinitas office at (760) 942-5147.

Very truly yours,

DUDEK & ASSOCIATES, INC.

Julie M. Vanderwier
Senior Biologist

cc: *Sherri Miller, Dudek & Associates*
Ken Marshall, Dudek & Associates
Steve Kaufmann, Richards, Watson and Gershon
Andi Culbertson, CAA Planning

ATTACHMENT A

Dos Pueblos Golf Links Site
Observed Bird Species
September 20 & 21, 2001

PELECANIDAE - PELICANS
Pelecanus occidentalis - brown pelican

PHALACROCORACIDAE - CORMORANTS
Phalacrocorax auritus - double-crested cormorant

ARDEIDAE - HERONS
Ardea herodias - great blue heron

CATHARTIDAE - NEW WORLD VULTURES
Cathartes aura - turkey vulture

ACCIPITRIDAE - HAWKS
Buteo jamaicensis - red-tailed hawk
Buteo lineatus - red-shouldered hawk
Elanus caeruleus - white-tailed kite

FALCONIDAE - FALCONS
Falco sparverius - American kestrel

PHASIANIDAE - PHEASANTS & QUAILS
Callipepla californica - California quail

CHARADRIIDAE - PLOVERS
Charadrius vociferus - killdeer

LARIDAE - GULLS & TERNS
Larus delawarensis - ring-billed gull
Larus occidentalis - western gull

1737.08 Dos Pueblos
092001 raptor survey
+ turkey vultures
common survey @
0950 skies obscured
marine o/c; WB 1;
temp ~ 62°F

≈ 30 TVs on bridge;
several soaring over
area

Enc ① Eagle Canyon
Encs / Cumxc

SPTO
CATO
RTHA (Soaring)
MODO
RODO
coyote
shot

+TVs roosting
in Cupressus
- can't get precise
counts as moving
around.

1040 RTHA voc somewhere
on property?

Amcr
~~Enc~~
Enc o/s
BVT

Enc ① nests
obs.

cypress ② Enc ait/grds
0 nests obs.

① monarch
butterfly
@ bridge

[in looking for
nests viewed
underneath trees
for wash, pellets,
etc.]

~ dec. oaks
T pines
dead or
dying

1130 AMKE on pvc ~ vgL
or

skies 60% o/c WB 3 ~ 65° Vitis/Rvo

1330 RSHA fly out of Eucgrds
(adj to tarplant site)
- Centromadia outside
of area

1345 RTHA fly out of Enc
+ circling over Centro.
site

WEKI not seeing any
BEWR ground squirrels
Say only occ. burrows
raccoon trx

N (above) bridge, ocean side

1430 5-6 TTVU roosting in Euc, others flying (on updrafts) (3-4) whitewash & feathers

just N (above) drg 2' w. in Euc grab. (N) potential nest + dby Euc's in branches.

1500 AMKE spooked by train fly over to Cuma @ edge

1515 WTKI roosting in cypress whistling; answered by another in cypress across CSS one flies to other - both roosting - pair or adult + juvenile (although pretty grey w/ brownish cast on back) one yakking @ the other more (initially) pair there until 1545; one moved off to forage ducked out of site behind cypress

landed in cypress behind first - then @ ~1600 2nd flies to cypress w/ bey

~1615 one moved back to another of the previous cypress and back with other @ 1630 - end survey -

---

Las Positas 0730 9.21

Dos Pueblos 9.21.01 0830
skies O/C; WB1; ~60°F
2 TTVU on bridge
0830 - WTKI pr same location moving between cypress
0850 - end of prop
AMKE roosting fence - foraging trees only @ propline - O/S

CATO
BOTH WEKI
MELA MODO
SABP
AMCR
BEWR

grasslands thistles
harvests obs. in perimeter trees (Euc, young Cuma, Acacia)

9/19/01

WRTI 21mm 0930 – Heard dom. RSHA roosting in chaparral

quivi @ grasslands but not in #5 like E. end of site.
areas of former Brassica on heavy clay soils – low prod #s? or patchy grasses

0945 WTKI flying over grassland W. of dss drg @ W. end (see map + notes)

1020 after driving quickly to first site (9:20) pair in cypress there.

drive back to second site – @ WTKI

potential nest site in cypress/pine grove @ curve, 50 of tx W. of lg barranca.
in cypress ≈ 15' up
loose accumulation of sticks + debris organized but dense no sign of nest on ground

HOT
~1045 marine o/c breaking up – sun coming out
WBZ – T ~ 65°

in ocean most cypress where WTKI first seen
(Entr)
potential nest – unorganized dense dead veg/sticks
no stuff below.

grnds W. similar grassland, fewer trees
N similar grassland – some tree cultivation, way fewer trees; development
E. – Bocara/Sandpiper

15 Oct 93

SMC field notes
(list wildlife observed)
1999 provided by applicant
RE: wildlife amphibians

pg 1.

DosPueblos Links Site

W/ Rosie Thompson - Jan 17, 1999

Looking for r/t, pond turtles, etc.

Walked to most of the "wetlands" detailed on the wetland delineation map.

Drainage — is dry w/ a few rushes Sp. Common yellowthroat but no water, gravel is cracked & dry — maybe can be used for tree frogs for breeding in wet years.

Most of area is weedy grassland w/ Eucs, Monterey pine & scattered stands of coyote brush. Areas marked as wetlands or drainages are dry but have more Veg — castorbean, coyote brush, Eucs,

house finch, Ann. hummingbird, wrentit, Bl. sh. kite, yellowrumped warbler, Cathartes, buffalos woodpecker, No. flicker, coyote sat.

Tomate drainage - mostly Eucs w/ tracks, dry, some nice willow

Very unlikely for r/f.

Drainage west of Tomate - dry, " for our amphib. system & train tracks

Downstream

Two drainages west down from Tomate - Bl. shouldered kite eating something on pine

West branch of 2nd drainage from Tomate has real thick extensive Coastal Sage Scrub, pines in area

pg 2

Kite

Kite

EXHIBIT NO. 15
APPLICATION NO. A-4-STB-93-154-A2
SMC 1999 field notes
DosPueblos Site

6/4/15 W 15

1/11/99 PJ3

Last pond near Ferndale - deep and well vegetated w/ coastal scrub on side + willows in bottom, dry but w/ a little water it looks good for wildlife + amphibs.

Blue-gray gnatcatcher, Bensell's Wren, CA thrasher, r.c. kinglet, house finch, yr warbler sp, Upstream of train tracks = the most exten. willows on site, run parallel to tracks, (good for yellow warbler?), song sparrow

2 flocks of geese (23 + 10) flew over

R.C. kinglets, bushtit

Saw loggerhead shrike on tamarisk

Eagle canyon has nice lagoon ~ 50' wide w/ cattails, willows, bulrush + lots of tules around. Can't tell if water is salty or not.

Spotted sandpiper, CO. yellowlegs,

PJ4

black phoebe, r-c kinglet, yellow rumped warbler, bushtit,

Water is not too deep, maybe about 1-2' at deepest?

Started night survey @ Eagle Canyon looks fine for r/f + tadpoles. None seen. Josie + I surveyed up + down for about 45 min — no eyeshine, no sign of fish. Did have a few areas w/ deep enough water and there was plenty of overhanging cover and refuge. Surprised

CW 1/19/99

1/12/99 Dos Pueblos Links w/ R. Thompson

Combo on Loch is 1718

- We arrive @ site @ ~2:00 pm. Drive to Westend. Walk down drainage 5 to Beach and then up Tamate Canyon. There are a few pools along this channel but no flowing water. Lots of willows and robust healthy coastal scrub on both sides of the steep slopes. Rosie walks up entire valley while I walk down beach to Drainage 7. (There are only a few stagnant pools at the bottom of Tamate – not likely for gobies or frogs).

Drainage 7 ends in a fairly steep drop off & has no potential for gobies. Due to how dry it is, very unlikely for frogs.

I walk back up D-7 to top of bluff. There is a series of rock outcrops along

the beach that are used by various shorebirds: (willet, marbled godwit, sanderlings, killdeer, bl. bellied plover + semi palmated plover) for foraging – mostly in kelp-strewn areas (looking for bugs?).

Also a roost site just offshore of D-7 w/ 10-15 Ca brown pelicans, Heermann's gull, Caspian tern, and various gulls sp.

We see the kite foraging over grassy area & perched in same tree as yesterday. (see only 1 kite, also see pair of red-tail hawks, Am. kestrel, turkey vulture, Ca towhee, yellow rump warbler, r.c. kinglet E. starling, WC sparrow, house finch, blue gray gnatcatcher, plain titmouse, Anna's hummer, mourning dove, A. crow, wrentit, song sp, ca. yellowthroat, Townsends warbler, Bewick's wren, black phoebe →

kite

kite

P53 1/12/99

We also see bobcat near bridge over train tracks - ran into coastal scrub. We then head to Eagle Canyon - get a good look in water → no signs of gobies (the bottom of the lagoon is not very sandy - lots of wood/plant debris + black mud). We begin to walked up Eagle Canyon to Freeway. Beautiful willow + sycamore Riparian woodland upstream of train tracks although lots of Blues also (saw a handful of butterflies in this area - no clumps although area looks suitable for butterfly roosting).

We begin r/t night survey @ 5:40pm. We listen for 10 minutes - no calls heard. Did hear tree frogs. Search for another 1/2 hr w/ lights → no eye shine - still say this area is great for frogs.

Pacifica Jan 21, 99 w/ Steb 3:30pm

- Flat accessible beach.. easy to land, waves look a bit ominous 2-3' tall. Lots of people + dogs so SW plovers prob. not an issue.
- Sandunes w/in 100' or so of bathrooms + easy to avoid
- Birds in H2O: gulls, scoters, cormorants about 50 or so individuals.
- Shorebirds: willets + sanderlings
- Sand dunes/foredunes see lots of traffic by people + pets

Hwy 1 - closest rd/TH to Bell w/in 400' of landing

Beach is over 100' wide (shore to dunes) widest: farther North but vehicles could drive down along beach.

Ocean is roughest @ North end

Pt

11 Jan 99 cont.

Tomate Cyn.

W. Large drainage to flat bottom N of RR. due to sediment accumulation up to culvert. Saliz at RR & mixed faltex-riparian. Below RR is narrow gully w/ CF on sides & Saliz in bottom. Channel cobble. Dry but lots of shade & cover.

Eagle Cr has good lagoon at mouth w/ cattails. 40-50' wide + Scirp Sapling & scirpus. Flow N of RR.

4:00 Night survey of Eagle Cr Lagoon
No RLF seen - 1 Bufo
No fish seen either.
finished @ 6:40. Good habitat!

O.P. Links 12 Jan 99

2:30 at site - hiked down to beach & Tomate Canyon then up Tomate Canyon almost to road. Many small pools ± 1'x3' & a few inches deep No frogs seen. well shaded w/ lots of roots & holes in banks.

4-5: walked up Eagle Creek to N of 101. Good habitat for RLF but none seen. beyond RR, eucalyptus → Sycamore & small willows. Many sycamore seedlings. Vinca & German "ivy" abundant.

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DP Links — 11 Jan 99

1050 at site - lock cannot open gate.
walked to Drainage #3? (just E of Tomato)
a wetland N of RR in shallow pool w/ Rumex
no culvert under RR seen. DRY
weedy grassland around margin w/ 2nd spp
& Rumex Downstream of RR is small
channel lined w/ CS. No RLF or SWFT
habitat N of RR

Drainage — Tomato
Eucalyptus above RR has deep well
to culvert w/ lg. steel beam treel
racks (Vertical). Eucalyptus at
1 RR then Salix upstream.
1 Common Yellowthroat in area.

Tomato
Drainage WEST of Tomato is very dry.
CS in banks + weeds. Remnant on W-bank
at RR. Steel pipe w/ slots at toe of RR
Blk. Shrubland hike on top of culvert
Tomato
Eating - 2 drainages W of Tomato

Kik

162
EP. 15 Pg 6 of 6

3/4/99 Pg 1

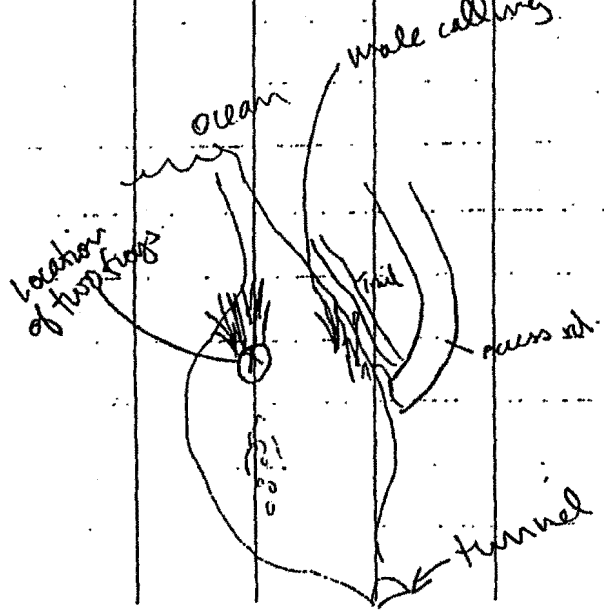
Feb 24, 1999 w/ Rosie up @ Lopez Lk. arrived at bank of dam at 5:45 pm - still light out. We walked around one of the ponds downstream of work area. Coots, ruddy duck, rw blackbirds present. Once it got dark, began eyeshine surveys - saw 4 definite adult, good sized bullfrogs in this area. Walked downstream to next pond + found another - also saw a beaver! with stick in mouth moving across water. (red eyeshine). Bullfrogs had white eye shine - no deep calls but did hear a "huh-huh-huh" call which didn't sound like tree frog or bullfrog. Also saw lots of bats (small) + night herons (4). Upstream site counted 5 adult Ranids - I got a good look @ only one which I would say was 80% a bull frog. Our feeling is that they all were bullfrogs but not 100% sure. Left @ ~8:30 pm.

Thursday March 4 - Eagle Canyon Ck for Dos Pueblos Golf Links - RIF survey At site at about 7:15 pm (no cows downstream of work area, so I have to walk from gate). Clear night, no clouds, no breeze all the afternoon was breezy. Warm - low to mid 60's.

Down at water in Eagle Canyon @ about 7:30 pm, begin slowly walking through open water w/ flashlight to detect eye shine. The tree frog chorus is just about deafening when I turn off my light + remain still. Get eye shine (reddish dull) from several tree frogs. Walk up length of lagoon from train tracks to saline. On way back at about 8:35 I get double eyeshine and see a male small frog (~2.5 cm long) on the

161

back of a larger (50cm) female (I hope a female). Definite rlfs - got 3 photos! I also heard very likely call of another male (no eyeshine) from cattails on west bank. I decided to get out of the kayak at that point to avoid any impacts to eggs we saw or any other breeding activities.



Lopez Lk. 3-9-99

Drill crew doesn't show up till about 8:20 (aquired tuns). Rained last night + this morning. While they set up I look for birds along creek.

Co. yellowthroat, blue-gray gnatcatcher, song sp, ruby-crowned kinglet, Anna's hummer, tree or violet green swallow, Am. crow(1), great blue heron(2), wrentit, Steller's jay, hairy woodpecker, yellow-rumped warbler(2), Am. kestrel, Mallard pair, Mallard pair, turkey vulture(5)

They didn't start setting up really until they went back to town to get a few pieces of needed equipment (back @ ~1230 pm). Pumped about 300 gallons from ark. Vo mob - they got green - didn't pull too

DP Links 13 April 99

4:00 left office ODO = 272 - 299 = (27 mi)

4:20 @ site - need key to get in - called Samantha Security ~~Sec~~ Paul Bramsen 659-7285. cell 732-5818 → Admiral Arnold

5:00 onto site. Tomate Cyn above RR water flowing from Hwy 101 - 3/4 way to RR. Upper 1/3 has salix & a few Salix & Typha. Pool under culverts - no tadpoles observed. Hyla heard. (Eat Pool Treefrogs)

Pool at culvert under Hwy 101 access w/ shrubs. Mud very soft.

- Pool of muddy water in Trib. to Tomate next to Hwy 101. 6' x 40'

- D7: ~75% had some water, most very cloudy & shallow. Hyla heard above RR

D7 marsh below RR has water - cloudy with lots of plant debris floating below that was mostly dry except in depressions until near ocean where small flow over soft shale ~10' drop to beach was wet & slippery

- Tomate Cyn below RR has water. Many Pseudacris heard. Pool near road where culvert empties & make slough pit. Willow & lots of rock & woody debris. DP2 not walk down/access due to difficult access & late time (6:45p) Expect water in most areas to occur.

Tomate Cyn amphibian habitat (Pseudacris frog heard) D7 riparian habitat also

RECEIVED
APR 29 2002
CALIFORNIA COASTAL COMMISSION SOUTH CENTRAL COAST DISTRICT

EXHIBIT NO. 14
APPLICATION NO. 4-98-154-A1
Page 1 of 1

DP. Linker — 19 April 91

28 mi — 895-7746

7:10, left house for site + met Jill clear, warm

7:30-8:00 checked Eagle Cyn from RR to ocean. Heard many Pseudacris regilla. Creek level is down to a stream flow only. Saw 1 RLF ~3" in stream w/ water about ½" deep RLF Eagle Cyn 1/19/99

8:15-9:15 checked lower Tomales south of RR. Saw & heard many Pseudacris - 2 in amplexus. No RLF.

9:15-10:30 checked upper Tomales and DT. water loss in Tomales. Pseudacris abundant. Saw 2 in amplexus. No pool in tributary to Tomales. DT still has some pools - only saw & heard Pseudacris. Jill checked the pond in DT - no water.

DP Lonke — 22 Apr 91

7:40 left home light wind, clear, warm

8:00 Q site began surveys in DT. Pseudacris were beginning to call. DT is getting drier - no RLF seen. - Upper Tomales is drier - water did not extend as far downstream. No RLF seen. - Lower Tomales - saw Pseudacris, some in amplexus. No RLF. - algae on water surface has increased

10:15 left site

Tomales Cyn amphibian reproduction RTE 20, 1991 Apr

194

D.P. Linder 2 May 00

2:15 @ site. Gate over tracks locked. walked to Eagle Cyn. Cruz down ea road.

- Much sed. deposited in lagoon on N side in marsh. 8-12"
- Flow in creek but small lagoon formed.
- treefrog heard. No gobies seen in lagoon waters

EXHIBIT NO. 18a
APPLICATION NO.
A-4-STB-93-154-CC-A2
SMC Field Notes
May 1999

DP Golf Links 18 May 00

4:30 visual search – no RLF or TC
lots of Psuedochis tad poles
- dip net → no frogs but saw some
in creek area ~ ½ way between RR & ocean
- Seine Island – 1st no frogs just
treefrogs + tadpoles
- 2nd → 5 TC + lg. Bdorchmatch d.
5 TC finished
checked TC in plastic bag w/ handlens
- lots of dead/decaying marine algae in
bottom of lagoon at beach
- lots of scum & filamentous green algae
in lagoon where more creek-like
- brown (dying?) filamentous algae
in fishing creek

8:30-9:00 pm RLF survey. Saw lots of Psuedochis & one possible RLF but no positive ID as could not get close enough

Exp. 18a/02 2

16a&b
15d
17a

Photo by Crissy Slaughter

Biological Monitoring of Eagle Canyon Creek, Goleta, CA

Leticia Gallardo

February 3, 1999

Introduction

The following survey was commissioned to determine if Eagle Canyon Creek supports a California Red legged frog, *Rana aurora draytonii*, population. Distribution of the California Red legged frog extends from Shasta County south to Northern Baja California. Santa Barbara County is known to support various populations of *Rana aurora draytonii* throughout its waterways. Populations of Red legged frogs are known to occur in the creeks adjacent to Eagle Canyon Creek at distances of a minimum of three-quarters of a mile away. Given that this is a feasible distance for dispersal movements of this species (Gallardo, 1998), the likelihood of its presence in Eagle Canyon was high, thus the following survey was undertaken to determine if *Rana aurora draytonii* inhabits Eagle Canyon Creek.

Survey Site

Survey area consisted of the mouth of Eagle Canyon Creek upstream approximately 150 meters to the point where the creek meets the 101 freeway. The creek consists of riparian vegetation such as *Salix sp.*, *Plantanus racemosa*, *Artemisia douglasiana*, and *Rubus ursinus*, surrounded by an adjacent Eucalyptus forest. The creek empties into a lagoon formed where it drains into the ocean. This area contains typical brackish water vegetation such as *Typha sp.*, *Carex sp.*, and *Grendelia sp.*

Methods

Both day and nighttime surveying was performed. Day surveys consisted of an analysis of the area for ideal frog habitat, which was based on the presence of appropriate vegetation, cover, and water depth. Night surveying began after dark and covered areas identified as ideal frog habitat. Two nights of surveying were performed. Appropriate areas were surveyed from the water using Koehler Wheat Cap Lights, model #2200-GI, to locate eyeshine. Search distance was approximately 5-15ft from the bank and in appropriate vegetation. Individuals were identified visually or by capture.

Results & Discussion

Daylight analysis of Eagle Canyon Creek found that appropriate vegetation, cover, and water depths were present and sufficient to maintain a Rana aurora draytonii population. Night surveys conducted in this area confirmed that Rana aurora draytonii does indeed inhabit the Eagle Canyon Creek. Despite adverse conditions such as low air and water temperatures, a low rainfall year, few survey events, as well as pre-breeding season when frog abundance and visibility is low, several individuals were located and identified. The number of frogs located in this area can be expected to increase as temperatures rise and as the breeding season progresses.

Further survey work is recommended to determine the size and distribution of this population. This is particularly important since the configuration of the lagoon region of the creek provides ideal conditions for a *Rana aurora draytonii* breeding site. The potential for this site as an important breeding pond was confirmed by the presence of calling male *Rana aurora draytonii*. It should also be noted at this point that in this species it is common that males move into the breeding site to establish territories well before the females arrive. Thus the low number of individuals found at this time may be partially explained by this migration pattern.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

March 16, 1999

Chuck Damm, Senior Deputy Director
California Coastal Commission
89 South California Street, Suite 200
Ventura, California 93001

Subject: Proposed Dos Pueblos Golf Course, Santa Barbara County, California

Dear Mr. Damm:

This letter is in response to your faxed request, dated March 11, 1999, for further clarification on our letter, dated February 22, 1999, stating that the U.S. Fish and Wildlife Service (Service) had been informed that the federally threatened California red-legged frog (*Rana aurora draytonii*) occurred in Eagle Canyon Creek on site of the proposed Dos Pueblos Golf Course. Specifically, you requested that the Service provide the Coastal Commission with any further information that we might have, including the specific information that we used to make this determination.

On February 4, 1999, we received a faxed copy of a survey report written by Leticia Gallardo indicating that she heard and saw California red-legged frogs in the mouth of Eagle Canyon Creek. In a telephone conversation with Bridget Fahey of my staff on March 5, Ms. Gallardo reported that she heard and saw a minimum of two male California red-legged frogs during January of this year. We consider Ms. Gallardo to be a credible source of information, as she has experience surveying for California red-legged frogs and currently possesses a recovery permit, issued by the Service pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended. Since then, the presence of the California red-legged frog in Eagle Canyon Creek has been confirmed by Dr. Rosemary Thompson of Science Application International Corporation, a consultant for the project applicant. The Service considers Dr. Thompson to be a credible source of information as well.

The project, as proposed, could result in direct and indirect impacts to the California red-legged frog. California red-legged frogs are known to use upland areas within a mile of streams. Consequently, grading of the site could kill or injure dispersing individuals. California red-legged frogs may be attracted to the golf course, once in operation, because of its water features and irrigation. Therefore, routine operation of the golf course is likely to cause mortality of California red-legged frogs as a result of vehicle use, maintenance of playing areas, and other

Ex 19 pg 4

related activities. The construction of the proposed public access footpath through Eagle Canyon Creek and the resulting increase in human activity in the immediate vicinity of habitat of California red-legged frogs are likely to result in the take of California red-legged frogs.

Our letter to the County of Santa Barbara provided information regarding the prohibitions against take contained in section 9 of the Act. Because the operation of the golf course and the use of the proposed footpath would likely cause take of California red-legged frogs, we strongly recommend that the project proponent apply to the Service for an incidental take permit, pursuant to section 10(a)(1)(B) of the Act.

We hope that this information is useful to you. If you have further questions, please contact Bridget Fahey of my staff at (805) 644-1766.

Sincerely,

Diane K. Noda

Diane K. Noda
Field Supervisor

March

STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, Governor

CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST AREA
89 SOUTH CALIFORNIA ST., SUITE 200
VENTURA, CA 93001
(805) 641-0142

March 11, 1999

Diane K. Noda
Field Supervisor
U.S. Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, CA 93003

Dear Ms Noda:

RE: Proposed Dos Pueblos Golf Course, Santa Barbara County, California

We recently received a copy of your letter dated February 25, 1999 to the County of Santa Barbara regarding presence of California Red-legged *frog (Rana aurora drytonii)* on the project site at the mouth of Eagle Canyon Creek. Your letter indicated that the U.S. Fish and Wildlife Service had been informed that the species occurs on the site, but did not indicate the source or this information, or whether the U.S. Fish and Wildlife Service has independently confirmed the presence of this species.

The Commission is currently considering several actions (including an amendment, two appeals, and a time extension) regarding this project. Information regarding the status of the Red-legged frog would be germane to the Commission deliberations. We are therefore requesting that the U.S. Fish and Wildlife Service provide the Commission with any information that they may have regarding this species on the Dos Pueblos Golf Course site, including any specific information which the U.S. Fish and Wildlife Service relied upon in determining the presence of the species on the site.

If possible, we would appreciate receiving this information before March 25th, the completion date for the staff reports for the Commission's April meeting.

Thank you for your assistance in this matter.

Sincerely,
Chuck Damm
Senior Deputy Director

Ex. 19 pg. 6

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

November 2, 1998

Michelle Gasperini, Energy Specialist
Planning and Development Department
County of Santa Barbara
1226 Anacapa Street
Santa Barbara, California 93101-2010

Subject: Wetland Mitigation Plan for Dos Pueblos Remediation Action Plan, Santa Barbara County, California

Dear Ms. Gasperini:

This letter acknowledges the request by Dudek and Associates, dated October 20, 1998, for the U.S. Fish and Wildlife Service's (Service) determination regarding the potential for success of the subject proposed wetland mitigation activities. The letter, written on behalf of ARCO Petroleum Company (ARCO), requested that the Service respond to the County of Santa Barbara (County). These comments were prepared in support of the County's responsibilities, under its Local Coastal Plan, to obtain from the Service a statement whether a given wetland mitigation project, as defined under section 30233 of the Coastal Act of 1976, "can be successfully carried out." The Dos Pueblos project site is located south of Highway 101, approximately five miles west of the community of Goleta.

ARCO proposes to restore 16,913 square feet of disturbed wetlands in Tomate Canyon to offset the effects of proposed excavation activities on 0.26 acre of created, disturbed wetlands. Mitigation activities are described in greater detail in the October 20, 1998 letter, which you also received from Dudek and Associates. In summary, the mitigation site would be seeded with locally collected native plant species that are appropriate for local habitat conditions and monitored for up to five years or longer until the vegetation success criteria have been met. Monitoring would also include the control of erosion and non-native plants within the mitigation site. To ensure funding exists to implement the proposed actions, the project proponent would post a performance bond in favor of the County. Based on the information provided in the October 20, 1998 letter, we believe the proposed wetland mitigation activities, if implemented as described, should be successful.

If you have any questions regarding this matter, please contact Kate Symonds of my staff at (805) 644-1766.

Sincerely,

Diane K. Noda

Diane K. Noda
Field Supervisor

Enclosure

CULBERTSON, ADAMS & ASSOCIATES
PLANNING CONSULTANTS

FAX TRANSMITTAL

DATE: May 14, 2002 TIME SENT: 2:23 PM

TO: Melanie Hale

FROM: M. Andriette Culbertson

SUBJECT: Dos Pueblos

FAX NUMBER: TO: (805) 641-1732
FROM: (949) 581-3698

TOTAL PAGES FAXED (Including cover page): 5

COMMENTS:

Following are comments to your email, provided by Whitt Hollis and a copy of an April 5, 1999 letter from Union Pacific Railroad Company.

If you have any questions, please call.

Cc: Whitt Hollis

85 ARGONAUT, SUITE 220 •ALISO VIEJO, CALIFORNIA 92656 • (949) 581-2888 • FAX (94

EXHIBIT NO. 20
APPLICATION NO.
A-4-STB-93154-LC
drainage comments from applicants 5/1

Makar Properties, LLC
P.O. Box 2521 / 1420 ½ Laguna
Santa Barbara, CA 93120-2521 / 93101
Phone: 805.899.8636
Fax: 805.899.8645

MakarPropertiesLLC

memorandum

TO: Andi Culbertson
FROM: R. W. Hollis, Jr.
SUBJECT: Responses to Inquires
DATE: May 14, 2002
CC: Steve Kaufmann & Sandy Weissbard

This morning you provided excerpts of an email from Melanie Hale. The following is responses to the questions posed within the portion forwarded.

1.) am wondering whether the middle tunnel under crossing revision (relocating westwardly) and placement of extensive riprap have been approved by CDFG - and do you have a current streambed alteration agreement for the overall project? If memory serves me, the old one has expired.

Response: The approved grading and Drainage Plans were reviewed by the California Department of Fish & Game in association with their issuance of Agreement Regarding Proposed Stream or Lake Alteration, Notification No. 5-474-98, Dated December 28, 1998. This Agreement presently expires on June 1, 2002. An extension has been requested.

2. I do not recall seeing this riprap, which appears to be associated with the new amendments? I received to day a full set of grading plans, but would appreciate it (I think I asked for this previously, so please excuse me if I'm repeating myself here) if the placement of riprap could be quantified (length, width, amount and size of riprap, purpose of the revetment, etc.), and explained. What is the purpose of this structure, and how does it affect the hydrology of the drainage (Drainage 4?)? Also, the riprap appears to be placed within the railroad right-of-way. Does the applicant have written approval from Union Pacific to place these structures?

Response: The middle (or eastern) tunnel was slightly realigned from the original proposed to conform better to the existing terrain. By re-aligning the angle from the originally proposed 90-degree (in relationship to the railroad tracks) to the present

Ex. 20 pg 2

angle, less grading would be required on both sides of the railroad.

The riprap has been a part of the Grading and Drainage plans since 1998.

The riprap associated with the eastern tunnel is depicted on sheets G13, G15 and G16. The riprap consists of check dams and bank protection.

On Sheet G13 Note 12 discusses the 5 Check Dams shown on this sheet and sheet G15. The note refers to Detail "D" on sheet G24. This Detail consists of a plan view and a cross-section. Each check dam will be 4' high, 2-1/2' thick. The width will vary slightly between dam to dam. Each is designed to be constructed using 5 cubic yards of non-grouted 1/4th ton minimum rocks.

The check dams are required to stop erosion that has occurred. The dams are designed to slow down water and caption sediment, thus preventing sediments to enter drainage 4 north.

The bank protection, depicted on sheets G13 and G15, is subject to note 11. This note refers to Detail "E" on sheet G24. This detail shows the bank protection. By reviewing both Detail "E" and sheets G13 and G15, the length of this structure is approximately 400'. It will be 18" thick and extend approximately 4' up the slope. The bank protection will be constructed using approximately 133 cubic yards of non-grouted 1/4th ton minimum rocks.

The bank protection structure will eliminate bank erosion and prevent sediment entering into drainage 4 north.

Both the check dams and bank protection will be constructed by dumping the rock from dump trucks and final placement of the rock by a backhoe or similar equipment. Small amounts of dirt will be removed in some spots prior to the placement of the rocks.

The April 5, 1999 written approval of the Grading and Drainage Plans by Union Pacific Railroad is attached.

EX 20 PS-3

UNION PACIFIC RAILROAD COMPANY
ENGINEERING OFFICE

JAMES H. SMITH
Manager Industry & Public Projects

Western Region Headquarters
10031 Foothills Boulevard
Roseville, California 95747
(916) 789-6362

April 5, 1999

Brett Foster
Project Engineer, P.E.
Penfield & Smith
P.O. Box 98
Santa Barbara, CA 93102

SUBJECT: Dos Pueblos Golf Links, Proposed Tunnels, Santa Barbara County
M.P. E-352.65, Santa Barbara Sub

Dear Mr. Foster:

Reference is made to your letter dated October 7, 1998 transmitting Grading and Drainage Plans, Railroad Cross Sections, Tunnel Calculations, Soils Report and Drainage Report for Railroad review. The plans have been reviewed by the Railroad and are approved with the following comments.

1. The plans do not indicate the 8' chain link fence that was requested in our 4/29/98 comments. All of the Railroad's Right-of-Way along the golf course shall be fenced to keep trespassers off of Railroad property.

2. Should the Railroad add an additional track, the Dos Pueblos Golf Links will be responsible for any modifications to the tunnels at their expense.

3. Dos Pueblos Golf Links will be responsible for all maintenance of the tunnels. If the Railroad should need to make any emergency repairs to these tunnels the applicant shall be responsible for these costs.

4. The project must comply with the attached plans. Any changes from these plans shall be approved by the Railroad.

5. Installation and construction procedures of the contractor shall be approved by the Railroad.

EC 20154

The next step to moving this project along will be for the Railroad and Dos Pueblos GolfLinks to enter into an agreement allowing for the construction and use of the tunnels. I will need three sets of property description and plat drawing for the area of Railroad property where the tunnels will be constructed. Send these to my attention and I will proceed with having an agreement prepared. If I can be of any assistance please do not hesitate to contact me.

Very truly yours

EX. 2035

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October 16, 2001

REFER TO FILE NUMBER
030868-0008

VIA OVERNIGHT DELIVERY

Ms. Bridget Fahey
United States Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, California 93003-7726

Re: Dos Pueblos Golf Links Habitat Conservation Plan

Dear Bridget:

As you know, this firm represents CPH Dos Pueblos Associates LLC ("CPH"), one of the applicants for a permit under Section 10(a) of the Federal Endangered Species Act ("FESA") in conjunction with the Dos Pueblos Golf Links Habitat Conservation Plan ("HCP"). CPH appreciates the opportunity to review the public comments on the draft HCP and the associated Environmental Assessment ("EA") and Implementation Agreement ("IA"). In order to assist the U.S. Fish and Wildlife Service ("Service") in its consideration of the public comments we transmit the enclosed Response to Comments prepared by the scientific and planning experts who prepared the HCP.

The Dos Pueblos Golf Links Project ("Project") consists of the abandonment of an existing oil field and gas production, storage and processing facilities, cleanup of the site, and construction of public golf course facilities and associated public access. The Project was approved by the County of Santa Barbara in 1993. In 1994, the Project was approved by the California Coastal Commission, relying on the County Environmental Impact Report ("EIR"). The Coastal Commission approval was upheld by the California Court of Appeal. (Surfrider v. Coastal Commission (2nd Dist., 1997).)

Some public commentators have suggested that the Service should prepare an Environmental Impact Statement ("EIS") under the provisions of the National Environmental Policy Act ("NEPA"), rather than relying on the EA which the Service has pre for public comment. In part, these comments may result from a misperceptior between NEPA and the parallel environmental reporting statute in California.

213592_1.DOC

EXHIBIT NO. 21
APPLICATION NO. A-4-STB-93-154-A1
Applicants' attorney letter to USFWS of 10/16/01 w/attached "responses to public comments" submitted to USFWS

state impact reporting statutes, while generally similar, set different standards for impact significance. Conclusions under state law do not compel similar conclusions under NEPA.

Under the California Environmental Quality Act ("CEQA") state and local agencies prepare an EIR anytime the agency is presented with substantial evidence supporting a fair argument that the project will have a significant environmental effect. (Cal. Pub. Resources Code, § 21080, subd. (d); CEQA Guidelines § 15064(f)(1).) Under NEPA, an agency is to prepare an EIS for all major Federal actions significantly affecting the quality of the human environment. (42 U.S.C. § 4332(2)(C).) As a statutory matter, therefore, the threshold level for preparing an EIR is lower than that for preparing an EIS. Evaluating the same project under different statutory requirements, the Service is not required to prepare an EIS even if the – potential impacts of the project require a state agency to prepare an EIR. (See, Friends of Endangered Species, Inc. v. Jantzen, 760 F.2d 976, 986 (9th Cir. 1985) [upholding the Service's use of an EA to approve an HCP even though an EIR was required under state law].)

Similarly, a CEQA conclusion that a project will result in significant effects does not compel the same conclusion under NEPA. CEQA provides that a "significant" effect is narrowly defined to mean a substantial adverse change in the physical conditions within the area affected by the project. (CEQA Guidelines 15382.) The NEPA regulations promulgated by the Council on Environmental Quality by contrast, have a broader definition of "significance," which encompasses considerations of context and intensity. (40 C.F.R. 1508.27.) Due to these differences in the definition of a significant effect, the Service may conclude that even a substantial adverse change does not "significantly affect the human environment" and require an EIS. Therefore, the identification of potentially significant effects in the Dos Pueblos project EIR does not compel the Service to make similar conclusions in deciding whether to prepare an EA/FONSI or an EIS in conjunction with the Dos Pueblos HCP. It is also important to recognize that for most of the potentially significant effects identified in the EIR, the EIR also identified mitigation measures to reduce those effects to a less than significant level. Those mitigation measures were adopted by the County of Santa Barbara in approving the Dos Pueblos project, and have been incorporated into the description of the Project which is now the subject of the HCP and EA.

It is important to recognize that the EA discussion, including the information incorporated by reference from the EIR, goes beyond the minimum requirements for evaluation of an HCP. The focus of the Service's NEPA review is on the HCP, not on the development of the site. (Friends of Endangered Species, Inc. v. Jantzen (N.D.Cal. 1984) 596 F.Supp. 518, 524, affd, 760 F.2d 976, 986 (9th Cir. 1985).) Consistent with that focus, the Service's guidance on NEPA compliance for HCPs directs that the majority of HCPs be evaluated using an EA. (HCP Handbook, 5-3.) The recent case involving the Natomas HCP, where the court determined that use of an EA was inappropriate, involved a long term countywide plan where specific HCP impacts could not be identified. In contrast, the Dos Pueblos HCP covers a limited geographic area and is expected to have very limited effects on listed species. As a result, while the

Natomas HCP may have been the unusual case where evaluation of an HCP's effects requires and EIS, the use of an EA/FONSI for Dos Pueblos HCP is consistent with NEPA cases and the Service's adopted guidance.

The public comments on the HCP raise a number of issues about the potential impacts on listed species and the design, implementation, and effectiveness of the mitigation measures set forth in the HCP. These issues are addressed in the enclosed Response to Comments. As the public comments point out, NEPA requires that environmental impact statements be prepared for proposals involving federal actions "significantly affecting the quality of the human environment." (42 U.S.C. § 1332(2)(C).) Although an EIS is appropriate where there are substantial questions about whether a project may have significant effects on the quality of the human environment, the mere presence of differing scientific opinions does not require an EIS. Here, the Service's scientific view is that the EA's analysis of impacts, including the protective measures proposed as part of the development and the mitigation required under the HCP, supports the conclusion that there will be no significant effects. In support of the Service's own biological experts, the enclosed Response to Comments includes information from expert biologists Sherri Miller, Rosemary Thompson, John Bulger and Jeff Froke. CVs for Rosemary Thompson and Sherri Miller are enclosed herein. Where the Service concludes that potential effects will not be significant, such a determination is entitled to great deference and will not be overturned unless it is found to be arbitrary and capricious. (Greenpeace Action v. Franklin (9th Cir. 1992) 14 F.3d 1324.)

In summary, the HCP and EA properly evaluate potential take of listed species and other impacts associated with the HCP. Although some of the identified impacts are potentially significant, the HCP provides mitigation measures to address effects on listed species (as well as on a number of unlisted species with similar habitat requirements). Additionally, the Project already includes a wide variety of mitigation measures developed through the local and state permitting processes at the County of Santa Barbara and the California Coastal Commission. Use of an EA and a Finding of No Significant Impact is appropriate where potentially significant impacts can be mitigated by specific remedial measures. (Surfrider Foundation v. Dalton, (S.D. Calif., 1998) 989 F.Supp. 1309).

If you have any questions regarding this matter, please do not hesitate to contact me.

Very truly yours,

Adam H. Relin
of NOSSAMAN, GUTHNER, KNOX & ELLIOTT, LLP

AHR/MWS/skd/jn
Enclosures (3)

cc: Anthony R. Brown
Ben Harrison
Kerry O'Hara
Clark Wardle
Whitt Hollis
Andi Culbertson
Sherri Miller
Steve Kaufman

EX. 21 PG 4

Dos Pueblos Golf Links Habitat Conservation Plan
Responses to Public Comments

1. Four commenters are concerned that the water storage lake and irrigated fairways may attract more California red-legged frogs onto the golf course (attractive nuisance).

As referenced in Section 4 of the HCP, research data from the U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division indicate that adult California red-legged frogs travel, on average, approximately 25 meters (82 feet) from a breeding pond. During the wet season, 50 percent of the tagged frogs never moved more than 80 feet from water and 90 percent never moved more than 200 feet from water (Bulger 1999). There is no scientific basis for the conclusion that during the wet season California red-legged frogs would use managed turf in preference to other vegetation types. Data indicate that during the dry season frogs would be closely tied to the lagoon in Eagle Canyon, moving into upland areas only if there is a rare summer rain (Bulger 1999). Accordingly, in the absence of any recent precipitation, California red-legged frogs are not expected to wander from the lagoon. There is no scientific basis to suggest that during the dry season, when the local environs surrounding the lagoon are dry and the nearest watered playing areas to the lagoon are greater than 250 feet from the par-three course, California red-legged frogs in the lagoon would sense that areas greater than 250 feet away are periodically moistened or sense the water storage lake. However, if California red-legged frogs were to use these watered areas, they would almost certainly be concealed beneath shrubs during the day when golf course activities are occurring, and therefore would not be susceptible to incidental take due to activities on the course. Therefore, given the suitable scrub habitat extending continuously upstream and the coastal sage scrub that runs along the top of Eagle Canyon, the Service concludes that the 250-foot vegetated buffer separating Eagle Canyon from the proposed golf course and water storage lake will adequately protect the population of California red-legged frogs.

2. Several commenters believe that the habitat enhancement success is not certain.

As stated in the HCP (Section 7), CPH will create 1.15 acres of southern willow scrub in several intermittent drainages onsite, including Tomate Canyon. In addition, 0.15 acre of riparian scrub and 0.12 acre of Venturan coastal sage scrub will be created in Eagle Canyon (Section 7 of the HCP). The creation, installation, monitoring and success criteria are described in the Biological Enhancement Landscape Plan (BELP; Appendix A of the HCP). The monitoring and success criteria and adaptive management measures are also described in Section 8 of the HCP. The applicant is obligated to meet the success criteria in each year of monitoring; if the success criteria are not met in any given year, additional treatments (*i.e.*, hydroseeding, planting, etc.) will be conducted. CPH has assured funding for the construction, installation, maintenance and monitoring for the habitat creation and enhancement. Conservation easements will preserve in perpetuity 0.83 acre in the vernal pool area, 3.03 acres in several intermittent drainages, including Tomate Canyon (north of the railroad), 1.21 acres in Drainage 4 North, and 2.46 acres in Eagle Canyon south of the rail road. Prior to initiation of the RAP or any construction on the golf course, the conservation easements, designated easement holder, management plan and endowment for protection and management in perpetuity must be approved in writing by the Service and recorded.

Ex 21
1355

Provided as attachment to Nossaman et al 10/16/01 letter (prepared by applicants [illegible])

Endangered species habitat restoration of the kind to be implemented here has been successfully accomplished by Dudek & Associates, Inc., the applicant's consultant, throughout Southern California. While restoration projects are often keyed to a single endangered species, successful restoration projects focus on recreating functioning ecosystems that support species diversity. Habitat restoration for endangered species requires specific and detailed knowledge of the species' biology and habitat preferences. However, creating these habitats requires specific and detailed knowledge of vegetation community ecology and individual plant species biology. Recent restoration practice has started to focus not only on the core habitat of endangered species, but also associated vegetation communities. For example, least Bell's vireo lives most of its reproductive life in wetland vegetation, but is known to forage in adjacent upland areas. Similarly, California gnatcatcher relies mainly on the resources provided by coastal sage scrub vegetation, but benefits from foraging in adjacent wetlands late in the year when summer drought has reduced those resources found in upland habitat. These associated vegetation types often form significant habitat buffers around the core restoration area that is intended to support endangered species.

Least Bell's vireo habitat has been successfully created in San Diego County in areas previously dominated by ruderal species such as giant reed (*Arundo donax*). The success of these projects is dependent upon establishment of dense native wetlands vegetation that achieves a vertical structure that is known to be used by least Bell's vireo. Creating suitable wetlands vegetation that is self-sustaining requires the creation of appropriate hydrology across that restoration area. Once this and other environmental factors such as soil, plant introduction, and exotic plant control have been appropriately handled, the habitat develops according to the schedule of nature. Projects like the Tijuana River Emergency Channel Project (11 acres) and Los Peñasquitos Lagoon Riparian Restoration Project have successfully restored vireo habitat and currently support nesting pairs of least Bell's vireo. For Los Peñasquitos Lagoon, this is the first recorded sighting of least Bell's vireo in the area and hopefully evidence of species recovery within the region.

Unlike the migratory least Bell's vireo, California gnatcatcher is a year round resident of coastal sage scrub. Upland habitats present a different challenge to habitat restorationists. This is a habitat that both requires water to become established and then shuns it. Recognition of the plant adaptations to Southern California's prolonged summer season is key to establishing the preferred habitat of California gnatcatchers. Gnatcatcher habitat has been successfully restored on the Palos Verdes Peninsula at the Ocean Trails Golf Course. Of the 90+ acres of habitat restoration in progress, there are 20 acres of habitat restoration occurring within the golf course boundaries. The gnatcatcher population has steadily increased over the past three years from a pre-construction population of three breeding pairs to 10 breeding pairs in 2000. Most of these birds are successfully utilizing biological resources that resulted from the habitat restoration efforts of Ocean Trails. Survey results in the 2001 breeding season have documented nesting and foraging activity in habitat located in the golf course habitat areas.

3. One commenter states that implementing the ATMIPM is not adequate to render chemical use less than significant.

As stated in the HCP (Section 1, Objective B2; Section 3), through implementation of the final ATMIPM and extensive monitoring and testing, CPH will maintain no detectable input of

chemicals (fertilizers, herbicides and pesticides) to waters and sediments of Eagle Canyon, Tomate Canyon, and Drainage 4 North. Baseline data for chemicals in surface water and sediments will be obtained prior to construction (Section 3 of the HCP). As described in the HCP (Section 3), chemical applications will cease and application rates and methods will be changed to prevent future exceedance of background levels in accordance with the adaptive management measures described in Section 8.1.3 of the HCP, if surface water or sediment testing reveal that levels of nitrites, nitrates and phosphates are greater than EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts per million (ppm), if pH levels are less than 6.0 or greater than 9.0 (when water entering the property from the north is within acceptable limits for these parameters); or if any amount of any chemical (and additives such as surfactants, carrier oils or spreading agents) used within buffer areas (compared with chemical levels in the water entering the property from the north) is detected. In addition to monitoring for chemical input in waters and sediments, a number of avoidance and minimization measures have been incorporated into the project to reduce the possibility of exposing California red-legged frogs to chemicals (Section 6 of the HCP). Chemical application restrictions have been incorporated into the HCP and ATMIPM with regard to rainfall; morning and evening dew; wind conditions; and proximity to buffer zones, native areas, revegetation areas and drainage areas. Therefore, the Service determines that the ATMIPM is adequate to render chemical use less than significant.

4. Two commenters state that zoning is not justification for not selecting an alternative site because the zoning at other locations could have been changed.

Conversion of zoning was not considered a reason for any alternative analysis. Section 2.2.2 of the EA discusses two alternative sites. The Naples site was found to have similar biological impacts. The Patterson site, known as the "South Patterson Agricultural Area" (SPAA), was found to be inappropriate due its current viable agriculture operations and conversion to a golf course would be, and has been, found to violate County of Santa Barbara policies. On page 9-15 of the ARCO Dos Pueblos Golf Links Final EIR (from the Alternative Sites discussion on SPAA) it states "The project site (SPAA) contains soils which are considered to be agriculturally prime (Goleta Loam) and other non-prime soils. Portions of the site have either been or are currently in agricultural production. Based on these factors, conversion of the site from agriculture to a non-agricultural base has the potential to result in an unavoidable significant adverse agricultural impact."

In order to protect the agricultural lands of the SPAA, the County created numerous policies, including the following:

> Policy LUA-GV-1: Land designated for agriculture within the urban boundary (SPAA) is designated for agriculture and lies within the urban boundary) shall be preserved for agricultural use, unless the County makes findings that the land is no longer appropriate for agriculture or there is an overriding public need for conversion to other uses for which there is no other land available in the Goleta rural area. (editorial comments added)
>
> Action LUA-GV-1.6: The parcels known as the South Patterson Agricultural Area, south of Hollister Avenue and west of Patterson Avenue (Figure 25)

shall have a land use designation of A-I for the life of this Plan or for ten years from the adoption of this Plan, whichever occurs first. At that time, the County shall review this site to determine if the agricultural designation is still appropriate. If not, the County should consider the submittal of a Specific Plan for the eventual development of these parcels. This action shall not preclude the identification of this site as a Transfer of Development Rights receiver site as part of the County's TDR study.

Policy LUA-GV-4: In consideration of conversion [of] any agricultural land within the urban boundary to urban uses, (SPAA lies within the urban boundary) the County shall first consider small, more isolated parcels with greater urban/agricultural conflicts prior to larger blocks of agricultural lands. (editorial comments added)

5. Three commenters are concerned that construction monitors and maintenance operators will not be able to see (and thus avoid) California red-legged frogs.

As described in Sections 6 and 8 of the HCP, the Service-approved biologist will be responsible for training construction monitors and maintenance operators. These monitors and golf course personnel, given appropriate levels of obligatory training, wildlife "sensitization," and experience can and will learn to recognize and detect California red-legged frogs that may traverse construction or turf areas.

6. Several commenters believe that surveys for the California red-legged frog and tidewater goby were not conducted according to Service protocol.

California red-legged frog: The surveys were conducted in accordance with the Service's 1997 protocol (the Service's current protocol; USFWS. 18 February 1997. Guidance on Site Assessment and Field Surveys for California Red-legged Frogs). This protocol is designed to determine presence/absence and is not designed to estimate abundance or migration patterns. The protocol recommends that surveys be conducted between 1 May and 1 November (to avoid disturbance to breeding individuals), but surveys outside this window are also valid. California red-legged frogs are present in aquatic habitats all year, and careful survey techniques that do not disrupt breeding activity or damage egg masses in the water allow determination of presence/absence between 1 November and 1 May.

Tidewater goby: The Service has no published protocol for tidewater goby surveys. The surveys were conducted according to a plan prepared in accordance with a Section 10(a)(1)(A) permit for tidewater gobies, and this plan was approved by the Service prior to implementation. The approved plan included visual searches for tidewater gobies from the banks with collection of any seen with a dip net for positive identification followed by release of the captured individuals. If no fish were found in the visual search, seining (using a 10-foot seine with 1/8-inch mesh) was to be used to sample no more than 20% of the available habitat (in accordance with permit restriction). Sampling was to stop as soon as any tidewater gobies were captured. If seining failed to locate any tidewater gobies, unbaited minnow traps were to be set over night. Several fish were observed

shall have a land use designation of A-I for the life of this Plan or for ten years from the adoption of this Plan, whichever occurs first. At that time, the County shall review this site to determine if the agricultural designation is still appropriate. If not, the County should consider the submittal of a Specific Plan for the eventual development of these parcels. This action shall not preclude the identification of this site as a Transfer of Development Rights receiver site as part of the County's TDR study.

Policy LUA-GV-4: In consideration of conversion [of] any agricultural land within the urban boundary to urban uses, (SPAA lies within the urban boundary) the County shall first consider small, more isolated parcels with greater urban/agricultural conflicts prior to larger blocks of agricultural lands. (editorial comments added)

15. One commenter stated that pets should not be restricted from public access trails.

5. Three commenters are concerned that construction monitors and maintenance operators will not be able to see (and thus avoid) California red-legged frogs. P requires that no dogs be allowed on the vertical access trails and the beach to protect the harbor seal. The Service feels that it is necessary to As described in Sections 6 and 8 of the HCP, the Service-approved biologist will be responsible for training construction monitors and maintenance operators. These monitors and golf course personnel, given appropriate levels of obligatory training, wildlife "sensitization," and experience can and will learn to recognize and detect California red-legged frogs that may traverse construction or turf areas. are of the opinion that monitors will not be able to assess the entire property during construction activities.

6. Several commenters believe that surveys for the California red-legged frog and tidewater goby were not conducted according to Service protocol. of the proposed golf links project. *Figure 4* depicts the project site by construction area section. The construction schedule is included in Appendix C. California red-legged frog: The surveys were conducted in accordance with the Service's 1997 protocol (the Service's current protocol; USFWS. 18 February 1997. Guidance on Site Assessment and Field Surveys for California Red-legged Frogs). This protocol is designed to determine presence/absence and is not designed to estimate abundance or migration patterns. The protocol recommends that surveys be conducted between 1 May and 1 November (to avoid disturbance to breeding individuals), but surveys outside this window are also valid. California red-legged frogs are present in aquatic habitats all year, and careful survey techniques that do not disrupt breeding activity or damage egg masses in the water allow determination of presence/absence between 1 November and 1 May.

There is no evidence that the California red-legged frog uses animal burrows or ground holes. T Tidewater goby: The Service has no published protocol for tidewater goby surveys. The surveys were conducted according to a plan prepared in accordance with a Section 10(a)(1)(A) permit for tidewater gobies, and this plan was approved by the Service prior to implementation. The approved plan included visual searches for tidewater gobies from the banks with collection of any seen with a dip net for positive identification followed by release of the captured individuals. If no fish were found in the visual search, seining (using a 10-foot seine with 1/8-inch mesh) was to be used to sample no more than 20% of the available habitat (in accordance with permit restriction). Sampling was to stop as soon as any tidewater gobies were captured. If seining failed to locate any tidewater gobies, unbaited minnow traps were to be set over night. Several fish were observed

darting between cobbles, and dip netting did not capture any so the seine was used (Thompson, R. Letter to Carl Benz at USFWS dated 8 May 2000 regarding Tidewater Goby Permit TE-815144-2 Sampling). Five tidewater goby individuals were captured and held in a small plastic bag for identification before release at the site of capture.

7. One commenter is concerned that the relocation of California red-legged frogs by the monitors may not be successful.

As described in Section 6 of the HCP, California red-legged frogs found in the work area during construction are to be relocated to Eagle Canyon Creek, from where they likely came. This relocation will prevent mortality from construction equipment and activities. The habitat in Eagle Canyon Creek is suitable as the California red-legged frog has been observed there. Careful handling of the animals will minimize the potential for damage and stress that could result in mortality. Because the frogs will be returned to the habitat from which they likely came and not placed in a new habitat that could be inhospitable, the Service believes that the relocation will be successful.

8. Several commenters believed that California Species of Concern (CSC) were not adequately addressed by the EA, including the steelhead, ringtail, western pond turtle, coast horned lizard, black legless lizard, silvery legless lizard, coast patch-nosed snake, coast range newt, two-striped garter snake and western spadefoot toad.

An HCP only covers federally-listed species that could be "taken" by a project as well as any species considered likely to become listed during the life of the project. The EA addresses the federal action of issuing the 10(a)(1)(B) permit for the project (including implementation of the HCP). Species of special concern were addressed in the project EIR, which is incorporated in the EA.

Nevertheless, the Service has responded by species below. The following information was taken from the HCP, EA, EIR, *Amphibian and Reptile Species of Special Concern in California* (Jennings and Hayes 1994), from the California Department of Fish and Game web page, and personal knowledge of Service staff.

Steelhead. As stated in the HCP (Section 4), and the EA (Section 3), the steelhead, federally-listed as endangered and a state-designated Species of Special Concern (SSC) are not known to occur in Eagle Canyon Creek and the culvert under U.S. Highway may pose a barrier to steelhead migration upstream under some flow conditions. However, this species could potentially use Eagle Canyon Creek in wet years. No spawning habitat is present adjacent to the project although the creek in the project area could provide passage for migrating adults and juveniles. Steelhead spawning habitat is generally characterized by clean gravels 0.5 to 3 inches in diameter that are not compacted and have low amounts of sand or silt. These gravels are usually located in riffles or the tails of pools. Coastal lagoons are not spawning habitat but can be used by juveniles as they prepare to enter the ocean. Because Eagle Canyon Creek would not be altered by construction activities and because increased public access to the beach is not expected to affect steelhead migration to or from the creek (if present), it was determined that steelhead would not be taken by

implementation of the RAP nor construction or operation of the proposed golf links project (Section 4 of the HCP).

Ringtail. As stated in the HCP (Section 4) and the EIR (Section 5.1), although not recently observed onsite, if present, ringtails would be expected to use the riparian habitats and could be resident in the more densely vegetated portions of Eagle Canyon. This nocturnal, mobile species, if present, would not be adversely impacted by implementation of the RAP or the proposed golf course project due to the preservation and screening of the riparian drainages onsite and the diurnal nature of activities associated with implementation of the RAP and the golf course. Regarding chemical uses onsite, particularly rodenticides, Section 3 of the HCP requires that traps be used prior to rodenticides to eradicate rodents onsite. In the event that trapping efforts fail, rodenticides included in the Final ATMIPM will be used on the golf course on an as-needed basis. Following the uses of rodenticides, the golf course will be inspected daily for five days and any rodent carcasses found will be placed immediately into sealed trash containers. These measures will avoid and minimize to the ringtail (Section 4 of the HCP).

Southwestern Pond Turtle. Southwestern pond turtles use slow water or ponded habitats with basking sites. The only potential habitat within the project site is in Eagle Canyon (Section 4 of the HCP). The small size of the creek and lack of pools, other than the lagoon, limit the suitability of the creek for this species. None were observed in any of the field surveys and no permanent residents are anticipated. The other drainages on the property provide no suitable habitat for southwestern pond turtles due to small size and short duration of water (ephemeral waters).

California Legless Lizard. This species has not been officially split into black and silvery subspecies according to the California Department of Fish and Game. Legless lizards are found primarily in areas with loose sandy soils and sparse shrub or tree cover. Appropriate soil temperature and moisture are also important. The only suitable habitat for this species is under the oak trees within Eagle Canyon that is outside the areas proposed for golf course development.

Coast Horned Lizard. Preferred habitat for this species is not present on the project site, and the species is generally not found this close to the coast. Past disturbances at the site and isolation due to U.S. Highway 101 and coastal streams also limit the potential for occurrence at the project site. None were observed during field surveys and none are expected at the site.

Coast Range Newt. The coast range newt breeds in ponds, reservoirs, and slow moving streams. It is found in many of the streams draining the south side of the Santa Ynez Mountains. Historically, its distribution often reached the mouth of coastal streams, but its current distribution is generally upstream away from human development. Eagle Canyon Creek has little suitable breeding habitat on the project site due to the lack of pools and the shallow, flowing water. This species is unlikely to occur on the project site.

Western Spadefoot. According to the range map for this species, it is not found along the south coast of Santa Barbara County and, thus, would not occur at the project site.

Coast Patch-nosed Snake. The known range of this species in Santa Barbara County

is north of the Santa Ynez Mountains. Consequently, it is not expected to occur at the project site.

Two-striped Garter Snake. The two-striped garter snake is found in or near water with adjacent dense vegetation. It feeds on fish and amphibians. During winter, adults may use grassland or coastal sage scrub habitats. Eagle Canyon is the only potential habitat on the project site, and the range map for this species indicates that it occurs west of the project site.

9. Several commenters are concerned that the surveys conducted were not adequate to assess California red-legged frog and tidewater goby population size or California red-legged migration patterns over the project site.

Survey protocols are not intended to ascertain population size and migration patterns; the objective is to determine presence versus absence (please see response to comment 6). Because the California red-legged frog and tidewater goby are present onsite, numerous avoidance, minimization and mitigation measures were developed (see Sections 6 and 8 of the HCP) to reduce potential impacts to a level below significant, regardless of the population size of either species or the migration patterns of the California red-legged frog.

10. Several commenters state that silt fencing should be used during remediation and construction activities.

Properly installed and maintained silt fencing, placed between California red-legged frog habitat and the project construction can deter but not stop the frogs from entering the work area. One study has shown that the frogs can cross man-made barriers meant to keep them out (Rathbun, G. B., N. J. Scott, Jr., and T. G. Murphey. 1997. *Rana aurora draytonii* (California Red-legged Frog) Behavior. Herpetological Review 28(2):85-86). In any event, silt fencing will be placed onsite during construction as described in Section 2 of the HCP wherever water may potentially drain off construction areas as sheet flow. The Service determines that the monitoring of the remediation and construction activity areas as described in the HCP (Section 6) are appropriate to ensure that California red-legged frogs are avoided.

11. Several commenters inquired about the term "Service-approved biologist" and the minimum qualifications of this position.

The Service shall approve the appointed biologist prior to the assumption of duties as described in the HCP (Section 6). The Service shall approve the biologist based on that person's prior experience with the California red-legged frog and the tidewater goby.

12. Two commenters inquired how the remediation activities will improve habitat onsite.

The Service is uncertain as to whether "remediation," as used by the commenters, refers to implementation of the Remedial Action Plan (RAP) or implementation of the proposed mitigation measures. Implementation of the RAP will result in the removal of surficial soils contaminated with mercury and/or petroleum hydrocarbons. The contaminated soils will be replaced

with onsite clean soils. Therefore, implementation of the RAP represents an improvement of existing conditions onsite.

Implementation of the proposed mitigation measures, as described in Section 7 of the HCP, will improve tidewater goby habitat in Eagle Canyon and the California red-legged frog habitat throughout the proposed golf course site. The mitigation measures include the removal of non-native aquatic species, both plant and animal, and the removal of non-native plants within adjacent upland areas. Those areas where non-native plants are removed will be enhanced with native plant species. In addition, additional riparian areas will be created along drainages throughout the project site (Section 7 of the HCP). Please see the response to comment 2.

13. Several commenters noted that California red-legged frogs could migrate through the project site, resulting in contact with chemicals.

The Service agrees that California red-legged frogs could migrate through the project site. Therefore, as stated in response to comment 3, the HCP includes numerous restrictions on chemical uses onsite. Implementation of the ATMIPM will avoid and minimize the potential for California red-legged frogs to come into contact with chemicals to a level less than significant.

Available data show that a few pesticides are associated with proportionately large number of aquatic mortality incidents involving fish, reptiles and amphibians, and macroinvertebrates (EPA Ecological Incident Information System). Four chemicals are associated with 57 percent of reported aquatic mortalities: Azinphos-methyl, Chlorpyrifos (toxic to amphibians), Endosulfan, and Terbufos. None of these chemicals will be included in the final ATMIPM.

14. Two commenters stated that public access at Eagle Canyon should not be restricted.

As described in the HCP (Section 2), due to the presence of a harbor seal pupping site on the beach immediately east of Tomate Canyon, a Restricted Access Implementation Plan (RAIP; Appendix B of the HCP) was developed in coordination with, and approved by, the California Department of Fish and Game (CDFG) and the National Marine Fisheries Service (NMFS), for the proposed golf links project. This harbor seal haul-out area and pupping site is protected by the Federal Marine Mammal Protection Act.

The RAIP was established to comply with the Santa Barbara County Conditional Use Permit No. 91-CP-85 and California Coastal Commission Coastal Development Permit No. 4-STB-93-154. Both the County of Santa Barbara and the California Coastal Commission have both reviewed and approved the RAIP. According to the RAIP, beach access at the eastern vertical access trail at Eagle Canyon is prohibited during the seal pupping/breeding season (February 1 through May 31); a locking gate must be installed at the eastern vertical access trail. Access east along the beach from the western vertical access trail (west of Tomate Canyon) is prohibited and dogs are not allowed on the vertical access trails or on the beach.

Both the RAIP and the HCP require monitoring of the eastern vertical public access

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trail at Eagle Canyon. In accordance with the RAIP, if NMFS or CDFG determines that harbor seals are being detrimentally affected by uses of the vertical accessways, CPH must seek an emergency coastal development permit from the California Coastal Commission to further regulate the use of the vertical access trails onsite. In accordance with the HCP (Section 8), if monitoring reveals that the public using the eastern vertical access trail is leaving the trail or leaving the beach to enter Eagle Canyon, CPH must seek an emergency coastal development permit from the California Coastal Commission to close the eastern vertical access trail starting November 1 instead of February 1 of each year.

The Service has met with California Coastal Commission staff regarding vertical public access at Eagle Canyon and is satisfied that the restrictions on public access as proposed are necessary and effective for the protection of tidewater gobies and California red-legged frogs onsite.

15. One commenter stated that pets should not be restricted from public access trails.

As described in the response to comment 14, the RAIP requires that no dogs be allowed on the vertical access trails and the beach to protect the harbor seal. The Service feels that it is necessary to require that no dogs be allowed on the project site, including the lateral and vertical public access trails, in order to prevent take of tidewater gobies and California red-legged frogs onsite.

16. Two commenters are of the opinion that monitors will not be able to assess the entire property during construction activities.

Section 2.2 of the HCP describes the construction of the proposed golf links project. *Figure 4* depicts the project site by construction area section. The construction schedule is included in Appendix C of the HCP. As described in the construction schedule, the golf course construction will be implemented by construction area section, phased over two years. The Service feels that by constructing the golf course in phases, the monitors will be able to adequately assess those areas under construction for the presence of the California red-legged frog. The largest construction zone would occupy approximately 40 acres.

17. One commenter is concerned that any California red-legged frogs in ground holes would not be observable to monitors during construction activities.

There is no evidence that the California red-legged frog uses animal burrows or ground holes. The Service has consulted Dr. John Bulger regarding this issue. During Dr. Bulger's telemetry studies, more than 1,000 individual tracking records of frogs on land, he has never found a California red-legged frog using a burrow (personal communication, October 10, 2001).

18. One commenter states that a buffer of 300 feet is recommended for California red-legged frog critical habitat areas.

As referenced in Section 4 of the HCP, research data from the U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division indicate that adult California red-

legged frogs travel, on average, approximately 25 meters (82 feet) from a breeding pond (Bulger 1999). During the wet season, 50 percent of the tagged frogs never moved more than 80 feet from water and 90 percent never moved more than 200 feet from water. This paper, which is cited in the Service designation of critical habitat, recommends a 50- to 100-meter (150- to 300-foot) buffer, depending on the proposed project (Bulger 1999).

As stated in the response to comment 1, the Service concludes that the 250-foot vegetated buffer separating Eagle Canyon from the proposed golf course and water storage lake will adequately protect the population of California red-legged frogs. Please see comment 52 regarding the 250-foot buffer and Dr. Bulger's concurrence with the buffer.

19. One commenter is concerned that surface runoff from the par-3 course could adversely impact Eagle Canyon Creek water quality.

As stated in the HCP (Section 1, Objective B2; Section 3), through implementation of the final ATMIPM and extensive monitoring and testing, CPH will maintain no detectable input of chemicals (fertilizers, herbicides and pesticides) to waters and sediments of Eagle Canyon. Baseline data for chemicals in surface water and sediments will be obtained prior to construction (Section 3 of the HCP). As described in the HCP (Section 3), chemical applications will cease and application rates and methods will be changed to prevent future exceedance of background levels in accordance with the adaptive management measures described in Section 8.1.3 of the HCP, if surface water or sediment testing reveal that levels of nitrites, nitrates and phosphates are greater than EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts per million (ppm), if pH levels are less than 6.0 or greater than 9.0 (when water entering the property from the north is within acceptable limits for these parameters); or if any amount of any chemical (and additives such as surfactants, carrier oils or spreading agents) used within buffer areas (compared with chemical levels in the water entering the property from the north) is detected. In addition to monitoring for chemical input in waters and sediments, a number of avoidance and minimization measures have been incorporated into the project to reduce the possibility of exposing California red-legged frogs to chemicals (Section 6 of the HCP). Chemical application restrictions have been incorporated into the HCP and ATMIPM with regard to rainfall; morning and evening dew; wind conditions; and proximity to buffer zones, native areas, revegetation areas and drainage areas. Therefore, the Service concludes that the ATMIPM is adequate to render chemical use less than significant.

20. Several commenters believe that the elimination of the par-3 course would potentially reduce California red-legged frog take as this would leave a wider buffer of coastal sage scrub between Eagle Canyon and the 18-hole course.

Please see the response to comment 18. As referenced in Section 4 of the HCP, research data from the U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division indicate that adult California red-legged frogs travel, on average, approximately 25 meters (82 feet) from a breeding pond (Bulger 1999). During the wet season, 50 percent of the tagged frogs never moved more than 80 feet from water and 90 percent never moved more than 200 feet from water. If California red-legged frogs were to use these watered areas, they would almost certainly be concealed beneath shrubs during the day when golf course activities are occurring, and

therefore would not be susceptible to incidental take due to activities on the course. Therefore, the Service concludes that the 250-foot vegetated buffer separating Eagle Canyon from the proposed golf course and water storage lake will adequately protect the population of California red-legged frogs. Please see comment 52 regarding the 250-foot buffer and Dr. Bulger's concurrence with the buffer.

21. One commenter is concerned that mowing restrictions might not be observed, whereupon take could occur.

The Implementing Agreement obligates CPH to implement the mowing restrictions described in Section 6 of the HCP. The Service has no reason to believe that CPH will not observe these avoidance and minimization measures. As described in Sections 6 and 8 of the HCP, the Service-approved biologist will be responsible for training the maintenance operators. These golf course personnel, given appropriate levels of obligatory training, wildlife 'sensitization,' and experience can and will learn to recognize and detect California red-legged frogs that may traverse turf areas and will be able to avoid them. In addition, compliance with mowing restrictions will be monitored, enforced and reported.

22. One commenter believes that chemicals could build up in the water table and soil and subsequently migrate east to Eagle Canyon.

As a part of the acquisition of the permit from the County of Santa Barbara Environmental Health Services for the construction of the private wastewater system for the project, borings were taken to a depth of almost sixty-feet below the surface. No groundwater was encountered. Therefore, it is extremely remote, if not impossible, for the projects' proposed irrigation ever reaching the deep water table. Similarly, the proposed ATMIPM requires fertilizers to be applied through the irrigation system. The application rates would be only enough to be absorbed by the turf grasses and no nutrient overloading of the soils are expected.

23. One commenter inquired what triggers cessation of chemical use: detectable amount of chemicals or exceedance of EPA standards.

As described in the HCP (Section 3), chemical applications will cease and application rates and methods will be changed to prevent future exceedance of background levels in accordance with the adaptive management measures described in Section 8.1.3 of the HCP, if surface water or sediment testing reveal that levels of nitrites, nitrates and phosphates are greater than EPA standards for aquatic life, if dissolved oxygen levels are less than 5 parts per million (ppm), if pH levels are less than 6.0 or greater than 9.0 (when water entering the property from the north is within acceptable limits for these parameters); or if any amount of any chemical (and additives such as surfactants, carrier oils or spreading agents) used within buffer areas is detected (compared with chemical levels in the water entering the property from the north).

24. One commenter requested that information be provided regarding chemical applications, specific areas and potential impacts during remediation, construction and site preparation.

Please refer to Section 3 of the HCP and the draft ATMIPM (Appendix D of the HCP) regarding the specific types of chemical applications and specific areas during remediation, construction and site preparation. Section 3 of the HCP and the draft ATMIPM provide information regarding chemical uses onsite. Implementation of the RAP will require revegetation of the soil remediation areas. Construction of the golf course does not involve the use of chemicals. During site preparation and golf course maintenance, chemicals (herbicides, pesticides and fertilizers) will be used as described in Section 3 of the HCP. Regarding potential impacts due to chemical uses onsite, numerous restrictions on the chemicals that may be used onsite and the methods of applications, and extensive surface water and sediment testing have been incorporated into the HCP and ATMIPM in order to reduce the potential impacts to a level below significant (Section 4 of the EA).

25. One commenter inquired how take was estimated for the project alternatives.

Regarding the preferred alternative, Section 5.4 of the HCP addresses anticipated incidental take. The actual level of incidental take of California red-legged frogs will vary from year to year due to fluctuations in population size, movement patterns and reproduction, and will be influenced by the seasonal variations of distribution and abundance. The actual level of incidental take of tidewater gobies will also be affected by seasonal variation of population size based on reproductive success and storm flows washing out the berm at the mouth of Eagle Canyon. Due to the number of avoidance and minimization measures incorporated into the proposed soil remediation and golf course projects, the Service has determined that the potential anticipated take is low. In addition, if even one frog is taken in the form of injury or mortality due to implementation of the RAP or the proposed golf course project, the applicant, in association with the Service, will evaluate the cause of take, reevaluate implementation or operation measures and determine if adaptive management measures (Section 8 of the HCP) are required. Therefore, due to the anticipated variation in population sizes of the California red-legged frog and distribution of the tidewater goby and the California red-legged frog, the Service concludes that a numerical analysis of take is not appropriate.

Regarding the reduced take alternative (Section 11 of the HCP), please see the response to comment 18. The Service concludes that the 250-foot vegetated buffer separating Eagle Canyon from the proposed golf course and water storage lake will adequately protect the population of California red-legged frogs. Please see comment 52 regarding the 250-foot buffer and Dr. Bulger's concurrence with the buffer. Therefore, the Service determined that this alternative would have about the same potential for take of listed species as would the preferred alternative.

42. One commenter ask why the supplemental conservation and mitigation measures are not solely

Regarding the no action, no eastern vertical access and eastern vertical access within Eagle Canyon alternatives, the Service estimated the level of take based on the collective experience of the Service HCP staff and the level of illegal trespassing that occurs onsite.

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26. One commenter believes that the proposed equestrian use and tie-up area could impact water quality in Eagle Canyon.

Equestrian use of the lateral coastal access trail would not commence until the trails are extended to the east (down coast) and west (up coast). When such use would begin horses would be restricted to the trail. Only a small portion of the trail system is within Eagle Canyon. The horse tie up area will be constructed on a level portion of the site above Eagle Canyon and its perimeter will be bermed. The tie-up area will be construction on a sand (6 inches compacted) over gravel (10 inches) base, sloped away from Eagle Canyon Creek. All portions of the trail system will be maintained by the project applicant, including removal of wastes. The trail system will be open only during daylight (Section 2 of the HCP). Given the existence of California red-legged frog and tidewater goby populations on many cattle grazing operations, impacts to water quality or red legged frogs and tide water goby are not considered to be minimal.

27. One commenter states that the HCP and EA inadequately address potential impacts to the harbor seal and California brown pelican. Particularly, the commenter states concern over increased presence of people on the bluff and on the beach and golf balls landing on the beach, which could impact the harbor seal haul out and brown pelican roosting area.

These concerns have been fully addressed in the HCP (Section 4), EA and the FEIR (Section 5.1.2.2 c. 6, page 5.1-38). No direct loss of habitat will result from the construction or operation of the project. The golf course has been designed with set backs from the bluff. Golfers will not be able to view the harbor seal haul out or California brown pelican roost, nor will the harbor seals or roosting pelicans be able to see golfers, because of these proposed set backs and fencing. The design of the golf holes minimizes the chance of errant golf balls landing on the beach. The Restrictive Access Implementation Plan (RAIP) has been reviewed and approved by the County of Santa Barbara, California Fish & Game, California Coastal Commission and National Marine Fisheries Service and is attached as Appendix B of the HCP. The RAIP requirements of access restrictions annually during the harbor seal breeding/pupping season (February 1 to May 31) are fully addressed. Moreover, implementation of the RAIP will reduce the potential for disturbance of the pelicans as well.

28. One commenter notes that the National Seashore is considering the project site and that the current National Park Service Gaviota Coast Feasibility Study should be taken in to account.

Congress authorized the National Park Service in November 1999 to study the possibility of the Gaviota Coast being included into the National Park System. The EIS for this study is scheduled to be released in early 2002 and a report to Congress is expected to be delivered in November 2002. The potential for some, or all of the Gaviota Coast to become part of the National Park System in some capacity is speculative at best. The study will take into account the Dos Pueblos Golf Links since it was approved in 1993 and currently retains permits to construct on appeal before the California Coastal Commission.

29. One commenter states that the water storage lake should be covered.

Please see the response to comment 18. As referenced in Section 4 of the HCP, research data from the U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division indicate that adult California red-legged frogs travel, on average, approximately 25 meters (82 feet) from a breeding pond (Bulger 1999). During the wet season, 50 percent of the tagged frogs never moved more than 80 feet from water and 90 percent never moved more than 200 feet from water (Bulger 1999). Therefore, the Service concludes that the 250-foot vegetated buffer separating Eagle Canyon from the proposed golf course and water storage lake will adequately protect the population of California red-legged frogs. Please see comment 52 regarding the 250-foot buffer and Dr. Bulger's concurrence with the buffer.

However, due to the possibility that California red-legged frogs could use the water storage lake, a number of features have been included in the design of the water storage lake (Section 2 of the HCP), and a number of avoidance and minimization measures have been included in the proposed project (Section 6 of the HCP). These design features and measures include a concrete liner, aquatic weed control, a screened intake pipe and an exotic animal species removal program. These measures in particular will avoid take of California red-legged frog eggs.

30. One commenter objects to the "unwarranted" removal of California red-legged frog habitat.

Because the golf course will not result in the loss of California red-legged frog breeding habitat or act as a barrier to frog migration and dispersal, the Service does not agree that the proposed project would result in the removal of California red-legged frog habitat.

31. One commenter suggested that baseline water quality sampling should be conducted.

As stated in Section 3 of the HCP, surface water and sediment testing will be conducted prior to use of any chemicals onsite, and will be used as baseline data. These data will be provided to the Service prior to golf course construction. Sampling and testing will be conducted by a third-party designee and will be implemented by an EPA-approved laboratory in accordance with EPA-approved methodologies. Samples will be taken from the vernal pool; water storage lake; Eagle Canyon at the northern property line, north of the railroad and in the lagoon at the mouth of Eagle Canyon Creek; Tomate Canyon at the northern property line, north of the railroad and at the mouth of the creek; and Drainage 4 North at the northern property line and north of the railroad. The Service concludes that this level of baseline data is appropriate.

32. Two commenters expressed concern that the proposed golf links project would result in the introduction of exotic species onsite.

The Service acknowledges that the proposed project could attract exotic species onsite. The Service has therefore required that avoidance, minimization and mitigation measures be incorporated into the proposed project. As described in Section 7 of the HCP, surveys will be conducted annually for non-native plants in Eagle Canyon between the railroad and the ocean within the limits of the 2.46-acre conservation easement. Non-native plant species will be removed by hand

and the area will be revegetated with native species. In addition, annual surveys will be conducted for non-native aquatic animal species (*e.g.*, bullfrogs, crayfish, mosquitofish and snapping turtles), as described in Sections 6 and 7 of the HCP. These non-native animal species will be eradicated.

33. One commenter requested that bluff vegetation removal should be minimized at the vertical access locations (Tomate and Eagle canyons).

The Service agrees with this request and this avoidance measure has been incorporated into the HCP.

34. One commenter requested that erosion control measures be used at the proposed earthcut associated with the western vertical public access trail at Tomate Canyon.

The Service agrees with this request and this avoidance measure has been incorporated into the HCP.

35. Two commenters note that there is no take coverage for chemical use.

As stated in Section 3, the permit will not provide coverage for take due to chemical use onsite. The Service has worked with the applicants in order to ensure that "zero take" from chemical use will occur by ensuring that no detectable amounts of chemicals used onsite reach those areas known to be used by the California red-legged frog and tidewater goby or are believed to have a high potential for use by the California red-legged frog. Please see the response to comment 3.

36. One commenter inquired as to the consequences of take resulting from chemical use.

As stated in response to comment 35, the Service does not anticipate take due to chemical use onsite. The Service has worked with the applicants in order to ensure that "zero take" from chemical use will occur by ensuring that no detectable amounts of chemicals used onsite reach those areas known to be used by the California red-legged frog and tidewater goby or are believed to have a high potential for use by the California red-legged frog. Please see the response to comment 3.

37. One commenter recommends holding a public education meeting for frequent users of the public access trails.

The Service concurs with the recommendation and CPH has agreed to hold a public education meeting prior to the opening of the golf links project, regarding the sensitive species at risk from the public. This avoidance and minimization measure has been incorporated into the HCP.

38. One commenter recommends a 100-foot equipment refueling buffer at Eagle Canyon rather than the proposed 50-foot buffer.

The HCP has been revised to incorporate this change.

39. One commenter inquires about turbidity thresholds exceedence (*i.e.*, when would the next test be administered if the threshold is exceeded and who authorizes work to recommence).

Turbidity thresholds have been developed by the Regional Water Quality Control Board in conformance with Section 13241, Division 7 of the California Water Code. The applicable thresholds for this project are contained in the objectives for inland surface waters, enclosed bays, and estuaries. These objectives satisfy state and federal requirements to protect waters for the beneficial uses that include fish and wildlife habitat. When turbidity exceeds the threshold, turbidity will be measured again as soon as remedial measures are implemented to reduce suspended solids in runoff from the work area. Environmental monitors, in coordination with the resident engineer, will enforce the stop work order for the area causing the turbidity and determine when work can begin again (Sections 6 and 8 of the HCP).

40. One commenter suggested that the California red-legged frogs should be recovered prior to removal of bull frogs from the water storage lake.

Because the removal of bullfrogs will be by capture or killing individual frogs, the Service does not believe that removal of California red-legged frogs prior to this (if any are present) is advisable. The California red-legged frogs would have to be captured without harm, held, and either relocated or released back into the lake. This is a form of take and has the potential for damage or mortality of the California red-legged frogs. Therefore, the Service respectfully disagrees with the comment.

41. One commenter asks the ramifications of a negative California red-legged frog or tidewater goby survey.

As described in Section 8 of the HCP, the results of the annual California red-legged frog and tidewater goby surveys will be evaluated to determine if changes in abundance of tidewater gobies and California red-legged frogs have occurred and, if so, to determine if changed circumstances have occurred. In accordance with Section 9.1, Changed Circumstances, if additional conservation and mitigation measures are necessary to respond to changed circumstances and these additional measure are already included in the plan's operating conservation program, then CPH will implement those measures as specified in the plan. If additional mitigation and conservation measures are deemed necessary to respond to changed circumstances and these measures were not included in the plan's operating conservation program, the Service will not require additional measures without the consent of CPH, provided the HCP is being "properly implemented" (Section 9.1 of the HCP). CPH has ensured funding of anticipated changed circumstances (see *Table 5* of the HCP).

42. One commenter ask why the supplemental conservation and mitigation measures are not solely at the discretion of the Service.

The Service has adopted the Habitat Conservation Plan Assurances Rule (50 C.F.R. § 17.22), which governs the range of responses to unforeseen circumstances after a habitat

39. One commenter inquires about turbidity thresholds exceedence (*i.e.*, when would the next test be administered if the threshold is exceeded and who authorizes work to recommence).

Turbidity thresholds have been developed by the Regional Water Quality Control Board in conformance with Section 13241, Division 7 of the California Water Code. The applicable thresholds for this project are contained in the objectives for inland surface waters, enclosed bays, and estuaries. These objectives satisfy state and federal requirements to protect waters for the beneficial uses that include fish and wildlife habitat. When turbidity exceeds the threshold, turbidity will be measured again as soon as remedial measures are implemented to reduce suspended solids in runoff from the work area. Environmental monitors, in coordination with the resident engineer, will enforce the stop work order for the area causing the turbidity and determine when work can begin again (Sections 6 and 8 of the HCP).

40. One commenter suggested that the California red-legged frogs should be recovered prior to removal of bull frogs from the water storage lake, and revegetation requirements. Given the short duration of the remediation activities, and the avoidance and minimizat Because the removal of bullfrogs will be by capture or killing individual frogs, the Service does not believe that removal of California red-legged frogs prior to this (if any are present) is advisable. The California red-legged frogs would have to be captured without harm, held, and either relocated or released back into the lake. This is a form of take and has the potential for damage or mortality of the California red-legged frogs. Therefore, the Service respectfully disagrees with the comment.

41. One commenter asks the ramifications of a negative California red-legged frog or tidewater goby survey areas pr vents (50 C.F.R. § 17.3.) The HCP addresses changed circumstances in Section 9.1, and lists reasonably anticipated changed circumstances in Table 5. Table includes fire and listing of new As described in Section 8 of the HCP, the results of the annual California red-legged frog and tidewater goby surveys will be evaluated to determine if changes in abundance of tidewater gobies and California red-legged frogs have occurred and, if so, to determine if changed circumstances have occurred. In accordance with Section 9.1, Changed Circumstances, if additional conservation and mitigation measures are necessary to respond to changed circumstances and these additional measure are already included in the plan's operating conservation program, then CPH will implement those measures as specified in the plan. If additional mitigation and conservation measures are deemed necessary to respond to changed circumstances and these measures were not included in the plan's operating conservation program, the Service will not require additional measures without the consent of CPH, provided the HCP is being "properly implemented" (Section 9.1 of the HCP). CPH has ensured funding of anticipated changed circumstances (see *Table 5* of the HCP). itment from the permittees, beyond the basic commitments set forth in the HCP with regard to Covered Species. The provision in Table 5 requires the permittees to work with the Service to

42. vide One commenter ask why the supplemental conservation and mitigation measures are not comm solely at the discretion of the Service. h the habitat assurances rule. Th additional measu will be limited to modifications within conserved hab

The Service has adopted the Habitat Conservation Plan Assurances Rule (50 C.F.R. § 17.22), which governs the range of responses to unforeseen circumstances after a habitat

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conservation plan has been adopted. The Assurances Rule specifically states that "additional conservation and mitigation measures will not involve the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the conservation plan without the consent of the permittee." (50 C.F.R. § 17.22(b)(5)(iii).) Section 9.2 of the Dos Pueblos HCP conforms to the provisions of the Assurances Rule.

43. One commenter requested that the Service specify the frequency and duration of the biological monitor oversight. Monitoring measures are described in Section 8 of the HCP. If surface water quality or sediment testing reveals that acceptable phosphate, nitrite, nitrate, oxygen, pH and/or chemical levels (see Section 3 of the HCP) have not been met, the Service will be notified immediately, during all stages of the project. The Service will also be notified immediately if a dead or injured listed species is discovered within the project boundaries. Construction monitoring reports will be submitted either monthly or at the end of specific construction activities in or near Eagle Canyon if these activities take less than two months to complete. During operation of the golf links project, annual reports will be submitted to the Service by 1 January of each year. The annual reporting may be decreased to every five years, upon approval by the Service, if the goals and objectives are being met after 10 years (Sections 3 and 8 of the HCP).

44. One commenter suggests that monitors should be stationed at the mouth of Eagle Canyon and east of the harbor seal haul-out. Regarding an additional monitor east of the harbor seal haul-out, this species is not a federally-listed species. Protection for this animal is provided in accordance with the Federal Marine Mammals Protection Act. Please see the response above to comment 14. Regarding a monitor at the mouth of Eagle Canyon, the HCP requires the placement of signs at the parking lot, top of Eagle Canyon and the mouth of Eagle Canyon, (see Section 6 of the HCP) and installation of fencing at the mouth of Eagle Canyon (see Section 10 of the HCP). In addition, as described above in response to comment 14 (see Section 8 of the HCP), if monitoring reveals that the public using the eastern vertical access trail is leaving the trail or leaving the beach to enter Eagle Canyon, CPH must seek an emergency coastal development permit from the California Coastal Commission to close the eastern vertical access trail starting November 1 instead of February 1 of each year. The Service concludes that these avoidance and minimization measures, monitoring and adaptive management requirements are appropriate and that a biological monitor is not required at the mouth of Eagle Canyon.

45. One commenter believes that the HCP and EA should have been prepared by a disinterested third party. Each of the documents involved in the HCP process, including the HCP, the EA, and the Implementation Agreement, are subject to review by Service staff. As explained in the Service's permit regulations, the HCP is prepared by the permit applicant and submitted to the Service as part

of the application package. (50 C.F.R. § 17.22(b)(1).) While the initial draft of the various documents may be prepared by the applicant or consultants hired by the applicant, the Service maintains the responsibility for reviewing and approving the application materials and ultimately issuing the Section 10(a) permits and the supporting documents.

46. One commenter states that the project will drastically reduce existing beach access rights.

The proposed project site is currently private property with no legal public access rights. Implementation of the proposed project would provide legal lateral and vertical public access trails and 15 public parking spaces in accordance with Santa Barbara County Conditional Use Permit No. 91-CP-85 and California Coastal Commission Coastal Development Permit No. 4-STB-93-154 and the associated RAIP.

As explained in the HCP and the response to comment 14, the RAIP restricts public access to the eastern vertical access trail at Eagle Canyon between February 1 and May 31 of each year. Both the RAIP and the HCP require monitoring of the eastern vertical public access trail at Eagle Canyon. In accordance with the RAIP, if NMFS or CDFG determines that harbor seals are being detrimentally affected by uses of the vertical accessways, CPH must seek an emergency coastal development permit from the California Coastal Commission to further regulate the use of the vertical access trails onsite. In accordance with the HCP (Section 8), if monitoring reveals that the public using the eastern vertical access trail is leaving the trail or leaving the beach to enter Eagle Canyon, CPH must seek an emergency coastal development permit from the California Coastal Commission to close the eastern vertical access trail starting November 1 instead of February 1 of each year.

The Service has met with California Coastal Commission staff regarding vertical public access at Eagle Canyon and is satisfied that the restrictions on public access as proposed are necessary for the protection of tidewater gobies and California red-legged frogs onsite.

47. One commenter believes that the property is zoned for agricultural use and should be "returned" to that use. This commenter also states that "agricultural operations ... might drastically improve protections for RLF and other wildlife."

The comment is factually wrong, and was rejected by the Santa Barbara Superior Court and California Court of Appeal in Surfrider Foundation v. California Coastal Commission, which upheld the project as fully consistent with the agriculture zone designation and agriculture policies of the County's LCP. As noted by the courts, the site originally was zoned as Coastal Dependent Industry. In 1991, the County rezoned the property to Ag-II, with the understanding that a golf course use was being proposed for the property. The Ag-II zone designation was selected by the County and approved by the Coastal Commission as a "holding designation" because a golf course is permitted in the Ag-II zone with a Major Conditional Use Permit, providing greater review authority over the details of the project. The commenter also misconceives the site history. The property was used continuously from the late 1920s until recently as an oil and gas storage and processing facility. As the courts repeatedly emphasized in the Surfrider case, the site has never been used to support a "stand alone" agricultural production or an operational farming unit because it

lacks farmable soils and has no agricultural irrigation water supply.

Regarding agricultural operations, the Service does not concur that these operations would improve protection of California red-legged frogs. An agricultural use would not necessarily or likely result in better California red-legged frog protection. Constant ground effects from grazing or cultivation would sustain a disturbance regime that is more conducive to exotic species invasion and disease. Normal cropping and stress associated with the project site would require infusions of pesticides and fertilizers, and not in a regulated and monitored fashion as is essential in golf management. Whether in crops or pasture, nitrate contamination from field runoff would exceed amounts produced by managed turf, and infiltration and filtering coefficients would be substantially less than would result from managed turf.

48. One commenter believes that the project could introduce disease and infection (*e.g.*, chytrid fungus infections) into the California red-legged frog and tidewater goby populations.

Regarding chytrid fungus, this pathogen is not resistant to dehydration in any of its stages. Therefore, it can only be spread by release of water that contains the zoospores or by the introduction of an infected amphibian to the aquatic habitat of concern. Neither of these possibilities becomes more likely simply by building a golf course. Furthermore, the Service is not aware of any particular pathogen that is unique to golf courses and is transferred by golfers or the public.

49. One commenter stated that the proposed project would result in cumulative impacts to the California red-legged frogs and tidewater gobies onsite, as a result of habitat fragmentation, prevention of gene flow, creation of a genetic "sink," and problems with dispersal.

Because the golf course is not obviously a barrier to frog migration and dispersal, the Service does not agree that the proposed project would result either in contributing to local habitat fragmentation or in preventing gene flow through a metapopulation or colonization of new areas by California red-legged frogs, or colonization of Eagle Canyon Creek by additional tidewater gobies.

In addition, the Service does not feel that the proposed project would result in significant impacts to the California red-legged frog and tidewater goby populations onsite, due to the avoidance, minimization and mitigation measures described in both the HCP and the EA. The HCP and EA include measures to protect and enhance the survival of the species within the project boundaries. Due to these measures, the project would not decrease the survival of individuals on the project property and thus would not contribute to a genetic sink, if one exists in this area.

50. One commenter states that rigorous numerical analysis of take can and should be conducted.

Section 5.4 of the HCP addresses anticipated incidental take. The actual level of incidental take of California red-legged frogs will vary from year to year due to fluctuations in population size, movement patterns and reproduction, and will be influenced by the seasonal variations of distribution and abundance. The actual level of incidental take of tidewater gobies will also be affected by seasonal variation of population size based on reproductive success and storm flows washing out the berm at the mouth of Eagle Canyon. Due to the number of avoidance and

minimization measures incorporated into the proposed soil remediation and golf course projects, the Service has determined that the potential anticipated take is low. In addition, if even one frog is taken in the form of injury or mortality due to implementation of the RAP or the proposed golf course project, the applicant, in association with the Service, will evaluate the cause of take, reevaluate implementation or operation measures and determine if adaptive management measures (Section 8 of the HCP) are required. Therefore, due to the anticipated variation in population sizes of the California red-legged frog and distribution of the tidewater goby and the California red-legged frog, the Service feels that a numerical analysis of take is not appropriate.

51. One commenter believes that implementation of the RAP should require water quality sampling and the possibility for work to be halted if merited by the test results.

According to the EIR analysis, there is a significant impact on prime soil whenever viable agricul As discussed in the EA (Section 4), the remediation activities will be conducted over a two month period. Avoidance and minimization measures, described in Section 6.1.2 of the HCP, include extensive monitoring, erosion and sediment control features, seasonal restrictions (remediation activities south of the railroad will not be conducted during the rainy season), and revegetation requirements. Given the short duration of the remediation activities, and the avoidance and minimization measures, the Service does not believe that water quality sampling during implementation of the RAP is necessary. determine viability for agricultural use. (EIR at p. 5.16-5.) The EIR also found that there are 61 acres of the Project site which are classed as prime soils. The

52. One commenter states that the changed circumstances section of the HCP is fatally flawed. calculation of agricultural viability and prime acreage prevented from agricultural use is not the only reasonable me Changed circumstances are changes affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the Service, and that can be planned for, including the listing of new species, fire or other natural catastrophic events in areas prone to such events (50 C.F.R. § 17.3.) The HCP addresses changed circumstances in Section 9.1, and lists reasonably anticipated changed circumstances in Table 5. Table 5 includes fire and listing of new species as anticipated changed circumstances, consistent with the definition of changed circumstances in the Service's regulations. The response to listing of new species calls for the development of avoidance, minimization and mitigation measures as necessary to avoid take (HCP, Table 5.) ing

Table 5 also identifies a substantial change in the abundance of species covered by the HCP as a reasonably anticipated changed circumstance. Although this possibility is included in the list of anticipated changed circumstances, the Service recognizes that such effects could occur off the project site, and could be the result of factors unrelated to the Covered Activities or implementation of the HCP. Therefore, the response to this potential changed circumstance bridges the gap between changed circumstances and unforeseen circumstances. The provision requires an additional commitment from the permittees, beyond the basic commitments set forth in the HCP with regard to Covered Species. The provision in Table 5 requires the permittees to work with the Service to provide additional protection measures on-site, while limiting the nature of the additional commitment of resources to be consistent with the habitat assurances rule. This limitation means that additional measures will be limited to modifications within conserved habitat areas or the HCP's operating conservation program for the effected species, and should maintain the original terms of the conservation plan to the maximum extent possible. If additional measures beyond that are

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required, they are the responsibility of the Service. This provision requires the permittees to assist in responding to declines in Covered Species populations, but does not require the permittees to bear a disproportionate share of the burden in responding to declines in the species that are range-wide or due to off-site events. The Service has concluded that the responses, and associated costs, set forth in Table 5 of the HCP are adequate to address the anticipated changed circumstances.

53. One commenter states that the implementation agreement is inadequate.

One of the public commenters raised questions about several specific provisions of the Implementation Agreement. The following paragraphs explain the purpose and effectiveness of each of the identified Implementation Agreement provisions.

Section 3.4: This section describes the activities covered by the HCP and the permits. Unless additional activities are specified in the permits, the activities covered are those described in the HCP, which include the remedial action plan and the development and operation of the golf course and public access.

Section 3.8: The definition of the term "Environmental Laws" includes all federal laws "governing or regulating the impact of development activities on land, water or biological resources as they relate to covered species . . . ." There is no need to list the Clean Water Act or all of the other relevant federal laws.

Section 4.1.3: The HCP calls for development of several specific mitigation implementation plans which will be subject to review by the Service prior to implementation. Because the HCP defines the nature of these plans, including their general contents and performance criteria, there is no need to delay implementation of the project until the Service has approved the final form of the implementation plans. The HCP requires enhancement of 1.15 acres of southern willow scrub on the project site. An enhancement plan will be developed to define the specific details of how this habitat improvement will be implemented. This type of habitat enhancement plan is regularly used to achieve wetland habitat mitigation, both by the Service and by other federal agencies including the U.S. Army Corps of Engineers. While the specific details of the plan have not been developed, the effectiveness of habitat enhancement in southern willow scrub and other wetland habitat types is well established. Moreover, the Biological Enhancement Landscape Plan, attached as an Appendix to the HCP, provides the basis for the habitat enhancement plan. The same approach is used for the other enhancement plans described in response to comment 2.

Section 4.2.4: This section is consistent with the Service's Habitat Conservation Plan Assurances Rule (50 C.F.R. § 17.22). The Assurances Rule provides that in the event of unforeseen circumstances the permittee will not be required to commit additional land, water, or financial compensation or commit other natural resources beyond the level defined by the conservation plan. Similarly, additional conservation measures may be required but only in the area conserved by the habitat plan (50 C.F.R. § 17.22(b)(5)(iii)). Consistent with this regulation, the Implementation Agreement in this section makes clear that in the event of a finding of Unforeseen Circumstances the permittees will not need to commit additional financial resources or stop implementation of Covered Activities which occur outside of conserved areas.

Section 4.2.6: This section acknowledges that the Service may comment with regard to the implementation of the HCP, the Incidental Take Permits and the Implementation Agreement in any CEQA or NEPA process, but such comments must be consistent with the provisions of the permits. This section does not impermissibly limit the ability of the Service to comment in any state or federal regulatory process.

Section 5.2: This section creates an obligation for the permittees to provide information upon request by the Service and does not conflict with the independent obligation established by Section 5.4 to allow inspection of records.

Section 6.2: This section defines the process by which the Service and the permittees will address the listing of species which are not treated by the HCP as Covered Species. This section does not affect the Service's authority to undertake internal consultation with regard to the Covered Species or to engage in such consultation with regard to newly listed species.

Section 6.3: The Service's adopted guidance for preparation of habitat conservation plans calls for the inclusion of adaptive management provisions (65 Fed.Reg. 35242, 35252) which allow for management programs to respond to new information or new circumstances identified during the implementation of an HCP. The purpose of adaptive management is to allow an HCP management program to develop over time, becoming more effective and efficient in the achievement of the biological goals and objectives of the HCP. This section of the Implementation Agreement prohibits adaptive management changes that could result in less mitigation than initially provided by the HCP unless the Service authorizes such changes with a written approval. This section does not allow reduction that fails to meet the statutory standard for issuance of a Section 10(a) permit and it explicitly allows the Service to determine that such proposed changes require a permit amendment.

Section 12.1: This section provides that the permits issued to ARCO and to CPH should be treated as separate permits by the Service. However, this section is read in conjunction with Section 12.3 governing suspension and revocation of the permits. If a permit violation by one permittee results in reducing the effect of the HCP in a manner sufficient to justify suspension or revocation under the Service's rules (50 C.F.R. §§ 13.27 through 13.29, 17.22) and 17.32 either, or both, permits are subject to suspension and revocation. A permit violation by one permittee which does not trigger the permit suspension and revocation standards with respect to the other permittee will not effect the non-responsible permittee.

Section 13.3: This section excludes money damages liability with respect to implementation of the HCP, the permits or the Implementation Agreement. This provision is specific and unambiguous. In order to avoid any unintended extension of this limitation to other activities by any of the parties, the remainder of the section goes on to clarify that it does not affect any otherwise existing liabilities of the parties or limit the authority of the Service to engage in its full enforcement responsibilities.

Section 14.16: This section governs severability of the provisions of the

implementation agreement and the HCP, and provides that no element of the documents may be severed without terminating the agreement. However, since it is possible that the permittees will be willing to go forward with the agreement in the event that some provisions are found to be invalid, this section allows the permittees to sever such invalid provisions and continue with the implementation of the agreement and the HCP. This provision is desirable because it allows the conservation benefits of the HCP to go forward under circumstances which would otherwise terminate the HCP and the implementation agreement. This provision does not, however, put the Service in an inferior position. As set forth in Section 12.3, the Service maintains its ability to suspend or revoke the permits in the event that circumstances, including severed provisions of the Implementation Agreement or HCP, exceed the standards defined in the Service's regulation.

52. One commenter (offered as expert opinion) states that the 250-foot buffer separating Eagle Canyon and the proposed golf course is adequate to protect the California red-legged frog, the dispersal of California red-legged frogs is likely low, and the proposed project is unlikely to reduce the ability of California red-legged frogs to survive and recover as a species.

The Service has noted the comments.

53. One commenter notes that significant impacts were identified in the EIR.

The EIR identified two effects of the Project that were not mitigated below a level of significance: (1) "PM_{10} emissions generated during the construction and decommissioning phase would exceed significance thresholds." (EIR, Table 2.2-1); and (2) "potential loss of prime soils capable of supporting a viable agricultural operation." (EIR, 5.10-6).

These types of effects are likely to occur regardless of the Service's action. Any development project at this site, even one which did not require incidental take authority, would involve PM_{10} emissions during construction and would prevent agricultural use. In any event, these impacts are not likely to be significant for the following reasons:

1. Air Quality Impacts

The Project analyzed in the EIR included both decommissioning of the oil and gas facilities and construction and operation of the golf course. (EIR at pp. 3-4 – 3-11.) Decommissioning of the oil and gas facilities is substantially complete. As a result, PM_{10} (particulate matter of 10 microns or less) emissions of the Project subject to Service review are lower than the PM_{10} emissions evaluated in the EIR. Additionally, the EIR calculations assumed graded land would remain bare for 18 months. (See EIR at pp. 5.4-9 – 5.4-10.) In fact reseeding and revegetation will occur much more rapidly than previously assumed, due to enhancements to CPH's development plan for the Project and additional regulatory requirements subsequent to the EIR. In particular, reseeding and revegetation are governed by the Biological Enhancement/Landscape Plan required by the Coastal Commission and incorporated into the HCP. (See HCP at p. 18.) Reseeding is expected to occur within four months of disturbance. As a result, PM_{10} emissions will be significantly lower than estimated in the EIR.

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Additionally, the relevant threshold for significance has been revised since the EIR was adopted. The EIR found a PM_{10} impact based on the then-current 2.5 tons per quarter County threshold. In 1995, the County revised its environmental thresholds, and removed the quantitative threshold for PM_{10}. The current County guidance does require discussion of PM_{10}, and dust control mitigation, since construction-related dust can cause a nuisance, but specifically provides that there is no numerical threshold. (See *Scope and Content of Air Quality Sections in Environmental Documents* (County of Santa Barbara, 1999) at p. 5; *Environmental Thresholds and Guidelines Manual* (County of Santa Barbara, 1995).)

2. *Prime Soils*

According to the EIR analysis, there is a significant impact on prime soils whenever viable agricultural land is removed from agricultural production or developed to prevent present and future use for agricultural purposes. In considering the significance of this issue, it is important to recognize that there is no agricultural use of the property now, there has been no agricultural use, none is proposed and none is practical.

In the EIR, the Project site received the minimum possible rating to be called viable on the rating scale used by the County to determine viability for agricultural use. (EIR at p. 5.10-5.) The EIR also found that there are 61 acres of the Project site which are classed as prime soils. The EIR does not go beyond this rather simple calculation. However, the EIR's reliance on a formulaic calculation of agricultural viability and prime acreage prevented from agricultural use is not the only reasonable methodology for evaluating impact to agricultural resources. Relying on a more practical analysis which addressed the context of the Project, the relative value of the agricultural resource and the extent of the impact, the California Coastal Commission found that the impact of the Project on these resources was not significant.

The California Coastal Commission addressed the effect of the project on agricultural resources as part of its findings approving the Project. The Coastal Commission found that the Project is consistent with the agricultural zoning of the Project site. In this regard, the Commission found the following:

> The proposed non-agricultural use is not inconsistent with the intent of the [zoning] ordinance to establish agricultural uses on the large holdings more typical of the Gaviota Coast.
>
> The [Project] is also not inconsistent with the second goal of the [zoning district], which is to preserve prime and non-prime soils for long term agricultural use. Golf courses, unlike most non-agricultural development result in minimal site coverage . . . and need good soil to operate. [The Project will take a variety of measures to enhance the fertility of the soils.] Thus, although the use will not be agricultural, the agricultural soils on the site, with the exception of the minimal areas covered by buildings and paving, will be retained and possibly enhanced consistent with potential agricultural use. (Findings, p.13.)

The Commission also found that the Project will not conflict with contiguous agricultural operations (Findings, p. 14), and that the Project is consistent with agricultural preservation provisions of the California Coastal Act. The Commission found that the Project is consistent with Coastal Act standards for maintaining maximum land in agricultural production, explaining:

> [A] closer look at the facts of the subject site distinguishes its agricultural potential from that of neighboring ranches. The prime soils on this site are located in sixteen separate areas. The largest single aggregation of prime soils is +/-17 acres with most patches being under +/- 2 acres in size. In addition there is no on-site water for irrigation. Given these facts, it is apparent that the site for the proposed golf course does not have the potential to be farmed commercially . . ..(Findings, p. 17.)

Finally, the Commission concluded that as amended by the applicant and further conditioned by the Commission, the proposed development is consistent with CEQA. The Commission explained that its actual permitting process is "designated as the functional equivalent of CEQA" and that "CEQA requires the consideration of less environmentally damaging alternatives and mitigation measures to lessen significant environmental impacts to a level of insignificance." As to agricultural impacts and to the other project impacts in general, the Commission explained:

> [T]he Commission has considered an on-site agricultural alternative which would convert the project site to agricultural use. However, as previously stated, agricultural use of the site is presently not possible because the lot and development uncertainties inherent in the site could result in lots that are too small to be farmed and the site has no commercial agricultural irrigation water supply.
> Based on the information available, the Commission finds that there is no alternative available that will further reduce any adverse environmental impacts created by the project. Further, there are no negative impacts caused by the project which have not been adequately mitigated. (Findings, p. 34.)

The Coastal Commission's approval of the Project, and specifically the findings with regard to agricultural impacts, was upheld by the California Court of Appeal. The Court found that the Commission had substantial evidence for its conclusions that the Project site would not support agricultural uses and that the Project would preserve prime soils by maintaining and improving soil fertility. (*Surfrider Foundation v. California Coastal Commission*, p. 12-14.)

54. One commenter states that significant cumulative impacts were identified in the EIR.

The California Environmental Quality Act ("CEQA") has been amended since the EIR for the project was adopted by the County of Santa Barbara in 1993. In particular, the 1998 amendments to CEQA clarify the required approach to addressing cumulative impacts. CEQA now provides that a lead agency "may determine that the incremental impacts of a project are not cumulatively considerable when they are so small that they make only a *de minimus* contribution to a

significant cumulative impact caused by other projects that would exist in the absence of the proposed project." (CEQA Guidelines § 15064(i)(4).) The CEQA amendments also clarify the determination of significant impact with respect to archaeological and historical resources. (CEQA Guidelines § 15064.5.) The cumulative impacts identified as significant in the 1993 EIR are discussed in the paragraphs below, including a description of the impact and the probability that these impacts would be found *de minimus*, or less than significant, under current standards.

1. Archaeological Resources

The EIR identifies the presence of six archaeological sites in the project area. Two of these sites would be avoided by the project and the remaining four would be retained in place and covered by "culturally sterile on-site fill." (EIR at p. 5.5-7.) The revised CEQA Guidelines specifically address impacts to archaeological resources, and provide that if an archaeological site is neither a historical resource or a unique archaeological resource, as defined in statute, then the effects of the project on the resources shall not be considered a significant effect on the environment. (CEQA Guidelines § 15064.5(c)(4).) Since none of the archaeological sites associated with the Dos Pueblos project area are identified as either historic resources or unique archaeological resources, the impacts of the project on archaeological resources is, by definition, not significant. Although the EIR concluded that the project would add to the effects of other proposed projects in Santa Barbara County by reducing the number of undisturbed archaeological sites available for scientific study, it is unlikely that the same conclusion would be reached under current CEQA law, since the impacts of the project are not significant. Also, the mitigation required by the EIR is consistent with the provisions in the revised CEQA Guidelines determining that preservation in place is the preferred manner of mitigating impacts to archaeological resources. (CEQA Guidelines § 15162.4(b)(3).)

2. Aesthetics

The EIR states that the cumulative change in the aesthetic character of the general project vicinity would be an unavoidable effect. (EIR at p. 5.6-26.) However, this cumulative impact analysis focuses on the development of the Hyatt Hotel to the east of the project and the Naples Golf Course project to the west of the project, indicating that the development of all of these projects would change the existing rural character of the area. Construction of the Hyatt (now called the Bacara Resort and Spa) is expected to be complete by late summer this year. The owners of the Naples golf property are pursuing housing development on the site. Since the alteration of the rural character of the project area will occur with or without the project, the cumulative impact would likely be considered de minimus under current CEQA law and therefore not significant.

3. Public Services (Police and Fire Department Staffing)

The EIR identifies very minimal impacts on public services. In particular, the EIR states that while the project would not generate additional population, it would require some law enforcement services, adding to cumulative law enforcement demands. (EIR, p. 5.9-2.) However, the calculation provided in the EIR demonstrates that additional law enforcement services will be required with or without the project, based on the cumulative development of approximately 1,117 residential units in the project area. Since the need for additional law enforcement services would

occur with or without the project, the project contribution is *de minimus*, and would not likely be considered significant under current CEQA law.

Similarly, the EIR states that development of the project would result in the demand for fire services which could be cumulatively significant when added to the development of 1,117 residential units in the project area. (EIR, p. 5.9-5.) However, the EIR states that the cumulative development would not generate a demand for additional fire-fighter personnel. Again, since the increased demand for fire services would occur with or without the project, and since even with the project cumulative development would not create demand for additional personnel, the impact of the project is de minimus, and would not likely be significant under current CEQA law.

4. Agricultural Land Use

The EIR concludes that the significant direct impact on 61 acres of prime agricultural soil, limiting the use of the land for agricultural production, also creates a significant cumulative effect on agricultural resources. As discussed in our prior submission to the Service, the agricultural impacts of the project are not significant. Since the EIR's conclusion of cumulative significant effects depends on the related conclusion of significant direct effects, there is no significant cumulative effect on agricultural resources.

5. Biological Resources

The EIR indicates that the increase in human activity associated with the project and other nearby projects would result in alteration of environmentally sensitive habitats. The EIR, however, did not contemplate the development of a Habitat Conservation Plan for the property. Protection of environmentally sensitive habitats, and in particular the habitat of endangered species, addressed by the HCP, effectively reduces the biological impacts on sensitive habitats below a level of significance under CEQA. Moreover, the area-wide reduction in sensitive habitats would occur with or without the project. As a result, the contribution of the project to cumulative biological effects should be considered *de minimus*, and therefore not significant under current CEQA law.

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November 26, 2001

1737-08

Mr. R. Whitt Hollis, Jr.
Makar Properties, L.L.C.
P.O. Box 2521
Santa Barbara, California 93120-2521

Subject: ***Update of Biological Resources Report for the ARCO Dos Pueblos Golf Links Project, Santa Barbara County, California***

Dear Whitt:

This report documents the results of a biological resources survey conducted by Dudek and Associates, Inc. (DUDEK) at the approximately 208-acre Dos Pueblos Golf Links project area. The project site is located in an unincorporated area of Santa Barbara County, California.

INTRODUCTION

The purpose of this letter report is to determine if there are any significant changes (*e.g.*, changed circumstances) relating to vegetation communities on the Dos Pueblos Golf Links site from the original environmental review in 1993 (92-EIR-16) to current conditions. The site's current physical conditions remain substantially unchanged as compared to the physical conditions recorded in 1991 and 1992 (Interface Planning and Counseling Corporation, October 15 1991; Bowland and Ferren 1992), and in the 1993 EIR for the project.

PROJECT LOCATION

The ARCO Dos Pueblos Golf Links project encompasses approximately 208 acres in unincorporated Santa Barbara County (*Figure 1*). The project site is situated along the coastal bluff, 1.5 miles west of the Winchester Canyon exit on north-bound U.S. Highway 101. The site is bound to the south by the mean high tide line of the Pacific Ocean, to the north by U.S. Highway 101, to the east by Eagle Canyon Creek, and to the west by Mazzini Avenue within the Naples townsite. The site is bisected from east to west by the Union Pacific Railroad.

The 208-acre project site lies within the coastal plain between the Santa Ynez Mountain Ocean. Approximately 5.7 acres of the project site consist of developed lands rem

abandoned ARCO oil and gas production facilities. The remaining undeveloped lands consist predominantly of annual non-native grasslands (133.9 acres), Venturan coastal sage scrub (32.5 acres) and non-native windrows (11.9 acres), although other plant communities are also present to a lesser extent. The site is dissected by several incised coastal drainages, the largest of which are Eagle Canyon and Tomate Canyon. Eagle Canyon is located partially within the eastern project boundary and Tomate Canyon extends north-south in the western portion of the site. Seven smaller, unnamed drainages also exist onsite.

METHODS

DUDEK biologist Sherri Miller conducted a vegetation community survey of the Dos Pueblos Golf Links project site on September 20 and 21, 2001. A previous vegetation community survey was conducted by DUDEK on October 16, 17, 18 and 19, 2000. Interface Planning and Counseling Corporation conducted surveys on April 2 and 3, 1991.

The vegetation communities onsite were mapped in September 2001 and October 2000 according to Holland (1986) with modifications to accommodate the lack of conformity of the observed communities to those of Holland.

Plant communities were mapped in the field directly onto a 100-scale topographic map plotted at 100-scale (1"=100') prepared by Penfield & Smith. The vegetation boundaries were digitized by DUDEK GIS technician Martie Clemons using the ArcCAD system at DUDEK. The locations of the valley needlegrass grasslands were recorded using a global positioning system backpack unit and downloaded into the digital site plan. The limits of the proposed golf course and Biological Enhancement Landscape Plan (BELP) were intersected with the vegetation polygons in order to calculate impacts and open space. A cumulative list of plant species observed on the property during any of the surveys is presented in APPENDIX A.

RESULTS

Soils

Soils onsite are primarily of the Diablo Series. Other soils encountered onsite are the Milpitas and Conception series (USDA, Soil Conservation Service 1978).

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Vegetation

Vegetation onsite consists primarily of annual non-native grasses, non-native trees and Venturan coastal sage scrub. Substantial levels of disturbance have resulted from historic, abandoned oil and gas development, affecting the variety and distribution of vegetation communities onsite.

Based on species composition and general physiognomy, seven native plant communities were identified in the study area: coastal brackish marsh, freshwater marsh, poison oak scrub, southern willow scrub, valley needlegrass grassland, Venturan coastal sage scrub, and a man-made vernal pool. Four non-native plant communities were identified: annual non-native grassland, disturbed wetlands, non-native windrows, and ornamental plantings. In addition, beach, bluff, open channel and developed land covers were mapped. These habitat and land cover types are described in more detail below, their distribution onsite is presented on the attached map, and their acreage is presented in *Table 1* below. Open channel, beach and bluff communities are typically unvegetated and so are not described below.

As depicted in *Table 1* below, the final EIR does not include acreages for each vegetation community/land cover. When the current vegetation community acreages are compared with the vegetation communities described in the final EIR, certain trends become apparent. The acreage of developed lands has decreased due to the abandonment of the oil and gas facilities and the differentiation between ornamental plantings from developed lands in recent surveys. In addition, the abandonment of the oil and gas facilities has resulted in the creation of disturbed wetlands areas and a slight increase in annual non-native grassland acreage (*i.e.*, grasses have volunteered within some previously developed areas).

Annual Non-native Grassland

Where the native habitat has been disturbed frequently or intensively by annual mowing (for fire protection) or other activities as part of the former oil and gas operations, the native community usually is incapable of recovering. These areas within the project site are characterized by weedy, introduced annuals, primarily grasses, including especially slender wild oat (*Avena barbata*), bromes (*Bromus diandrus, B. madritensis, B. hordeaceus*), white sweet-clover (*Melilotus alba*), mustard (*Brassica nigra*), and star-thistle (*Centaurea melitensis*). In addition, highly disturbed areas of grassland onsite support non-native, invasive species including fennel (*Foeniculum vulgare*) and castor bean (*Ricinus communis*). This vegetation community covers approximately 133.9 acres of the project site. Most of this has been previously disturbed by the abandoned oil and gas production operations and is still subject to mowing for purposes of fire control (mowing for fire protection has been conducted annually since the 1980s).

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Southern Willow Scrub

TABLE 1
ACREAGES OF VEGETATION COMMUNITIES AND LAND COVER FORMS

Southern willow scrub has been described as a dense, broad-leafed, winter-deciduous riparian thicket

Vegetation Community/Land Cover	1992 Acreage	HCP Acreage[1]	2000 Acreage[1]	2001 Acreage[1]
Annual Non-native Grassland	127	127.3	136.1	133.9
Valley Needlegrass Grassland			0.6	0.7
Venturan Coastal Sage Scrub	35	35	31	32.5
Poison Oak Scrub			0.6	0.6
Developed	35.9	42	5.7	5.7
Ornamental			2.9	3.2
Non-native Windrows			11.9	11.9
Southern Willow Scrub		1.3	1.3	1.6
Disturbed Wetlands[2]			2.2	2.2
Freshwater Marsh		0.2	0.2	0.2
Coastal Brackish Marsh			0.4	0.3
Vernal Pool	0.1	0.1	0.1	0.1
Open Channel			1.0	1.0
Beach			7.9	7.9
Bluff			6.9	6.9
TOTAL HABITAT LAND COVER	202[3]	208	208	208

[1]Acreages may not total precisely due to rounding.
[2]Created during oil field abandonment.
[3]Difference between 202 and 208 acres is due to digital mapping of the site as part of permit compliance and inclusion of out parcel (as described in EIR).

Coastal Brackish Marsh

Valley Needlegrass Grassland vary considerably [illegible] presence of water sources. Ve
typically [illegible] rushes (*Juncus* spp.), bulrush (*Scirpus* spp.), and cattail (*Typha* s
Valley needlegrass grassland is a native grassland dominated by perennial bunchgrasses, such as needlegrass (*Nassella* spp.). This plant community typically alternates with coastal sage scrub on some clay soils, often on more mesic exposures and at the bases of slopes, but also may occur in large patches. [illegible] California mugwort (*Artemisia douglasiana*) [illegible] (*Sambucus*
Onsite, valley needlegrass grassland is dominated by non-native grasses, including red brome (*Bromus madritensis* ssp. *rubens*), soft-chess, and ripgut grass. Typical species include purple needlegrass (*Nassella pulchra*), foothill needlegrass (*Nassella lepida*), morning-glory, horseweed, fascicled tarweed (*Hemizonia fasciculata*), California sagebrush, coyote brush and coastal goldenbush.

Almost all native grasslands onsite are disturbed as indicated by the abundance of invasive non-native species. Grasslands in which at least 10% of the cover consists of *Nassella* and other native species were considered valley needlegrass grasslands; all others were mapped as non-native grasslands. Valley needlegrass grasslands cover 0.7 acre onsite. [illegible] ponds [illegible] and spring
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Venturan Coastal Sage Scrub

The vernal pool ecosystem is characterized by a variety of plant and animal species adapted to
This less dense coastal sage scrub association occurs throughout the South Coast Ranges but is especially abundant in the coastal area south of Point Conception. Venturan coastal sage scrub consists primarily of low, soft-woody shrubs (0.5 to 2 m tall). The crowns of the individual shrubs are usually touching but bare ground is typically seen beneath and between shrubs. Characteristic species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), lemonadeberry (*Rhus integrifolia*), white sage (*Saliva apiana*) and black sage (*Salvia mellifera*) (Holland 1986).
The area mapped as supporting vernal pools onsite is not characteristic of vernal pools (*e.g.*, no ve
Onsite, this habitat type commonly includes the following species: California sagebrush, coyote brush (*Baccharis pilularis*), coastal goldenbush (*Isocoma menziesii* ssp *veneta*), California buckwheat, California bush sunflower (*Encelia californica*), castor-bean (*Ricinus communis*), wild fennel, horseweed (*Conyza canadensis*), telegraph weed (*Heterotheca grandiflora*), western bindweed (*Calystegia macrostegia*), tree tobacco (*Nicotiana glauca*) and poison oak (*Toxicodendron diversilobum*). This vegetation community covers approximately 32.5 acres of drainage slopes and coastal bluffs onsite. The scrub vegetation appears to be less diverse than is typical for this community, being dominated by coyote brush on most of the property. [illegible] and types include th
[illegible]

Exh 2B of 5 2pg

Poison Oak Scrub

Areas dominated by poison oak were mapped as poison oak scrub. These almost monotypic stands of poison oak include scattered individuals of California buckwheat and California sagebrush. Poison oak scrub occupies 0.6 acre onsite.

Developed

Developed land onsite consists of abandoned oil and gas facilities, including the paved access roads throughout the property and abandoned building sites and parking area in the northeast portion of the property. This land cover occupies approximately 5.7 acres.

Ornamental

Ornamental plantings refer to areas where ornamentals and landscaping have been installed. These areas are concentrated around the northeast portion of the property adjacent to the abandoned ARCO development. The primary vegetation in these areas includes Hottentot fig (*Carpobrotus edulis*) acacia (*Acacia* sp.), mock orange (*Pittosporum undulatum*), geraniums (*Geranium* spp.), privet (*Ligustrum* sp.), eucalyptus, pine, cypress and Peruvian pepper tree (*Schinus molle*). Ornamental plantings cover 3.2 acres onsite.

Non-native Windrows

Non-native windrows consist of rows of non-native trees that were planted for ornamental purposes and as shelters from the wind. This land cover type is not considered a naturally occurring plant community. Species comprising windrows onsite include: red gum (*Eucalyptus camalduensis*), blue gum (*Eucalyptus globulus*), tamarisk (*Tamarix* sp.), Monterey cypress (*Cupressus macrocarpa*) and pines (*Pinus* sp.). Although planted trees may offer some wildlife value as roosting or nesting sites, they affect the flora adversely by displacing native species and communities. In addition, eucalyptus and tamarisk species can be highly invasive and can seriously deplete groundwater through transpiration, with negative effects on adjacent habitat. Non-native windrows occupy 11.9 acres onsite.

Southern Willow Scrub

Southern willow scrub has been described as a dense, broad-leafed, winter-deciduous riparian thicket dominated by several species of willow (*Salix* spp.), with scattered emergent Fremont cottonwood (*Populus fremontii*) and western sycamore (*Platanus racemosa*) (Holland 1986). The closed canopy of this riparian community typically inhibits the development of a diverse understory.

Onsite this community is dominated by arroyo willow and occurs in small to large patches along drainages. Understory species include coyote brush, mulefat (*Baccharis salicifolia*), horseweed, Mexican elderberry (*Sambucus mexicana*) and poison oak. This community occupies 1.6 acres.

Disturbed Wetland

Disturbed wetlands onsite consist of largely herbaceous, non-native hydrophytic species associated with saturated soils. The vegetation includes annual rabbits-foot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), Bermuda grass (*Cynodon dactylon*), African brass buttons (*Cotula coronopifolia),* Hottentot fig, English plantain (*Plantago lanceolata*), and Italian ryegrass (*Lolium multiflorum).* Disturbed wetlands onsite were created as part of oil and gas abandonment operations and therefore occur primarily within abandoned oil and gas facilities (*i.e.*, bermed tank farms). Disturbed wetlands occupy 2.2 acres.

Freshwater Marsh

Coastal and Valley freshwater marsh (freshwater marsh) is a wetland habitat type that develops where the water table is at or just above the ground surface, such as around the margins of lakes, ponds, slow-moving streams, ditches, and seepages. It typically is dominated by tall, emergent monocots, such as sedges (*Cyperus* spp.), cattail (*Typha* sp.) and bulrush (*Scirpus* sp.) (Holland 1986).

Freshwater marsh onsite supports annual rabbits-foot grass, curly dock, African umbrella sedge (*Cyperus involucratus*) and spiny cocklebur (*Xanthium spinosum*). Freshwater marsh occupies 0.2 acre onsite.

Coastal Brackish Marsh

Coastal brackish marsh is dominated by emergent, perennial, herbaceous monocots (up to 2m in height) that provide dense, often complete cover. The water is brackish due to a combination of freshwater and

Exh. 22 a 7-24-

saltwater input and salinity may vary considerably due to the influence of water sources. Vegetation typically includes rushes (*Juncus* spp.), bulrush (*Scirpus* spp.), broad-leaved cattail (*Typha latifolia*) (Holland 1986).

Onsite, this habitat type is limited to the mouth of Eagle Canyon. The dominant species include broad-leaved cattail, California mugwort (*Artemisia douglasiana*), and Pacific coast bulrush (*Scirpus robustus*). A few scattered arroyo willow saplings are also present. Currently, coastal brackish marsh occupies 0.3 acre; however, during winter storm events the berm at the mouth of Eagle Canyon is washed out annually along with the coastal brackish marsh so that the acreage of this habitat type is typically smaller during the winter.

Man-made Vernal Pool

Vernal pools are generally small, poorly drained depressions that occur in areas of level or gently undulating (mima mound) topography. These ephemeral ponds collect the run-off of winter and spring rains and support a unique biota adapted specifically to these temporary conditions.

The vernal pool ecosystem is characterized by a variety of plant and animal species adapted to aquatic conditions that occur for a brief period in the spring following winter rainfall, followed by intense desiccation. This habitat type typically develops in small depressions within mima mound topography on otherwise flat mesas of marine terraces or inland valleys where a semi-impermeable subsoil of clay or hardpan acts to collect runoff, resulting in a "perched water table." Many of the faunal and floral elements of vernal pools occur in no other habitat type.

The area mapped as supporting vernal pools onsite is not characteristic of vernal pools (*e.g.*, no vernal pool indicator species are present) although it does seasonally contain ponded water. The area is an artificially-created wetland resulting from excavation associated with the abandoned oil and gas operations. Natural vernal pools are not known to occur on the south coast of Santa Barbara west of Ellwood Mesa. This area is dominated by common spikerush (*Eleocharis macrostachya*) and occupies 0.1 acre.

PROJECT IMPACTS

Table 2 reflects the acreage of altered land types and open space. Altered land types include those areas that would be affected by the proposed golf course and the vegetation alterations associated with the BELP.

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TABLE 2.
ACREAGES OF ALTERED LAND TYPES AND OPEN SPACE

Vegetation Community/Land Cover	Altered Land Types Acreage	Open Space Acreage	Total Acreage
Annual Non-native Grassland	121.0	12.9	133.9
Valley Needlegrass Grassland	0.5	0.2	0.7
Venturan Coastal Sage Scrub	15.0	17.5	32.5
Poison Oak Scrub	0.1	0.5	0.6
Developed	5.5	0.2	5.7
Ornamental	2.4	0.8	3.2
Non-native Windrows	7.4	4.5	11.9
Southern Willow Scrub	0.9	0.7	1.6
Disturbed Wetlands	1.2	1.0	2.2
Freshwater Marsh	0.2	0.0	0.2
Coastal Brackish Marsh	0.0	0.3	0.3
Vernal Pool	0.0	0.1	0.1
Open Channel	0.25	0.75	1.0
Beach	0.1	7.8	7.9
Bluff	0.1	6.8	6.9
TOTAL HABITAT LAND COVER	154.65	54.05	208

SUMMARY

The existing acreage numbers remained the same or only changed slightly when compared to the previous year (see *Table 1*). The acreage changes appear to be the result of natural succession. Annual non-native grassland cover decreased slightly as the Venturan coastal sage scrub and ornamental (primarily iceplant) increased slightly. The coastal brackish marsh in Eagle Canyon decreased slightly as southern willow scrub has grown up within the mouth of Eagle Canyon. Southern willow scrub has also expanded in the vicinity of, but outside the limits of, proposed hole 13 and as such does not affect the construction or operation of the golf course.

When comparing the current physical conditions onsite to those recorded in 1991 and 1992 (and presented in the 1993 EIR on the proposed project), it is apparent that physical conditions onsite have not changed substantially (see *Table 1*). The acreage of developed lands has decreased due to the abandonment of the oil and gas facilities and the differentiation between ornamental plantings from developed lands in recent surveys. In addition, the abandonment of the oil and gas facilities has resulted in the creation of disturbed wetlands areas and a slight increase in annual non-native grassland acreage (*i.e.*, grasses have volunteered within some previously developed areas). The golf course has been designed to avoid these disturbed wetlands areas.

Please let me know if you have any questions regarding the contents of this letter.

Very truly yours,

DUDEK & ASSOCIATES, INC.

Sherri L. Miller
Senior Biologist

cc: *Ken Marshall, Dudek & Associates*
Steve Kaufmann, Richards, Watson and Gershon
Andi Culbertson, CAA Planning

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APPENDIX A

FLORAL COMPENDIUM

VASCULAR PLANT SPECIES

CONIFERAE

PINACEAE - PINE FAMILY

* *Pinus* sp. - pine

CUPRESSACEAE - CYPRESS FAMILY

Cupressus macrocarpa - Monterey cypress

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE - CARPET-WEED FAMILY

* *Carpobrotus edulis* - hottentot-fig

ANACARDIACEAE - SUMAC FAMILY

* *Schinus molle* - Peruvian pepper-tree

Toxicodendron diversilobum - poison-oak

APIACEAE - CARROT FAMILY

* *Conium maculatum* - poison-hemlock

* *Foeniculum vulgare* - sweet fennel

ASTERACEAE - SUNFLOWER FAMILY

Ambrosia sp. - ragweed

Artemisia californica - coastal sagebrush

Artemisia douglasiana - California mugwort

Baccharis pilularis - coyote brush

* *Centaurea melitensis* - star-thistle

APPENDIX A *(continued)*

* *Conyza canadensis* - horseweed
* *Cotula coronopifolia* - African brass-buttons
Encelia californica - California bush sunflower
Gnaphalium sp. - everlasting
Hazardia squarrosa ssp. *grindelioides* - saw-toothed goldenbush
Hemizonia fasciculata - fascicled tarweed
Hemizonia parryi ssp. *australis* - southern tarplant
Heterotheca grandiflora - telegraph weed
Isocoma menziesii ssp. *veneta* - coastal goldenbush
* *Lactuca serriola* - prickly lettuce
Malacothrix saxatilis var. *saxatilis* - cliff malacothrix
* *Picris echioides* - bristly ox-tongue
* *Senecio mikaniodes* - German ivy
* *Senecio vulgaris* - common groundsel
* *Taraxacum officinale* - common dandelion
Xanthium spinosum - spiny cocklebur

BRASSICACEAE - MUSTARD FAMILY

* *Brassica nigra* - black mustard

CHENOPODIACEAE - GOOSEFOOT FAMILY

Atriplex lentiformis- big saltbush, quail brush
* *Atriplex semibaccata* - Australian saltbush
* *Salsola tragus* - Russian-thistle

CONVOLVULACEAE - MORNING-GLORY FAMILY

Calystegia macrostegia - western bindweed
* *Convolvulus arvensis* - bindweed

ERICACEAE - HEATH FAMILY

Xylococcus bicolor - mission manzanita

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APPENDIX A *(continued)*

EUPHORBIACEAE - SPURGE FAMILY

Eremocarpus setigerus - doveweed
Ricinus communis - castor-bean

FABACEAE - PEA FAMILY

* *Acacia longifolia* - Sydney golden wattle
Lotus scoparius - deerweed
* *Medicago polymorpha* - California burclover
* *Melilotus alba* - white sweet-clover
* *Vicia benghaliensis* - purple vetch

GERANIACEAE - GERANIUM FAMILY

* *Geranium carolinianum* - Carolina geranium
* *Geranium* spp. - geranium cultivars

MYRTACEAE - MYRTLE FAMILY

* *Eucalyptus* sp. - eucalyptus
* *Eucalyptus citradora* - lemon-scented gum
* *Eucalyptus globulus* - blue gum

NYCTAGINACEAE - FOUR O'CLOCK FAMILY

* *Bougainvillea* sp. - Bougainvillea
* *Mirabilis jalapa* - four-o'clock

OLEACEAE - OLIVE FAMILY

* *Ligustrum* spp. - privet

PITTOSPORACEAE - PITTOSPORUM FAMILY

* *Pittosporum undulatum* - mock orange

PLANTAGINACEAE - PLANTAIN FAMILY

* *Plantago lanceolata* - English plantain

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APPENDIX A *(continued)*

POLYGONACEAE - BUCKWHEAT FAMILY

Eriogonum fasciculatum - California buckwheat
* *Rumex crispus* - curly dock
* *Polygonum arenastrum* - common knotweed

PRIMULACEAE - PRIMROSE FAMILY

* *Anagallis arvensis* - scarlet pimpernel

ROSACEAE - ROSE FAMILY

Rubus ursinus - California blackberry

SALICACEAE - WILLOW FAMILY

Salix gooddingii var. *gooddingii* - black willow
Salix lasiolepis var. *bracelinae* - arroyo willow

SOLANACEAE - NIGHTSHADE FAMILY

* *Nicotiana glauca* - tree tobacco
Solanum douglasii - white nightshade

URTICACEEAE - NETTLE FAMILY

Urtica dioica - giant creek nettle

VERBENACEAE - VERVAIN FAMILY

Verbena lasiostachys - western verbena

VITACEAE - GRAPE FAMILY

Vitus sp. - grape

ANGIOSPERMAE (MONOCOTYLEDONES)

CYPERACEAE - SEDGE FAMILY

* *Cyperus involucratus* - African umbrella sedge
Scirpus robustus - Pacific coast bulrush

APPENDIX A *(continued)*

ELEOCHARIS - SPIKERUSH FAMILY

Eleocharis macrostachya - spikerush

POACEAE - GRASS FAMILY

* *Avena barbata* - slender oat
* *Bromus diandrus* - ripgut grass
* *Bromus hordeaceus* - soft chess
* *Bromus madritensis* ssp. *rubens* - foxtail chess
* *Cortaderia selloana* - pampas grass
* *Cynodon dactylon* - Bermuda grass
* *Lolium multiflorum* - Italian ryegrass
Nassella lepida - foothill stipa
Nassella pulchra - purple needlegrass
* *Pennisetum clandestinum* - kikuyu grass
* *Phalaris aquatica* - Harding grass
* *Polypogon monspeliensis* - annual rabbit's-foot grass
* *Vulpia myuros* - rattail fescue

TYPHACEAE - CATTAIL FAMILY

Typha latifolia - broad-leaved cattail

* signifies introduced (non-native) species

Rec 4/26/02
Rec

DUDEK & ASSOCIATES, INC.
Professional Teams for Complex Projects

Engineering, Planning,
Environmental Sciences and
Management Services

Corporate Office:
605 Third Street
Encinitas, California 92024

760.942.5147
Fax 760.632.0164

April 25, 2002 1737-08

Mr. R. Whitt Hollis, Jr.
Makar Properties, L.L.C.
P.O. Box 2521
Santa Barbara, California 93120-2521

SUBJECT: *UPDATE OF BIOLOGICAL RESOURCES REPORT FOR THE DOS PUEBLOS GOLF LINKS PROJECT, SANTA BARBARA COUNTY, CALIFORNIA*

Dear Whitt:

This report documents the results of a biological resources survey conducted on April 7, 2002 by Dudek and Associates, Inc. (DUDEK) at the approximately 208-acre Dos Pueblos Golf Links project area. The project site is located in an unincorporated area of Santa Barbara County, California.

INTRODUCTION

The purpose of this letter report is to determine if there are any significant changes (*e.g.*, changed circumstances) relating to vegetation communities on the Dos Pueblos Golf Links site from the original environmental review in 1993 (92-EIR-16) to current conditions. The site's current physical conditions remain substantially unchanged as compared to the physical conditions recorded in 1991 and 1992 (Interface Planning and Counseling Corporation, October 15, 1991; Bowland and Ferren 1992), and in the 1993 EIR for the project.

PROJECT LOCATION

The ARCO Dos Pueblos Golf Links project encompasses approximately 208 acres in unincorporated Santa Barbara County (*Figure 1*). The project site is situated along the coastal bluff, 1.5 miles west of the Winchester Canyon exit on north-bound U.S. Highway 101. The site is bound to the south by the mean high tide line of the Pacific Ocean, to the north by U.S. Highway 101, to the east by Eagle Canyon Creek, and to the west by Mazzini Avenue within the Naples townsite. The site is bisected from east to west by the Union Pacific Railroad.

EXHIBIT NO. 23
APPLICATION NO.
A-4-STB-93-154-CC(A2)
Dudek, April 25, 2002
Bio Resources Update
(Revised Attachment)

RECEIVED
APR 29 2002
CALIFORNIA COASTAL COMMISSION

244

The 208-acre project site lies within the coastal plain between the Santa Ynez Mountains and the Pacific Ocean. Approximately 5.7 acres of the project site consist of developed lands remaining from the abandoned ARCO oil and gas production facilities. The remaining undeveloped lands consist predominantly of annual non-native grasslands (133.9 acres), Venturan coastal sage scrub (32.5 acres) and non-native windrows (11.9 acres), although other plant communities are also present to a lesser extent. The site is dissected by several incised coastal drainages, the largest of which are Eagle Canyon and Tomate Canyon. Eagle Canyon is located partially within the eastern project boundary and Tomate Canyon extends north-south in the western portion of the site. Seven smaller, unnamed drainages also exist onsite.

METHODS

DUDEK biologists Sherri Miller and Tricia Wotipka conducted a vegetation community survey of the Dos Pueblos Golf Links project site on April 7, 2002. A previous vegetation community survey was conducted by DUDEK on October 16, 17, 18 and 19, 2000 and September 20 and 21, 2001. Interface Planning and Counseling Corporation conducted surveys on April 2 and 3, 1991.

The vegetation communities onsite were mapped in April 2002, September 2001 and October 2000 according to Holland (1986) with modifications to accommodate the lack of conformity of the observed communities to those of Holland. Focused surveys for southern tarplant (*Hemizonia parryi* ssp. *australis*) were conducted November 16, 1999, October16, 2000 and September 21, 2001. A focused survey for southern tarplant was not conducted during the April 2002 site visit due to the senescence of this annual plant species.

Plant communities were mapped in the field directly onto a topographic map plotted at 100-scale (1"=100'), prepared by Penfield & Smith. The vegetation boundaries were digitized by DUDEK GIS technician Martie Clemons using the ArcCAD system at DUDEK. The locations of the valley needlegrass grasslands were recorded using a global positioning system backpack unit and downloaded into the digital site plan. The southern tarplants were counted individually; where several plants were growing in a clump the number of individual plants was counted using central axis stems. The limits of the highest density of southern tarplants was recorded using a global positioning system backpack unit and downloaded into the digital site plan. The limits of the proposed golf course and Biological Enhancement

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Landscape Plan (BELP) were intersected with the vegetation polygons in order to calculate impacts and open space. A cumulative list of plant species observed on the property during any of the surveys is presented in APPENDIX A.

RESULTS

Soils

Soils onsite are primarily of the Diablo Series. Other soils encountered onsite are the Milpitas and Conception series (USDA, Soil Conservation Service 1978).

Vegetation

Vegetation onsite consists primarily of annual non-native grasses, non-native trees and Venturan coastal sage scrub. Substantial levels of disturbance have resulted from historic, abandoned oil and gas development, affecting the variety and distribution of vegetation communities onsite.

Based on species composition and general physiognomy, seven native plant communities were identified in the study area: coastal brackish marsh, freshwater marsh, poison oak scrub, southern willow scrub, valley needlegrass grassland, Venturan coastal sage scrub, and a man-made vernal pool. Four non-native plant communities were identified: annual non-native grassland, disturbed wetlands, non-native windrows, and ornamental plantings. In addition, beach, bluff, open channel and developed land covers were mapped. These habitat and land cover types are described in more detail below, their distribution onsite is presented on the attached map, and their acreage is presented in *Table 1* below. Open channel, beach and bluff communities are typically unvegetated and so are not described below. See attached Site Plan.

As depicted in *Table 1* below, the final EIR does not include acreages for each vegetation community/land cover. When the current vegetation community acreages are compared with the vegetation communities described in the final EIR, certain trends become apparent. The acreage of developed lands has decreased due to the abandonment of the oil and gas facilities and the differentiation between ornamental plantings from developed lands in recent surveys. In addition, the abandonment of the oil and gas facilities has resulted in the

creation of disturbed wetlands areas and a slight increase in annual non-native grassland acreage (*i.e.*, grasses have volunteered within some previously developed areas).

TABLE 1.
ACREAGES OF VEGETATION COMMUNITIES AND LAND COVER FORMS

Vegetation Community/Land Cover	1992 Acreage	HCP Acreage[1]	2000 Acreage[1]	2001 Acreage[1]	2002 Acreage[1]
Annual Non-native Grassland	127	127.3	136.1	133.9	133.5
Valley Needlegrass Grassland			0.6	0.7	0.9
Venturan Coastal Sage Scrub	35	35	31	32.5	32.6
Poison Oak Scrub			0.6	0.6	0.7
Developed	35.9	42	5.7	5.7	5.7
Ornamental			2.9	3.2	3.5
Non-native Windrows			11.9	11.9	11.9
Southern Willow Scrub		1.3	1.3	1.6	1.6
Disturbed Wetlands[2]		2.2	2.2	2.2	2.2
Freshwater Marsh		0.2	0.2	0.2	0.2
Coastal Brackish Marsh		0.05	0.4	0.3	0.2
Vernal Pool	0.1	0.1	0.1	0.1	0.1
Open Channel			1.0	1.0	1.0
Beach			7.9	7.9	7.9
Bluff			6.9	6.9	6.9
TOTAL HABITAT LAND COVER	**202[3]**	**208**	**208**	**208**	**208**

1 Acreages may not total precisely due to rounding.
2 Created during oil field abandonment.
3 Difference between 202 and 208 acres is due to digital mapping of the site as part of permit compliance and inclusion of out parcel (as described in EIR).

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Annual Non-native Grassland

Where the native habitat has been disturbed frequently or intensively by annual mowing (for fire protection) or other activities as part of the former oil and gas operations, the native community usually is incapable of recovering. These areas within the project site are characterized by weedy, introduced annuals, primarily grasses, including especially slender wild oat (*Avena barbata*), bromes (*Bromus diandrus, B. madritensis, B. hordeaceus*), white sweet-clover (*Melilotus alba*), mustard (*Brassica nigra*), and star-thistle (*Centaurea melitensis*). In addition, highly disturbed areas of grassland onsite support non-native, invasive species including fennel (*Foeniculum vulgare*) and castor bean (*Ricinus communis*). This vegetation community covers approximately 133.5 acres of the project site. Most of this has been previously disturbed by the abandoned oil and gas production operations and is still subject to mowing for purposes of fire control (mowing for fire protection has been conducted annually since the 1980s).

Valley Needlegrass Grassland

Valley needlegrass grassland is a native grassland dominated by perennial bunchgrasses, such as needlegrass (*Nassella* spp.). This plant community typically alternates with coastal sage scrub on some clay soils, often on more mesic exposures and at the bases of slopes, but also may occur in large patches.

Onsite, valley needlegrass grassland is dominated by non-native grasses, including red brome (*Bromus madritensis* ssp. *rubens*), soft-chess, and ripgut grass. Typical species include purple needlegrass (*Nassella pulchra*), foothill needlegrass (*Nassella lepida*), morning-glory, horseweed, fascicled tarweed (*Hemizonia fasciculata*), California sagebrush, coyote brush and coastal goldenbush.

Almost all native grasslands onsite are disturbed as indicated by the abundance of invasive non-native species. Grasslands in which at least 10% of the cover consists of *Nassella* and other native species were considered valley needlegrass grasslands; all others were mapped as non-native grasslands. Valley needlegrass grasslands cover 0.9 acre onsite.

EX. 23 pg. 5 248

Venturan Coastal Sage Scrub

This less dense coastal sage scrub association occurs throughout the South Coast Ranges but is especially abundant in the coastal area south of Point Conception. Venturan coastal sage scrub consists primarily of low, soft-woody shrubs (0.5 to 2 m tall). The crowns of the individual shrubs are usually touching but bare ground is typically seen beneath and between shrubs. Characteristic species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), lemonadeberry (*Rhus integrifolia*), white sage (*Saliva apiana*) and black sage (*Salvia mellifera*) (Holland 1986).

Onsite, this habitat type commonly includes the following species: California sagebrush, coyote brush (*Baccharis pilularis*), coastal goldenbush (*Isocoma menziesii* ssp *veneta*), California buckwheat, California bush sunflower (*Encelia californica*), castor-bean (*Ricinus communis*), wild fennel, horseweed (*Conyza canadensis*), telegraph weed (*Heterotheca grandiflora*), western bindweed (*Calystegia macrostegia*), tree tobacco (*Nicotiana glauca*) and poison oak (*Toxicodendron diversilobum*). This vegetation community covers approximately 32.6 acres of drainage slopes and coastal bluffs onsite. The scrub vegetation appears to be less diverse than is typical for this community, being dominated by coyote brush on most of the property.

Poison Oak Scrub

Areas dominated by poison oak were mapped as poison oak scrub. These almost monotypic stands of poison oak include scattered individuals of California buckwheat and California sagebrush. Poison oak scrub occupies 0.7 acre onsite.

Developed

Developed land onsite consists of abandoned oil and gas facilities, including the paved access roads throughout the property and abandoned building sites and parking area in the northeast portion of the property. This land cover occupies approximately 5.7 acres.

Ornamental

Ornamental plantings refer to areas where ornamentals and landscaping have been installed. These areas are concentrated around the northeast portion of the property adjacent to the

EK 23 PG 6 2nd

abandoned ARCO development. The primary vegetation in these areas includes Hottentot fig (*Carpobrotus edulis*) acacia (*Acacia* sp.), mock orange (*Pittosporum undulatum*), geraniums (*Geranium* spp.), privet (*Ligustrum* sp.), eucalyptus, pine, cypress and Peruvian pepper tree (*Schinus molle*). Ornamental plantings cover 3.5 acres onsite.

Non-native Windrows

Non-native windrows consist of rows of non-native trees that were planted for ornamental purposes and as shelters from the wind. This land cover type is not considered a naturally occurring plant community. Species comprising windrows onsite include: red gum (*Eucalyptus camalduensis*), blue gum (*Eucalyptus globulus*), tamarisk (*Tamarix* sp.), Monterey cypress (*Cupressus macrocarpa*) and pines (*Pinus* sp.). Although planted trees may offer some wildlife value as roosting or nesting sites, they affect the flora adversely by displacing native species and communities. In addition, eucalyptus and tamarisk species can be highly invasive and can seriously deplete groundwater through transpiration, with negative effects on adjacent habitat. Non-native windrows occupy 11.9 acres onsite.

Southern Willow Scrub

Southern willow scrub has been described as a dense, broad-leafed, winter-deciduous riparian thicket dominated by several species of willow (*Salix* spp.), with scattered emergent Fremont cottonwood (*Populus fremontii*) and western sycamore (*Platanus racemosa*) (Holland 1986). The closed canopy of this riparian community typically inhibits the development of a diverse understory.

Onsite this community is dominated by arroyo willow and occurs in small to large patches along drainages. Understory species include coyote brush, mulefat (*Baccharis salicifolia*), horseweed, Mexican elderberry (*Sambucus mexicana*) and poison oak. This community occupies 1.6 acres.

Disturbed Wetland

Disturbed wetlands onsite consist of largely herbaceous, non-native hydrophytic species associated with saturated soils. The vegetation includes annual rabbits-foot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), Bermuda grass (*Cynodon dactylon*), African brass

EX. 23 RJ. 7 250

buttons (*Cotula coronopifolia),* Hottentot fig, English plantain (*Plantago lanceolata*), and Italian ryegrass (*Lolium multiflorum).* Disturbed wetlands onsite were created as part of oil and gas abandonment operations and therefore occur primarily within abandoned oil and gas facilities (*i.e.*, bermed tank farms). Disturbed wetlands occupy 2.2 acres.

Freshwater Marsh

Coastal and Valley freshwater marsh (freshwater marsh) is a wetland habitat type that develops where the water table is at or just above the ground surface, such as around the margins of lakes, ponds, slow-moving streams, ditches, and seepages. It typically is dominated by tall, emergent monocots, such as sedges (*Cyperus* spp.), cattail (*Typha* sp.) and bulrush (*Scirpus* sp.) (Holland 1986).

Freshwater marsh onsite supports annual rabbits-foot grass, curly dock, African umbrella sedge (*Cyperus involucratus*) and spiny cocklebur (*Xanthium spinosum*). Freshwater marsh occupies 0.2 acre onsite.

Coastal Brackish Marsh

Coastal brackish marsh is dominated by emergent, perennial, herbaceous monocots (up to 2m in height) that provide dense, often complete cover. The water is brackish due to a combination of freshwater and saltwater input and salinity may vary considerably due to the influence of water sources. Vegetation typically includes rushes (*Juncus* spp.), bulrush (*Scirpus* spp.), broad-leaved cattail (*Typha latifolia*) (Holland 1986).

Onsite, this habitat type is limited to the mouth of Eagle Canyon. The dominant species include broad-leaved cattail, California mugwort (*Artemisia douglasiana*), and Pacific coast bulrush (*Scirpus robustus*). A few scattered arroyo willow saplings are also present. Currently, coastal brackish marsh occupies 0.2 acre; however, during winter storm events the berm at the mouth of Eagle Canyon is washed out annually along with the coastal brackish marsh so that the acreage of this habitat type is typically smaller during the winter.

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Man-made Vernal Pool

Vernal pools are generally small, poorly drained depressions that occur in areas of level or gently undulating (mima mound) topography. These ephemeral ponds collect the run-off of winter and spring rains and support a unique biota adapted specifically to these temporary conditions.

The vernal pool ecosystem is characterized by a variety of plant and animal species adapted to aquatic conditions that occur for a brief period in the spring following winter rainfall, followed by intense desiccation. This habitat type typically develops in small depressions within mima mound topography on otherwise flat mesas of marine terraces or inland valleys where a semi-impermeable subsoil of clay or hardpan acts to collect runoff, resulting in a "perched water table." Many of the faunal and floral elements of vernal pools occur in no other habitat type.

The area mapped as supporting vernal pools onsite is not characteristic of vernal pools (*e.g.*, no vernal pool indicator species are present) although it does seasonally contain ponded water. The area is an artificially-created wetland resulting from excavation associated with the abandoned oil and gas operations. Natural vernal pools are not known to occur on the south coast of Santa Barbara west of Ellwood Mesa. This area is dominated by common spikerush (*Eleocharis macrostachya*) and occupies 0.1 acre.

Sensitive Species

Southern Tarplant

In 2002, 436 southern tarplant individuals were observed in several scattered patches (see attached site plan). In 2000, 482 plants were observed onsite. In 1999, 372 plants were observed onsite. Please see the attached letter report regarding the southern tarplant onsite. Southern tarplant was on the California Native Plant Society's (CNPS) List 3 at the time the EIR was prepared. Southern tarplant is currently on the CNPS List 1B. List 3 is a compendium of plant species for which CNPS lacks the information necessary to determine to which list they should be assigned or whether to reject them. List 1b is a compendium of plant species considered by the CNPS to rare, threatened or endangered in California and elsewhere.

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Cliff Aster

DUDEK did not conduct focused surveys for cliff aster (*Malacothrix saxatilis* var. *saxatilis*) as previous surveys have identified this plant species on the cliff faces and bluff edge east of Tomate Canyon and west of Eagle Canyon. The proposed project would avoid all impacts to cliff aster due to its location on the bluff edge and cliff face. Cliff aster was listed as a species of special concern by Santa Barbara County (not CNPS-listed) at the time the EIR was prepared. Cliff aster is currently on the CNPS List 4. List 4 is a compendium of plant species of limited or infrequent distribution to which there appears a relatively low threat (*i.e.*, not rare).

PROJECT IMPACTS

Table 2 reflects the acreage of altered land types and open space. Altered land types include those areas that would be affected by the proposed golf course and the vegetation alterations associated with the BELP.

TABLE 2
ACREAGES OF ALTERED LAND TYPES AND OPEN SPACE

Vegetation Community/Land Cover	Altered Land Types Acreage	Open Space Acreage	Total Acreage
Annual Non-native Grassland	120.6	12.9	133.5
Valley Needlegrass Grassland	0.6	0.3	0.9
Venturan Coastal Sage Scrub	15.0	17.6	32.6
Poison Oak Scrub	0.2	0.5	0.7
Developed	5.5	0.7	5.7
Ornamental	2.8	0.7	3.5
Non-native Windrows	7.4	4.5	11.9
Southern Willow Scrub	0.9	0.7	1.6
Disturbed Wetlands	1.2	1.0	2.2

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TABLE 2 *(continued)*

Vegetation Community/Land Cover	Altered Land Types Acreage[1]	Open Space Acreage[1]	Total Acreage[1]
Freshwater March	0.2	0.0	0.2
Coastal Brackish March	0.0	0.3	0.3
Vernal Pool	0.0	0.1	0.1
Open Channel	0.25	0.75	1.0
Beach	0.1	7.8	7.9
Bluff	0.1	6.8	6.9
TOTAL HABITAT LAND COVER	**154.85**	**54.15**	**208**

[1] Acreages may not total precisely due to rounding.

SUMMARY

The existing acreage numbers remained the same or only changed slightly when compared to the previous year (see *Table 1*). The acreage changes appear to be the result of natural succession. Annual non-native grassland cover decreased slightly as the Venturan coastal sage scrub and ornamental (primarily iceplant) increased slightly. The coastal brackish marsh in Eagle Canyon decreased slightly within the mouth of Eagle Canyon, possibly due to winter storms which washed out the vegetation, leaving open channel. The slight increase in valley needlegrass grassland is believed to be the result of several smaller patches having grown together and the more optimum spring survey conditions. However, impacts to valley needlegrass grassland have not increased.

When comparing the current physical conditions onsite to those recorded in 1991 and 1992 (and presented in the 1993 EIR on the proposed project), it is apparent that physical conditions onsite have not changed substantially (see *Table 1*). The acreage of developed lands has decreased due to the abandonment of the oil and gas facilities and the differentiation between ornamental plantings from developed lands in recent surveys. In addition, the abandonment of the oil and gas facilities has resulted in the creation of disturbed wetlands areas and a slight increase in annual non-native grassland acreage (*i.e.*, grasses have volunteered within some previously developed areas). The golf course has been designed to avoid these disturbed wetlands areas.

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Please let me know if you have any questions regarding the contents of this letter.

Very truly yours,

DUDEK & ASSOCIATES, INC.

Sherri L. Miller
Senior Biologist

SLM/ems

att.: *Figure 1*
Appendix A

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REFERENCES CITED

Bowland, J. and W.R. Ferren, Jr. 1992. Wetland Classification and Environmental Analysis for the Dos Pueblos Golf Links, Interface Planning and Counseling Co., Santa Barbara, CA. Prepared for ARCO Oil and Gas Co., Goleta CA.

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Nongame-Heritage Program, California Department of Fish and Game. 156 pp.

Interface Planning and Counseling Corporation. June 28, 1991; revised October 15, 1991. *Biological Resources Analysis of the Proposed Dos Pueblos Golf Links Project*, Prepared for ARCO Oil and Gas Company.

U.S.D.A., Soil Conservation Service. 1978. Soil Survey of Santa Barbara County, California. South Coastal Region.

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APPENDIX A

FLORAL COMPENDIUM

VASCULAR PLANT SPECIES

CONIFERAE

PINACEAE - PINE FAMILY

* *Pinus* sp. - pine

CUPRESSACEAE - CYPRESS FAMILY

Cupressus macrocarpa - Monterey cypress

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE - CARPET-WEED FAMILY

* *Carpobrotus edulis* - hottentot-fig

ANACARDIACEAE - SUMAC FAMILY

* *Schinus molle* - Peruvian pepper-tree

Toxicodendron diversilobum - poison-oak

APIACEAE - CARROT FAMILY

* *Conium maculatum* - poison-hemlock

* *Foeniculum vulgare* - sweet fennel

Sanicula crassicaulis - Pacific sanicle

ASTERACEAE - SUNFLOWER FAMILY

Ambrosia sp. - ragweed

Artemisia californica - coastal sagebrush

Artemisia douglasiana - California mugwort

Baccharis pilularis - coyote brush

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APPENDIX A *(continued)*

* *Centaurea melitensis* - star-thistle
* *Conyza canadensis* - horseweed
* *Cotula coronopifolia* - African brass-buttons
Encelia californica - California bush sunflower
Gnaphalium sp. - everlasting
Hazardia squarrosa ssp. *grindelioides* - saw-toothed goldenbush
Helianthus gracilentus - slender sunflower
Hemizonia fasciculata - fascicled tarweed
Hemizonia parryi ssp. *australis* - southern tarplant
Heterotheca grandiflora - telegraph weed
* *Hedypnois cretica* - Crete hedypnois
Isocoma menziesii ssp. *veneta* - coastal goldenbush
* *Lactuca serriola* - prickly lettuce
Malacothrix saxatilis var. *saxatilis* - cliff aster
* *Picris echioides* - bristly ox-tongue
* *Senecio mikaniodes* - German ivy
* *Senecio vulgaris* - common groundsel
* *Silybum marianum* - milk thistle
* *Taraxacum officinale* - common dandelion
Xanthium spinosum - spiny cocklebur

BRASSICACEAE - MUSTARD FAMILY

* *Brassica nigra* - black mustard
* *Brassica rapa* - field mustard
Rorippa nasturtium-aquaticum - water cress

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

Sambucus mexicana - Mexican elderberry

CHENOPODIACEAE - GOOSEFOOT FAMILY

Atriplex lentiformis- big saltbush, quail brush
* *Atriplex semibaccata* - Australian saltbush
* *Salsola tragus* - Russian-thistle

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APPENDIX A *(continued)*

CONVOLVULACEAE - MORNING-GLORY FAMILY

Calystegia macrostegia - western bindweed
* *Convolvulus arvensis* - bindweed

CUCURBITACEAE - GOURD FAMILY

Marah macrocarpus - wild cucumber

ERICACEAE - HEATH FAMILY

Xylococcus bicolor - mission manzanita

EUPHORBIACEAE - SPURGE FAMILY

Eremocarpus setigerus - doveweed
* *Ricinus communis* - castor-bean

FABACEAE - PEA FAMILY

* *Acacia longifolia* - Sydney golden wattle
Lotus scoparius - deerweed
Lupinus bicolor - Lindley's annual lupine
* *Medicago polymorpha* - California burclover
* *Melilotus alba* - white sweet-clover
* *Melilotus indica* - yellow sweet-clover
* *Trifolium hirtum* - rose clover
* *Vicia benghaliensis* - purple vetch

GERANIACEAE - GERANIUM FAMILY

* *Erodium botrys* - broad-lobed filaree
* *Erodium cicutarium* - red-stemmed filaree
* *Geranium carolinianum* - Carolina geranium
* *Geranium* spp. - geranium cultivars

LAMIACEAE - MINT FAMILY

* *Marrubium vulgare* - horehound
Stachys bullata - California hedge-nettle

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APPENDIX A *(continued)*

MALVACEAE - MALLOW FAMILY

* *Malva parviflora* - cheeseweed

MYRTACEAE - MYRTLE FAMILY

* *Eucalyptus* sp. - eucalyptus
* *Eucalyptus citradora* - lemon-scented gum
* *Eucalyptus globulus* - blue gum

NYCTAGINACEAE - FOUR O'CLOCK FAMILY

* *Bougainvillea* sp. - Bougainvillea
* *Mirabilis jalapa* - four-o'clock

OLEACEAE - OLIVE FAMILY

* *Ligustrum* spp. - privet

OXALIDACEAE - WOOD-SORREL FAMILY

* *Oxalis pes-caprae* - Bermuda buttercup

PITTOSPORACEAE - PITTOSPORUM FAMILY

* *Pittosporum undulatum* - mock orange

PLANTAGINACEAE - PLANTAIN FAMILY

* *Plantago lanceolata* - English plantain

POLYGONACEAE - BUCKWHEAT FAMILY

Eriogonum fasciculatum - California buckwheat
Eriogonum parvifolium - seacliff buckwheat
* *Rumex crispus* - curly dock
* *Polygonum arenastrum* - common knotweed

PRIMULACEAE - PRIMROSE FAMILY

* *Anagallis arvensis* - scarlet pimpernel

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APPENDIX A *(continued)*

ROSACEAE - ROSE FAMILY
Rubus ursinus - California blackberry

SALICACEAE - WILLOW FAMILY
Salix gooddingii var. *gooddingii* - black willow
Salix lasiolepis var. *bracelinae* - arroyo willow

SCROPHULARIACEAE - FIGWORT FAMILY
Scrophularia californica ssp. *californica*

SOLANACEAE - NIGHTSHADE FAMILY
* *Nicotiana glauca* - tree tobacco
Solanum douglasii - white nightshade

URTICACEEAE - NETTLE FAMILY
Urtica dioica - giant creek nettle

VERBENACEAE - VERVAIN FAMILY
Verbena lasiostachys - western verbena

VITACEAE - GRAPE FAMILY
Vitus sp. - grape

ANGIOSPERMAE (MONOCOTYLEDONES)

CYPERACEAE - SEDGE FAMILY
* *Cyperus involucratus* - African umbrella sedge
Scirpus robustus - Pacific coast bulrush

ELEOCHARIS - SPIKERUSH FAMILY
Eleocharis macrostachya - spikerush

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APPENDIX A *(continued)*

IRIDACEAE - IRIS FAMILY

Sisyrinchium bellum - blue-eyed grass

POACEAE - GRASS FAMILY

* *Avena barbata* - slender oat
* *Bromus diandrus* - ripgut grass
* *Bromus hordeaceus* - soft chess
* *Bromus madritensis* ssp. *rubens* - foxtail chess
* *Cortaderia selloana* - pampas grass
* *Cynodon dactylon* - Bermuda grass
* *Hordeum marinum* spp. *gussoneanum* - Mediterranean barley
* *Lamarckia aurea* - goldentop
* *Lolium multiflorum* - Italian ryegrass
Nassella lepida - foothill stipa
Nassella pulchra - purple needlegrass
* *Pennisetum clandestinum* - kikuyu grass
* *Phalaris aquatica* - Harding grass
* *Polypogon monspeliensis* - annual rabbit's-foot grass
* *Vulpia myuros* - rattail fescue

TYPHACEAE - CATTAIL FAMILY

Typha latifolia - broad-leaved cattail

* signifies introduced (non-native) species

E#23/B.19 #62

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
REVISION COUNTY COMMENTS 11-6-98
UPDATED 10-16-01

Prepared by Jackie Bowland and Trish Burgess, Interface Planning and Counseling
Includes all trees on-site except Willows in Tomate Creek and Eagle Canyon*
Revised by the Office of Katie O'Reilly Rogers
October 2001 Revision by Dudek & Assocates

** DBH = Diameter measured average breast height (Four feet above grade)

(***) Grove I - of 40 trees, 25 will be removed

TREE ID	TREE SPECIES		TRUNK DIAMETER (INCHES) @ DBH**	STATUS (NO COMMENT INDICATES TREE TO REMAIN)
5	Pine		12	DEAD/GONE
6	Pine		11	~~REMOVE (G/F)~~ DEAD/GONE
7A	Pine		9 w/ sapling	~~REMOVE (G/F)~~ DEAD/GONE
7B	Cypress	1	12	REMOVE (G/F)
7C	Eucalyptus	1	8	REMOVE (G/F)
8	Cypress	1	20	
9	Cypress	1	18	
10	Cypress		N/A	REMOVE – Stump covered with ice plant
11A	Cypress	3	36	
11B	Eucalyptus	1	14	
12	Cypress	1	36	
13	Cypress	1	24	
14	Cypress	1	36	
15	Cypress	1	24	
16	Cypress	1	16	
17A	Cypress	1	20	
17B	Cypress	1	12	
18	Pine		12	REMOVE – Stump
19A	Eucalyptus	1	24	REMOVE
19B	Eucalyptus		24	REMOVE – SICK/DEAD
20	# Not Used			
21	Cypress		20; 10	~~REMOVE (F)~~ – Not Found (9/01)
22	# Not Used			
23A	Cypress	1	24	
23B	Cypress		30	REMOVE – DEAD
23C	Cypress	1	30	
24	Cypress	1	30	
25	Cypress	1	12	
26	Cypress	4	30	REMOVE (F)
27	Cypress	1	26 w/ sapling	
28	Eucalyptus	1	6	REMOVE (F)
29	# Not Used			
30	~~Ornamental~~ Acacia		8	INVASIVE EXOTI
31A	Eucalyptus		9	DISEASED (Scale)
31B	Eucalyptus	1	12	

EXHIBIT NO. 24
APPLICATION NO.
A-4-STB-93-154-EC-A2
10-16-01 tree inventory update / Dudek

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
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UPDATED 10-16-01

32	~~Ornamental~~ Acacia		18	INVASIVE EXOTIC (Senescent)
33	Eucalyptus		18	DISEASED (Scale)
34	Pine		22	REMOVE – DEAD
35	Pine		16	REMOVE – DEAD
36	Pine		14	REMOVE – DEAD (Uprooted by wind/toppled over)
37A	Eucalyptus		36	POOR HEALTH (Scale)
37B	Eucalyptus		8	POOR HEALTH (Scale)
37C	~~Ornamental~~ Acacia		8	INVASIVE EXOTIC
37D	Eucalyptus	1	8	REMOVE (F)
38A	Pine		24	~~REMOVE (G)~~ DEAD
38B	Eucalyptus	1	12	REMOVE (G)
39A	Eucalyptus	5	30	
39B	Eucalyptus	1	8	
39C	Eucalyptus	1	12	
39D	Eucalyptus	1	12	REMOVE (G)
40A	~~Ornamental~~ Acacia		26	INVASIVE EXOTIC
40B	~~Ornamental~~ Acacia		12	INVASIVE EXOTIC
40C	~~Ornamental~~ Acacia		12	INVASIVE EXOTIC
41	Cypress	1	18	REMOVE (F)
42	Cypress	4	10;11;16;15	
43A	Cypress	1	23	REMOVE (F)
43B	Cypress	1	18	REMOVE (F)
43C	Eucalyptus	1	12	REMOVE (F)
43D	Eucalyptus	1	18	REMOVE (F)
44A	Cypress		30	~~REMOVE – SICK/DEAD~~ Chopped Down
44B	Eucalyptus	1	12	REMOVE (F)
44C	Eucalyptus		Fallen	REMOVE – SICK
44D	Eucalyptus		Split Apart	REMOVE – SICK
45	Cypress	1	28	REMOVE (F)
46	Eucalyptus	1	20	REMOVE (F)
47	Eucalyptus	1	30	REMOVE (F)
48	Eucalyptus	6	Sprouts	REMOVE – ~~SICK/DEAD~~ OK
49	Eucalyptus	1	20	REMOVE – ~~SICK/DEAD~~ OK
50	Eucalyptus	1	24	REMOVE – ~~SICK/DEAD~~ OK
51A	Eucalyptus	1	30	REMOVE (F)
51B	Cypress	1	40	REMOVE (F)
52	Ca. Pepper	1	8;10	REMOVE (F)
53	Eucalyptus		30	REMOVE – SICK/DEAD
54	Cypress	1	28	REMOVE (F)
55	Eucalyptus	1	22	
56	Eucalyptus	1	9	
57	Eucalyptus	1	35	Note: In areas of Eucalyptus 56, 57–do not remove sideroxylon; prune only.
58	Eucalyptus		23 Blown Over	REMOVE – SICK
59	Cypress		20	REMOVE – SICK

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
REVISION COUNTY COMMENTS 11-6-98
UPDATED 10-16-01

60	Eucalyptus		Large number of Stumps sprouting	REMOVE – SICK
61A	Cypress	1	20	
61B	Cypress	1	18	Toppled over
62	Cypress	1	20	
63	Cypress	1	20	
64	Cypress		26	~~REMOVE (G/F)~~ Not Shown
65	Cypress	1	~~28~~ 42	
66	Eucalyptus		35	REMOVE – SICK
67	Cypress	1	36	REMOVE (F)
68	Eucalyptus		20	REMOVE – SICK
69	Cypress	1	30	REMOVE (F)
70	Cypress	3	Broken Apart	REMOVE (F)
71	Eucalyptus		18	REMOVE – SICK
72	Cypress	1	30	
73	Cypress	1	12	REMOVE (F)
74	Eucalyptus	1	18	REMOVE (F)
75	Eucalyptus Gone		26;10;8	REMOVE – GONE
76	Cypress		34	DEAD
77A	Eucalyptus	1	20	REMOVE (F)
77B	Eucalyptus		6;8	REMOVE ~~(F)~~ – DISEASED/DYING
77C	Eucalyptus	1	12;6	REMOVE (F)
78	Cypress	1	40	REMOVE (F)
79A	Cypress		30 Split Apart	REMOVE ~~(F)~~ – DISEASED (borers)
79B	Cypress		12	REMOVE ~~(F)~~ Dead/Missing
80	Eucalyptus		20	REMOVE ~~(F)~~ – DISEASED
81	Cypress		20;12;9	REMOVE ~~(F)~~ – DISEASED/DYING
82	Cypress	1	36	REMOVE (F)
83	Cypress	1	40	REMOVE (F)
84	Eucalyptus	1	26	REMOVE (F)
85	Pine		~~70%~~ 100% Dead	REMOVE ~~(F)~~ – DEAD
86	Eucalyptus	1	18	REMOVE (F)
87	Cypress	1	28	REMOVE (F)
88	Cypress	1	24	REMOVE (F)
89	Cypress	1	12	
90	Cypress	1	8	
91	Cypress	1	11	
92	Cypress	1	12	
93	Cypress	1	28	Uprooting
94	Cypress	1	25	
95	Cypress	1	12	
96	Cypress	1	16	
97	Cypress	1	26	
98	Cypress		8	DISEASED (Bark Beatles/borers)
99	Cypress		9;9;12;10;11	DEAD (Bark Beatles/borers)

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
REVISION COUNTY COMMENTS 11-6-98
UPDATED 10-16-01

100	Cypress		10	DEAD
101A	Cypress	1	24	Fallen but OK
101B	Cypress		4 Trunks	REMOVE – SICK
102	Cypress	1	22	
103A	Cypress	1	24	
103B	Cypress	1	22	
103C	Cypress	1	30	
104	Cypress		30	FALLEN - DEAD
105	Cypress	1	24	
106	Cypress	1	20	REMOVE (G)
107	Cypress	1	12	REMOVE (G)
108	Cypress	2	16	REMOVE (G/F)
109	Cypress		26	REMOVE – SICK
110	Cypress	2	14;18	REMOVE (G/F)
111	Cypress	1	24 Prune Out Blight	
112	Cypress	1	32	
113	Cypress	1	30	REMOVE (G)
114	Cypress	1	32	REMOVE (G)
115	Cypress	1	34	REMOVE (G)
116	Cypress	1	20	REMOVE (G)
117	Cypress	1	24	REMOVE (G)
118	Redwood	2	11,11	REMOVE (G/F)
119	Cypress	2	36	REMOVE (G/F)
120	Cypress	1	30	REMOVE (G/F)
121	Cypress	1	22	REMOVE (F)
122	Pine	3	10;12;11	REMOVE (G)
123	Pine	~~2~~ 4	10'12	REMOVE (G)
124	Pine		10'12	REMOVE ~~(G)~~ Split/Diseased
125	Pine	6	10;12;16	~~REVOVE – DEAD~~ OK
126	Pine	2	9;12	SICK
127	~~Cypress~~ Pine	2	10;12	SICK
128	Pine	3	12;10;16	
129	Pine	3	10;11;16	
130	Pine	2	12;9	
131	Pine		Blown over	REMOVE - DEAD
132	Pine		24;18	75% DEAD
133	~~Pine~~ Cypress	2	~~10;8~~ 12	
134	Pine	3	10;8;9	
135	Pine	2	24;19	
136	Eucalyptus	1	11	REMOVE (F)
137	Eucalyptus	5	6;6;6;7;8	REMOVE (F)
138	Eucalyptus	1	6	REMOVE (F)
139	Eucalyptus		11;8	REMOVE ~~(F)~~ – DEAD
140	Eucalyptus	1	10	REMOVE (F)
141	Eucalyptus	1	10	REMOVE (F)
142	Pine	2	12;10	
143	Pine	2	14;9	
144	Pine	2	9;10	

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
REVISION COUNTY COMMENTS 11-6-98
UPDATED 10-16-01

145	Pine	6	10;10;10;8;6;11	
146	Pine	4	8;10;12;9	
147	Pine	3	9;6;8	
148	Cypress	5	18;14;10;10;16	REMOVE (F)
149	Cypress	1	10	REMOVE (F)
150	Cypress	1	10	REMOVE (F)
151	Cypress	1	10	REMOVE (F)
152	Eucalyptus	1	10	REMOVE (F)
153	Eucalyptus	2	20;16	REMOVE (F)
154	Cypress	3	18;12;10	REMOVE (F)
155	Eucalyptus	2	18;16	
156	Eucalyptus	2	18;11;w/7 saplings	
157	Eucalyptus	1	18	
158	Eucalyptus	2	10;18	
159	Pine	2	12;10	
160	Pine	2	10;11	
161	Pine	~~1~~ 2	21	
162	Pine	2	12;16	SPLIT/REMOVE LOWER LIMB
163	Pine	3	10;10;8	
164	Pine		4	REMOVE – DEAD
165	Cypress	2	8;6	REMOVE (G)
166	Cypress	1	10	REMOVE (G)
167	Pine	3	10;10;12	REMOVE (G)
168	Pine	3	10;10;12	
169	Pine	3	10;10;14	REMOVE (G)
170	Pine	4	16;10;9;11	
171	Pine	2	11;9	REMOVE (G)
172	Pine	3	12;16;10	REMOVE (G)
173	Pine	4	10;9;11;14	REMOVE (G)
174	Cypress	6	9;10;18;6;11;10	REMOVE (G/F)
175	Pine	1	22	REMOVE (G/F)
176	Pine	2	18;12	
177	Pine	5	16;11;10;18;9	
178	Pine		16;17	REMOVE ~~(G/F)~~ - SICK
179	Pine		Dead	REMOVE – DEAD
180	Pine		Dead	REMOVE – DEAD
181	Pine		Dead	REMOVE – DEAD
182	Pine		Dead	REMOVE – DEAD
183	Pine	1	28	REMOVE (G/F)
184	Pine	3	18;10;16	REMOVE (G/F)
185	Pine	2	~~14~~;10 one branch broken	REMOVE (G/F)
186	Pine	2	10;16 dying/senescent 80% barren	REMOVE (G/F)
187	Pine	2	12;14	REMOVE (G/F)
188	Pine	2	16;10	SICK, broken branch
189	Pine	2	20;16	
190	Pine	2	18;14	Senescent

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
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UPDATED 10-16-01

191	Pine	2	16;11	
192	Willow	1	9	REMOVE – MANY DEAD TRUNKS
193	Willow	4	9;10;16;12	
194	Willow	3	12;18;21	
195	Willow	4	16;9;8;6	
196	Willow	3	9;8;10	
197	Willow	2	14	REMOVE
198	Willow	2	12;16	REMOVE
199A	Willow	3	16;10;20	
199B	Willow	1	14	
200	Willow	2	16;12	REMOVE
201	Willow	1	23	REMOVE
202	Willow	4	28;16;19;20	REMOVE
203	Willow	2	16;12	
204	Willow	2	12	
205	Willow	3	8;10;6	
206	Willow	2	8;10	
207	Willow	2	10;8	
208	Willow	3	16;10;18	
209	Willow	2	10;18	REMOVE
210	Willow	1	10	REMOVE
211	Willow	4	18;11;9;16	REMOVE
212	Willow	3	16;10;18	REMOVE
213	Willow	3	16;12;10	REMOVE
214	Willow	2	10;18	REMOVE
215	Willow	2	26;10	REMOVE
216	Willow	4	6	REMOVE
217	Willow	2	8;10	
218	Willow	2	6;10	
219	Willow	3	18;10;9	
220	Willow	4	18;12;9;10	
221	Willow	3	8;10;11	
222	Willow	2	12;10	
223	Willow	2	12;10	
224	Willow	4	16;20;11;11	
225	Willow	4	10;18;9;12	
226	Willow	3	16;20;12	
227	Willow	5	10;6;6;10;11	
228	Willow	3	6;6;8	
229	Willow	1	6	
230	Willow	3	9;10;6	
231	Willow	3	18;9;11	REMOVE (G)
232	Willow	3	6;6;9	REMOVE (G)
233	Willow	4	8;11;6;6	
234	Willow	1	6	
235	Willow	2	6;4	
236	Willow	4	8;16;6;6	

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
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UPDATED 10-16-01

237	Willow	1	7	
238	Willow	2	8;10	
239	Willow	7	16;9;6;10;14;8;9	
240	Willow	1	8	
241	Willow	1	6	
242	Willow	1	8	Viewed from slope, too dense vegetation and poison oak to tag
243	Willow	1	6	
244	Willow	3	12;10;8	
245	Willow	1	6	
246	Willow	1	8	
247	Willow	1	6	
248	Willow	1	8	
249	Willow	4	6;6;4;8	
250	Willow	2	9;6	
251	Willow	2	12;8	
252	Willow	2	18;9	
253	Willow	2	6;8	
254	Willow	1	8	
255	Willow	2	6;6	
256	Willow	3	6;6;6	Viewed from slope, too dense vegetation and poison oak to tag
257	Willow	3	6;6;6	
258	Willow	4	6;8;5;9	
259	Willow	6	6;6;6;5;7;6	
260	Willow	3	6;4;6	
261	Willow	2	7;6	
262	Willow	2	6;14	
263	Willow	4	10;9;7;11	
264	Willow	6 main trunks	6;10;7;9;11;18	
265	Eucalyptus	1	8	
266	Eucalyptus	1	16	
267	Willow	1	26	
268	Eucalyptus	6	38;22;28;16;14;18	
269	Eucalyptus	1	18	
270	Eucalyptus	4	39;26;18;14	
271	Eucalyptus	1	14	REMOVE (G)
272	Willow	1	6	
273	Willow	2	24;11	
274	Willow	2	18;10	
275	Willow	1	8	
276	Willow	1	12	
277	Willow	7	9;11;10;11;7;9;8	
278	Willow	1	20	
279	Willow	1	16	
280	Willow	1	16	
281	Willow	2	9;9	

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
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UPDATED 10-16-01

282	Willow	2	8;9	
283	Willow	3	6;10;14	
284	Willow	1	16	
285	Willow	1	6	
286	Willow	3	10;10;9	
287	Willow	1	9	
288	Willow	1	10	
289	Willow	2	9;8	
290	Willow	1	12	
291	Willow	4	6;8;9;6	
292	Willow	2	12;11	
293	Willow	1	11	
294	Willow	3	8;9;6	
295	Willow	2	6;8	
296	Willow	2	6;5	
297	Willow	2	6;11	
298	Willow	1	9	
299	Willow	1	6	
300	Willow	2	17;12	
301	Willow	2	6;8	
302	Willow	2	7;6	
303	Willow	4	6;7;6;5	
304	Eucalyptus	3	11;12;7	REMOVE
305	Coast Live Oak	1	10	
306	Cypress	1	24	
307	Eucalyptus	1	12	
308	Eucalyptus	2	10; 11	
309	Eucalyptus	1	16	
310	Eucalyptus	4	6; 6; 9; 8	
311	Eucalyptus	4	9; 8; 6; 6	
312	Eucalyptus	3	9; 12; 6	
313	Eucalyptus	4	6; 10; 9; 6	
314	Eucalyptus	1	9	
315	Eucalyptus	1	11	
316	Eucalyptus	1	15	
317	Eucalyptus	1	16	
318	Eucalyptus	4	6; 6; 9; 9	
319	Eucalyptus		10	REMOVE ~~(G/F)~~ – DEAD (Burn)
320	Eucalyptus		18; 16; 13; 10; 12	REMOVE ~~(G/F)~~ – DEAD (Burn)
321	Eucalyptus		24	REMOVE ~~(G/F)~~ – DEAD (Burn)
322	Eucalyptus		21; 9	REMOVE ~~(G/F)~~ – DEAD (Burn)
323	Eucalyptus		20	REMOVE ~~(G/F)~~ – DEAD (Burn)
324	Eucalyptus		20	REMOVE ~~(G/F)~~ – DEAD (Burn)
325	Eucalyptus		24	REMOVE ~~(G/F)~~ – DEAD (Burn)
326A	Eucalyptus		16; 10; 12; 9; 15; 10; 11; 11	REMOVE ~~(G/F)~~ – DEAD/DYING
326B	Eucalyptus	1	12	REMOVE ~~(G/F)~~
326C	Eucalyptus	1	12	REMOVE ~~(G/F)~~

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
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UPDATED 10-16-01

326D	Eucalyptus	1	12	REMOVE ~~(G/F)~~
326E	Eucalyptus	1	12	REMOVE ~~(G/F)~~
326F	~~Eucalyptus~~ Cypress	1	10	REMOVE ~~(G/F)~~
326G	~~Eucalyptus~~ Cypress	1	10	REMOVE ~~(G/F)~~
327	Eucalyptus		12; 12	REMOVE ~~(G/F)~~ – DEAD/DYING (burned)
328	Eucalyptus		12; 10; 8; 9	REMOVE ~~(G/F)~~ – DEAD/DYING (burned)
329	Eucalyptus		26	REMOVE ~~(G/F)~~ – DEAD/DYING (burned)
330	Eucalyptus	1	12	REMOVE
331	Eucalyptus	1	14	REMOVE
332	Eucalyptus	1	18; 12	REMOVE
333	Cypress	1	21	REMOVE (G)
334	Cypress	~~3~~ 1	~~15; 12; 9~~ 30	REMOVE (G/F)
335	Pine	1	23	REMOVE (G)
336	Pine		22	REMOVE – SICK
337	Pine		14; 22; 20; 21	REMOVE – ~~SICK~~ DEAD
338	Pine		21	REMOVE – ~~SICK~~ DEAD
339	Pine		22	REMOVE – ~~SICK~~ DEAD
340	Pine		22	REMOVE – ~~SICK~~ Toppled
341	Pine		26	REMOVE – ~~SICK~~ DEAD
342	Pine		18; 17; 20	REMOVE – SICK
343	Ornamental		19	REMOVE – SICK
344	Ornamental	1	17	REMOVE
345	Pine	1	52	REMOVE
346	Ornamental		19	REMOVE – SICK
347	Ornamental		16; 12; 24	REMOVE - SICK
348	Cypress	1	26	REMOVE
349	Ornamental	2	24; 10	REMOVE
350	Pine		7	REMOVE – SICK
351	Pine		58	REMOVE – DEAD
352	Cypress		10	REMOVE ~~(G)~~ – DISEASED/DYING
353	Cypress	1	36	
354	Cypress	1	58	REMOVE (G)
355	Willow	3	3;4;6	Not Taggable
356	Willow	1	11	Not Taggable
357	Willow	1	10	Not Taggable
358	Willow	1	9	Not Taggable
359	Willow	1	8	Not Taggable
360	Willow	1	9	Not Taggable
361	Willow	4	7;10;6;9	Not Taggable
362	~~Pine~~ Not there		16;10;12	~~REMOVE (G)~~
363	~~Pine~~ Not there		10;12	~~REMOVE (G)~~
364	~~Pine~~ Not there		12;10	~~REMOVE – DEAD~~
365	Cypress	3	10;15;18	REMOVE (G/F)
366	Cypress	1	15	REMOVE (G/F)

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
REVISION COUNTY COMMENTS 11-6-98
UPDATED 10-16-01

367	Tamarisk		23;12	
368	Tamarisk		24;14	
369	Tamarisk		18	
370	Tamarisk		14	
371	Tamarisk		12 to 20; suckers	
372	Tamarisk		8 to 23; suckers	
373	Tamarisk		9 to 18; suckers	
374	Tamarisk		6 to 25; suckers	
375	Prunus	Multiple	2 to 6; suckers	
376	Cypress	4	15;8;6;7	REMOVE (G) – Uprooted/Toppled (50% dead)
377	Cypress	1	13	REMOVE (G)
378	Cypress	6	9;9;13;6;12;16	REMOVE (G)
379	Pine	3	9;11;11	REMOVE (G)
380	Cypress	6	11;8;7;8;6;13	REMOVE (G)
381	Pine	1	23	REMOVE (G)
382	# Not Used			
383	Coast Live Oak	4	48;52;36;28	
384	Coast Live Oak	2	7;6; several ≤ 2" trunks or stems	REMOVE (G)
385	Eucalyptus	48		
386	Eucalyptus	48		
387	~~Ornamental~~ Acacia			INVASIVE EXOTIC-REMOVE (G)
388	Ornamental	8		REMOVE (G)
389	Ornamental			REMOVE ~~(G)~~ – SICK
390	Ornamental			REMOVE ~~(G)~~ – DEAD
391	Ornamental	12		REMOVE (G)
392	Pine	10		REMOVE
393	Pine			REMOVE – ~~SICK~~ DEAD
394	Eucalyptus	27		REMOVE (G)
395	Eucalyptus	32		REMOVE (G)
396	Ornamental	14		REMOVE (G)
397	Eucalyptus	36		REMOVE (G)
398	Ornamental	15		REMOVE (G)
399	Ornamental	24		
400	Ornamental	18		REMOVE (G)
401	Ornamental	8		REMOVE (G)
402	Ornamental	14		REMOVE (G)
403	~~Ornamental~~ Acacia			INVASIVE EXOTIC - REMOVE (G)
404	~~Ornamental~~ Acacia			INVASIVE EXOTIC - REMOVE (G)
Grove A	Eucalyptus	»12 Trees	6 to 10	
Grove B	Eucalyptus	»50 Trees	6 to 12 w/ saplings	
Grove C	Eucalyptus	»50 Trees	4 to 11 w/ saplings	

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
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UPDATED 10-16-01

Grove D	Eucalyptus	14 trees over 6"; saplings & smaller trees present 9 mult-trunks	15;9;11;6;8 and ranging from 2 to 6	REMOVE
Grove E	Eucalyptus	»20 + saplings & crown	Ranging from 6 to 26	REMOVE (F)
Grove F	Tamarisk		16 to 30	REMOVE
Grove G	Tamarisk		9 to 26	REMOVE
Grove H	Tamarisk		10 to 20	REMOVE
Grove I**	Tamarisk		10 to 25	REMOVE
Grove J	Eucalyptus	»159 trees	6 to 18 w/ saplings	
Grove K	Cypress	1	30	REMOVE
Grove L	INDIVIDUAL TREES LISTED			
Grove M	Eucalyptus forest	100 trees	Single & multi-trunk; ≤ 1" to 14" w/ saplings.	
Grove N	Willow	30 – 40 trees	Multi-trunk & saplings; ≤ 1" to 10"; sprouting from horizontal branches.	
Grove O	Willow	10 trees	Multi-trunk & saplings; ≤ ½" to 3"	
Grove P	Willow	20-30 trees	Multi-trunk & saplings; ≤ ½" to 12", sprouting from horizontal branches.	
Grove Q	Ornamental			REMOVE (G) – SICK
Grove R	Ornamental	6	Plus or Minus 12" w/ sapplings	REMOVE (G)

TABLE B
TREE INVENTORY
DOS PUEBLOS GOLF LINKS
FEBRUARY 1993 REVISED JUNE 1998
REVISION COUNTY COMMENTS 10-15-98
REVISION COUNTY COMMENTS 11-6-98
UPDATED 10-16-01

SUMMARY:

DESCRIPTION:	TREES TO BE REMOVED:	MITIGATION:
WILLOWS	15	75
OAK	1	10
NON-NATIVES	*148 FROM 187*	*444 FROM 576*
TOTAL	*164 FROM 203*	*529 FROM 662*

STATUS LEGEND

REMOVE (G):	REMOVE DUE TO GRADING
REMOVE (F):	REMOVE, TREE LOCATED IN PROPOSED FAIRWAY
REMOVE (G/F):	REMOVE DUE TO GRADING AND LOCATION IN PROPOSED FAIRWAY
(NO COMMENT):	TREE TO REMAIN

NOTES

1 TAMARISK TREES ARE NOT COUNTED OR MITIGATED.
2 SICK, DYNING OR DEAD TREES NOT MITIGATED.

Ex. 24 DPS 12 of 12

MEMORANDUM

Date: March 28, 2002

To: R. Whitt Hollis, Makar Properties, LLC

From: Sherri Miller, Dudek & Associates

Re: ***Surveys for Southern Tarplant***
Dos Pueblos Golf Links
Dudek Project No. 1737-06

On November 9, 1999, Dudek & Associates, Inc. (DUDEK), conducted a site visit at the Dos Pueblos Golf Links project site. The purpose of the site visit was to survey for the southern tarplant (*Hemizonia parryi* ssp. *australis*). The plants were counted individually; where several plants were growing in a clump the number of individual plants was counted using central axis stems. In total, 372 plants were observed onsite:

- Four plants were observed near the bluff, west of the bridge;
- One plant was observed within the southeast corner of the project site;
- Four plants were observed in the vicinity (west) of the previously removed ARCO offices;
- 363 plants were observed in the vicinity (east) of the previously removed ARCO offices.

On October16, 2000, DUDEK conducted a site visit to conduct a site visit to survey for the southern tarplant using the methods described above. In total, 482 plants were observed onsite:

- Three plants were observed near the bluff, west of the bridge;
- 21 plants were observed at the 1994 tarplant location;
- 13 plants were observed along the road in the southwest section of the project site;
- 37 plants were observed farther south along the road in the southwest section of the project site;
- 403 plants were observed in the vicinity of the previously removed ARCO offices.

On September 21, 2001, DUDEK conducted a site visit to conduct a site visit to survey for the southern tarplant using the methods described above. In total, 436 plants were observed onsite:

- 45 plants were observed at the 1994 tarplant location;
- 12 plants were observed in the vicinity (west) of the previously removed ARCO offices;
- 331 plants were observed in the vicinity (east) of the previously removed ARCO offices;
- 48 plants were observed south of the previously removed ARCO offices.

EXHIBIT NO. 25
APPLICATION NO.
A-4-STB-93-154-CC-A2
1999, 2000, 2001 southern tarplant surveys

DUDEK & ASSOCIATES
California Corporation

Corporate Office: 760.942.5147
605 Third Street Fax 760.632.8710
Encinitas, CA 92024

FAX TRANSMITTAL

DATE: 03/06/2002	JOB NO. 1737-06
RE: Dos Pueblos	

To: **Whitt Hollis**
Makar Properties

FAX #: **Bakersfield**
Attention: _____ Time: _____

To Whom It May Concern:

We are sending you via FAX the following items:

COPIES	DATE	NO.	DESCRIPTION
1			figure showing 45 Hemizonia plants
1			figure showing 331, 12 and 48 Hemizonia plants

THESE ARE TRANSMITTED as checked below:

___ For approval ___ For your use X As requested ___ For review and comment

___ Other _____

Remarks: We can make something pretty if you need it but here are my field notes. Thanks, Sherri

A total of 3 pages are being transmitted including this transmittal sheet. If you do not receive all of the pages, or if this FAX is received in error, please notify Dudek & Associates, Inc. at the phone number listed above.

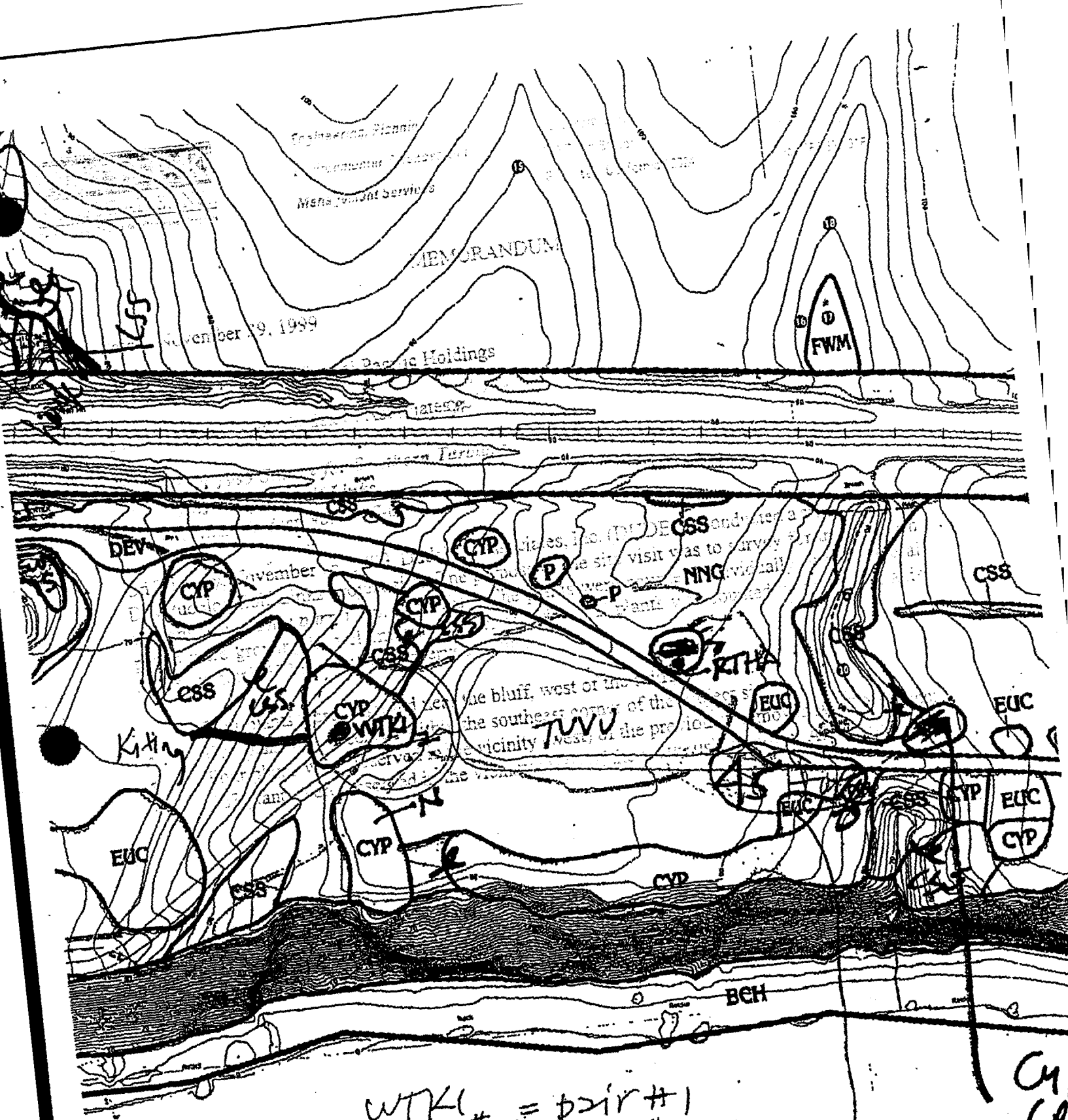
Copy to: _____

Signed: Sherri L. Miller

EX 25a
P 2
272

TO: WHITT HOLLIS BRIELD


ORN
PIN
EUC
ORN
PIN
CYP
CYP
PIN
NNG
ORN
PIN
EUC
EUC
12 Ha
331 Ha
(12)
RSHA
CSS
CSS
EUC
ORN
RTHA
40 Ha
NNG
EUC
(32)
CSS
DW
CSS
NNG
EUC
DW
IP
EUC
with Acacia
EUC
CYP
EUC
CSS
AMKE
VGL
OAK
EUC
VGL
EUC
EUC
VGL
EUC
EUC
EUC
CSS
CYP
RTHA
EUC
IP
CSS
DW
IP
IP
PIN
DEV
IP
CSS
CSS



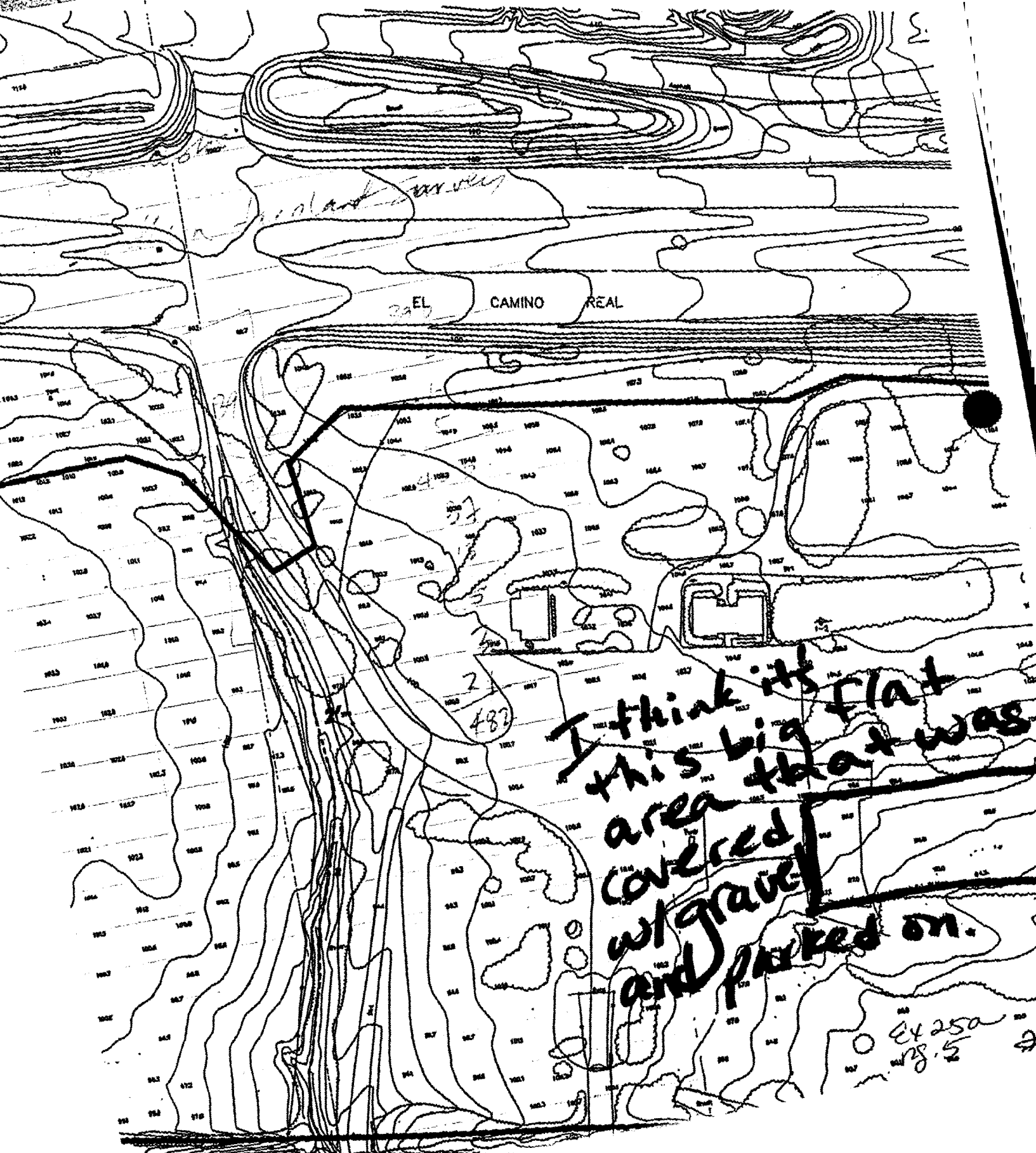
WTK # = pair #1 #2

others = #0105,

45 Hemizonia

Ex 25a pg 4

Whitt — 2 pages
Sheri
10/27/99



I think it's this big flat area that was covered w/ gravel and parked on.

Dos Pueblos — Nov 9, 19

near bluff, west of bridge
4 plants
southeast corner by pine
1 plant
ARCO offices west
4 plants
arco office east
363 ~~plants~~ plants

EX25a
pg. 6

DUDEK
& ASSOCIATES, INC.
Professional Teams for Complex Projects

Engineering, Planning,
Environmental Sciences and
Management Services

Corporate Office:
605 Third Street
Encinitas, California 92024

760.942.5147
Fax 760.632.0164

MEMORANDUM

Date: November 29, 1999

To: R. Whitt Hollis, Capital Pacific Holdings

From: Sherri Miller, Dudek & Associates

Re: ***Fall 1999 Survey for Southern Tarplant***
Dos Pueblos Golf Links
Dudek Project No. 1737-06

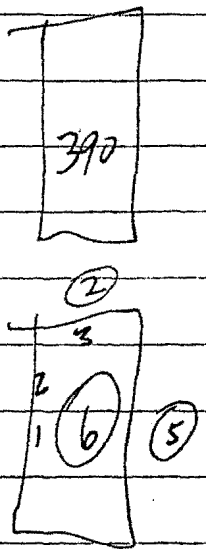
On Tuesday, November 16, 1999, Dudek & Associates, Inc. (DUDEK), conducted a site visit at the Dos Pueblos Golf Links project site. The purpose of the site visit was to survey for the southern tarplant (*Hemizonia parryi* ssp. *australis*). The plants were counted individually; where several plants were growing in a clump the number of individual plants was counted using central axis stems. In total, 372 plants were observed onsite:

- Four plants were observed near the bluff, west of the bridge;
- One plant was observed within the southeast corner of the project site;
- Four plants were observed in the vicinity (west) of the previously removed ARCO offices;
- 363 plants were observed in the vicinity (east) of the previously removed ARCO offices.

Exhibit 25a
Page 87 ~~284~~

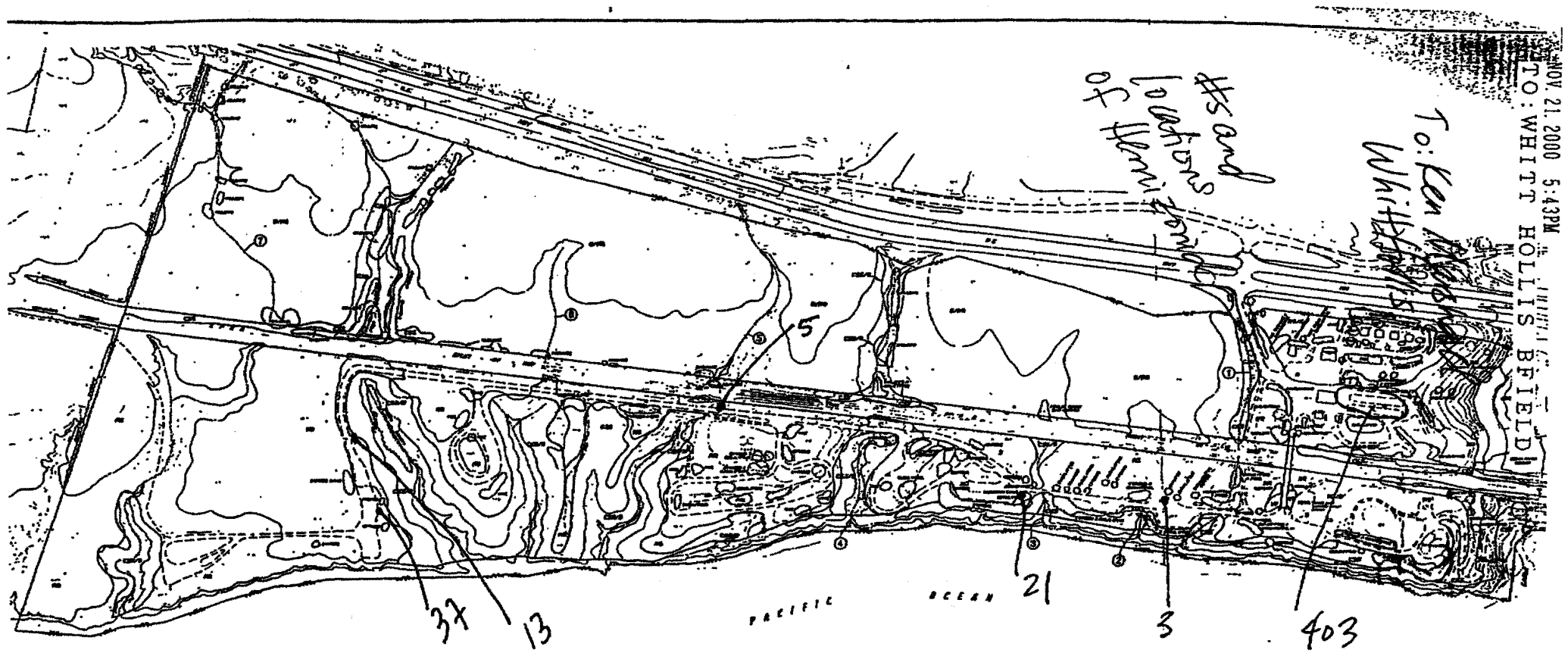
Dos Pueblos Oct 16, 2000

Southern tarplant survey



390
2
6
5
403
37
13
5
3
21
482

EX 25
B8



LEGEND

G/RG	ACTIVELY GRAZED RUDERAL GRASSLAND
CSS	COASTAL SAGE SCRUB
CSS/B	COASTAL SAGE SCRUB / BARRANCA
D	DEVELOPED
RG	RUDERAL GRASSLAND
RG/D	RUDERAL GRASSLAND / DEVELOPED
VP	VERNAL POOL
	DRAINAGE/OVERLAND MOVEMENT

SOUTH

EXISTING BIOLOGICAL CONDITIONS

DOS PUEBLOS GOLF LINKS

SANTA BARBARA CALIFORNIA

NO. 9774 P. 1/1

482 total

Exhibit 18
2 of 2

DUDEK & ASSOCIATES, INC.
Professional Teams for Complex Projects

Engineering, Planning,
Environmental Sciences and
Management Services

Corporate Office:
605 Third Street
Encinitas, California 92024

760.942.5147
Fax 760.632.0164

RECEIVED
APR 29 2002
CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

April 25, 2002

1737-06

Mr. R. Whitt Hollis, Jr.
Makar Properties, L.L.C.
P.O. Box 2521
Santa Barbara, California 93120-2521

SUBJECT: ***SURVEYS FOR SOUTHERN TARPLANT, DOS PUEBLOS GOLF LINKS PROJECT, SANTA BARBARA COUNTY, CALIFORNIA***

The letter report provides a summary of the surveys conducted by Dudek & Associates, Inc. (DUDEK) for the southern tarplant (*Hemizonia parryi* ssp. *australis*) at the approximately 208-acre Dos Pueblos Golf Links project area. The project site is located in an unincorporated area of Santa Barbara County, California.

INTRODUCTION

The purpose of this letter report is to document the focused surveys conducted for the southern tarplant over a three-year period (1999 through 2001), compare the survey results to those of the 1998 survey conducted by Jackie Bowland, as well as the results of the original environmental review in 1993 (92-EIR-16). The site's current physical conditions remain substantially unchanged as compared to the physical conditions recorded in 1991 and 1992 (Interface Planning and Counseling Corporation, October 15, 1991; Bowland and Ferren 1992), and in the 1993 EIR for the project.

PROJECT LOCATION

The ARCO Dos Pueblos Golf Links project encompasses approximately 208 acres in unincorporated Santa Barbara County (*Figure 1*). The project site is situated along the coastal bluff, 1.5 miles west of the Winchester Canyon exit on north-bound U.S. Highway 101. The site is bound to the south by the mean high tide line of the Pacific Ocean, to the north by U.S. Highway 101, to the east by Eagle Canyon Creek, and to the west by Mazzini Avenue within the Naples townsite. The site is bisected from east to west by the Union Pacific Railroad.

EXHIBIT NO. 25
APPLICATION NO.
A-4-STB-93-154-CC+A2
Dudek Apr 25 2002
Southern Tarplant Rpt.

The 208-acre project site lies within the coastal plain between the Santa Ynez Mountains and the Pacific Ocean. Approximately 5.7 acres of the project site consist of developed lands remaining from the abandoned ARCO oil and gas production facilities. The remaining undeveloped lands consist predominantly of annual non-native grasslands (133.9 acres), Venturan coastal sage scrub (32.5 acres) and non-native windrows (11.9 acres), although other plant communities are also present to a lesser extent. The site is dissected by several incised coastal drainages, the largest of which are Eagle Canyon and Tomate Canyon. Eagle Canyon is located partially within the eastern project boundary and Tomate Canyon extends north-south in the western portion of the site. Seven smaller, unnamed drainages also exist onsite.

PROJECT HISTORY

From 1949 through 1952, the production facilities, including storage tanks at the disturbed areas were installed. The project site remained operation from 1952 through 1997. From December 1997 through mid January 1998 the production facilities, including storage tanks at the disturbed areas, were dismantled and the pieces were hauled away by truck.

METHODS

On November 16, 1999; October16, 2000; and September 21, 2001 DUDEK biologist Sherri Miller conducted focused surveys for southern tarplant. A focused survey was not conducted during the April 2002 site visit due to the senescence of this annual (fall-blooming) plant species. Interface Planning and Counseling Corporation conducted surveys on April 2 and 3, 1991, at which time data was collected on the location of southern tarplant onsite.

DUDEK mapped the locations of the southern tarplant in the field directly onto a 100-scale topographic map plotted at 100-scale (1"=100') prepared by Penfield & Smith. During the April 2002 site visit, the limits of the highest density of southern tarplants was recorded using a global positioning system backpack unit and downloaded into the digital site plan.

DUDEK does not have information regarding the survey methods of Jackie Bowland (May 3, 1995 and October 1998 surveys) or Interface Planning and Counseling Corporation (October 15, 1991 survey).

EX. 25 A 2 270

RESULTS

Table 1 summarizes the southern tarplant population size onsite from 1991 through 2001 (see attached site plan).

Year of Survey	Population Size Onsite	Approximate Area of Occupation Onsite
1991	Small (approximate number unknown)	NA
1995	0	NA
1998	4,500	NA
1999	372	8,706
2000	482	8,740
2001	436	8,765

On October 15, 1991, Interface Planning and Counseling Corporation noted the occurrence of "a small population" immediately south of the coastal road and west of Drainage #3. The approximate number of individuals was not recorded. The location is recorded on Figure 5.1-1 in the 1993 EIR.

On May 3, 1995, Jackie Bowland conducted a survey for southern tarplant and found none. Although this species blooms in the fall, some evidence of southern tarplant should have been evident despite senescence.

In October 1998, Jackie Bowland conducted a focused survey for southern tarplant onsite. She estimated the onsite population to be approximately 4,500. The locations of the southern tarplant were not recorded.

On November 9, 1999, conducted a site visit at the Dos Pueblos Golf Links project site. The purpose of the site visit was to survey for the southern tarplant. The plants were counted individually; where several plants were growing in a clump the number of individual plants was counted using central axis stems. In total, 372 plants were observed onsite:

EX. 25 PG 3 277

- Four plants were observed near the bluff, west of the bridge;
- One plant was observed within the southeast corner of the project site;
- Four plants were observed in the vicinity (west) of the former loading rack facility;
- 363 plants were observed in the vicinity of the former loading rack facility.

On October16, 2000, DUDEK conducted a site visit to conduct a site visit to survey for the southern tarplant using the methods described above. In total, 482 plants were observed onsite:

- Three plants were observed near the bluff, west of the bridge;
- 21 plants were observed at the 1994 tarplant location;
- 13 plants were observed along the road in the southwest section of the project site;
- 37 plants were observed farther south along the road in the southwest section of the project site;
- 403 plants were observed in the vicinity of the former loading rack facility (this number includes those individuals located west of the former loading rack facility which were documented separately in 1999 and 2001).

* nuton veg map they submitted 11/01

On September 21, 2001, DUDEK conducted a site visit to conduct a site visit to survey for the southern tarplant using the methods described above. In total, 436 plants were observed onsite:

- 45 plants were observed at the 1994 tarplant location;
- 12 plants were observed in the vicinity (west) of former loading rack facility;
- 331 plants were observed in the vicinity of the former loading rack facility;
- 48 plants were observed south of the previously removed ARCO offices.

ANALYSIS OF OCCURRENCE DATA

Prior to the abandonment activities, the southern tarplant was known onsite exclusively at one location: south of the coastal road and west of Drainage #3 (1993 EIR). It is not known why the plant was not in evidence during the 1995 survey. Evidence of this annual, fall-blooming species should have been observerable during the spring survey despite senescence.

EX 25 B-4 276

There appears to have been a dramatic increase in the southern tarplant population between 1991 and 1998. As John Storrer notes (letter to Kristen Getler, County of Santa Barbara, dated April 1, 2002), members of the genus *Hemizonia* frequently respond positively to soil disturbance with rapid increases in population size. The limits of the highest density of southern tarplant from 1998 to present correspond to the location of the former loading rack facility. Upon completion of the abandonment, this area was left as a cleared patch of earth with a layer of gravel on top of the soil. The population boom appears to be the result of the disturbance and compaction of the clay soils (Diablo series) combined with the above-average (three times the yearly average) rainfall the winter of 1997 and spring of 1998.

Subsequent to the population boom in 1998, one individual appeared in 1999 at the edge of the dirt coastal road at the turn-around in the southeast corner of the property and four individuals were recorded north of the coast road, east of Drainage #2. Southern tarplant has not been observed at the turn-around location since 1999. In 2000, at the location north of the coast road, east of Drainage #2, only three southern tarplant individuals were observed. No individuals were observed at this location in 2001. These occurrences appear to be the result of distribution via the coastal road (*e.g.*, automobile, human or animal using the coastal road).

In 2000, two new occurrences were noted along the dirt coast road west of Tomate Canyon. No individuals were observed at these locations in 2001. These occurrences appear to be the result of distribution via the coastal road (*e.g.*, automobile, human or animal using the coastal road).

In 2000 and 2001, southern tarplant (21 and 45 individuals, respectively) was observed south of the dirt coast road, west of Drainage #3. This was the location of the 1991 record.

In 2001, a new occurrence (48 individuals) was recorded south of the former loading rack facility.

The number of individuals at the former loading rack facility has fluctuated over time. The number has changed from approximately 4,500 in 1998 to 367 in 1999, 403 in 2000 and 343 in 2001. Excluding the population boom of 4,500 individuals in 1998 (anticipated to be the result of heavy disturbance associated with the dismantling of the oil and gas facilities in the winter of 1997-1998, the population size at the former loading rack facility appears to fluctuate in the mid-300s to the low 400s.

EXHIBIT 5
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they have no map; only John Stover's source of spatial data 1998 population

SOUTHERN TARPLANT REVEGETATION

The limits of the highest density of southern tarplant (see attached site plan) occupies 0.2 acre (8,697 square feet). During 1999, 2000 and 2001 this area has supported up to approximately 400 individuals. The proposed revegetation sites (see attached site plan) occupy 0.5 acre (21,643 square feet west of the bridge) and 1.0 acre (43,191 square feet east of the bridge), respectively, totaling 1.5 acre. Based on the density at the adjacent former loading rack facility, the revegetation areas could support up to 3,000 individuals.

It is anticipated that the revegetation sites will be successful for the following reasons: the proximity of the revegetation sites to the occupied sites; the presence of the same soil type (Diablo clay) and similarities of topography at both the revegetation and occupied sites; the hydrology associated with the vernal pool and disturbed wetlands at the revegetation sites; and the ability of the species to reproduce by seed (high germination rate).

Please let me know if you have any questions regarding this matter.

Very truly yours,

DUDEK & ASSOCIATES, INC.

Sherri L. Miller
Senior Biologist

SLM/ems

att.: *Figure 1*

84-25-B6-280

timing of any surveys undertaken. Are any associated trees (on which monarchs have been observed on site) proposed for removal? Please ensure that the vegetation delineation map notes which trees and site areas have been utilized by monarchs. Please clarify what the proposed setbacks are from these trees (a condition of approval for construction related management will be required).

The Monarch Butterfly Aggregations Associated with Eagle Canyon - 2000-2001 Season, Althouse and Meade, Inc. dated June 2001, Revised November 2001. and Letter, dated February 18, 2002 (provided herein) is the only report/analyses of the monarch butterfly occurrence and use of the site in our possession. We have requested Althouse & Meade to gather any information that Monarch Unlimited or the Monarch Project have on Eagle Canyon and will provide you with any information we receive. We have no knowledge of any other possible information on the site within the past 5 years.

12. Please provide a copy of all maps (whether draft or final), field surveys, field notes, or other relevant data that was prepared by the applicant or its agents and submitted to Santa Barbara County for permit condition compliance for any ESHA, habitat, or sensitive species related matter referenced in any applicable permits/permit conditions for the Arco Dos Pueblos site. Please ensure that any information related to the preparation and submittal of the original BELP (Biological Enhancement Landscape Plan) and all subsequent updates of that plan, are included. Please specifically ensure that all information responsive to the presence of the Southern Tarplant on site is included. These would include any maps, field notes, or other documentation or analyses, memorandums, etc., prepared by Dudek & Associates, or other consulting firms, or County monitors or staff, on behalf of the applicant or related to the applicant's existing or pending permits for development, remediation, abandonment, etc., at the site.

This material has been requested from Dudek & Associates, SAIC and Katie O'Reilly Rogers (the only applicable consultants involved in these matters) and will provide these documents as soon as possible.

13. Please let me know as soon as possible, where all of the known tarplant sites are? You mentioned last Thursday that there were five or six.

EXHIBIT NO. 26
APPLICATION NO.
A-4-STB-93-154-CC-R2
Request of Commission Staff for Info/applicant response 3/13/02

CULBERTSON, ADAMS & ASSOCIATES
PLANNING CONSULTANTS

Fax Transmittal

RECEIVED
MAR 13 2002
CALIFORNIA
COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

EXHIBIT NO. 27
APPLICATION NO.
A-4-STB-93-154 EC A2
Southern Transport
Info. Faxed by A. Culbertson
3/13/02

FEIR 3/93

- *Southern Tarplant.* The southern tarplant (*Hemizonia australis*) has no official status, but it is on List 3 of the California Native Plant Society's (CNPS Inventory of Rare and Endangered Vascular Plants of California (Smith and Berg, 1988). "List 3" is a compendium of plants for which CNPS lacks the information necessary to determine rare, threatened or endangered status. CNPS believes that many historic occurrences of southern tarplant have been extirpated but requests additional rarity or endangerment information. This species occurs throughout southern coastal California, from San Diego County to Santa Barbara County. According to Smith (1976), it is "common in many sandy fields near the ocean, between Goleta and Ellwood." The occurrence of this species on the project site appears to constitute a range extension since its northern limit is reported to be Ellwood Mesa. A small population of southern tarplant was located by Interface (1991) immediately south of the coastal road and west of Drainage #3 (Figure 5.1-1), as verified by the EIR consultants.

- *Cliff Aster.* The cliff aster (*Malacothrix saxatalis* var. *saxatalis*) also has no official status and is not on any CNPS list. It is designated by the County of Santa Barbara as "endemic," however, meaning that it is only known to occur within the region. Smith (1976) reports the cliff aster as occurring in scattered locations along coastal bluffs and canyon mouths from west of Gaviota to the vicinity of Ventura and inland to Santa Rosa Road near Lompoc and north of Casmalia. It was encountered west of the mouth of Eagle Canyon and between the mouth of Drainage #6 and Tomate Canyon on steep, eroding shale cliffs or coastal bluffs by Katherine Rindlaub (1992). These populations were verified by the EIR consultants, and several additional populations were encountered on coastal bluffs near the mouths of Drainage #5, Drainage #4, Drainage #3 and adjacent to an access road east of Drainage #4. Other populations may exist in less accessible locations, so it can be assumed this species occurs throughout the coastal bluffs on the project site in appropriate habitats (eroding shale cliffs).

3. *Sensitive Taxa - Fauna.* Springtime surveys indicated the potential presence of several species considered sensitive by one or more monitoring agencies including the U.S. Fish and Wildlife Service (FWS), California Department of Fish and Game (DFG), National Audubon Society, National Park Service (NPS) and local monitors. Based on available habitat types, sightings and species records for the Santa Barbara area, many sensitive animals are expected to use the project site as residents, breeders, foragers or migrants. Table 5.1-2 provides a list of these sensitive species with their legal status. A description of federal- and/or state-listed endangered species which may occur at the project site and are legally protected from "taking" (which includes harassment) is provided below.

- *Red-legged Frog.* The red-legged frog (*Rana aurora*) is a California Species of Special Concern and a candidate for Federal listing as endangered or threatened. The red-legged frog occurs west of the Sierra-Cascade crest from southwest

FEIR 3/93

signs posted to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.

c. Grass cutting or disking for fire control shall not be permitted within buffer zone established by Measure b.

d. The applicant shall remove the non-native Hottentot fig along the edge of the pool and replace it with a native plant that is compatible with the vernal pool and ecosystem.

Plan Requirements: The above measures shall be noted on all grading and construction plans. **Timing:** The revised BELP shall be reviewed and approved prior to issuance of CDP.

MONITORING: RMD shall ensure compliance during construction and prior to occupancy through site inspection.

Implementation of this measure would reduce impacts to vernal pool wildlife values to less than significant (Class II) levels.

B8 Sensitive Plants. The applicant shall submit a revised BELP, including a component addressing revegetation for the southern tarplant, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

- Collection of propagules (seeds, cuttings, rootstock);
- Growth of propagules in containers in a greenhouse;
- Transplanting of propagated plantings to suitable habitats onsite;
- Monitoring and maintenance of transplanted populations; and,
- A contingency plan to be carried out in the event of high mortality of transplants.

Plan Requirements: Prior to issuance of the CDP, the applicant shall submit the revised BELP. **Timing:** Populations of rare plants grown from collected propagules shall be established in advance of the removal of natural populations from the site. Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use.

MONITORING: RMD staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance signature is required for performance security release.

Implementation of the above measure would reduce impacts to sensitive plants occurring onsite to less than significant levels (Class II).

EXHIBIT 3 305

MONITORING: RMD/EQAP staff shall ensure compliance by conducting periodic site inspections throughout the life of the project.

13. (B7) Vernal Pool. The following requirements apply to the vernal pool designated in Figure 5.1-1 and shall be a component of the BELP and shall be incorporated into the final grading and building plans for the project:

a. Construction other than that shown on the site plan, or required to build the staircase from the existing bridge to access the Coastal Trail shall be prohibited within 100 feet of the pool.

b. A permanent fence at the edge of the cart path as shown in the site plan, and at least 50 feet from the pool edge in all other areas shall be installed around the pool to protect the pool against humans and vehicles. The fencing shall be split rail (or equivalent) to allow for wildlife use of the pool. The fence shall have signs posted to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.

c. Grass cutting or disking for fire control shall not be permitted within buffer zone established by Measure b.

d. The applicant shall remove the non-native Hottentot fig along the edge of the pool and replace it with a native plant that is compatible with the vernal pool and ecosystem.

Plan Requirements: The above measures shall be noted on all grading and construction plans. **Timing:** The revised BELP shall be reviewed and approved prior to issuance of CDP.

MONITORING: RMD/EQAP staff shall ensure compliance during construction and prior to occupancy through site inspection.

14. (B8) Sensitive Plants. The applicant shall submit a revised BELP, including a component addressing revegetation for the southern tarplant, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

a. Collection of propagules (seeds, cuttings, rootstock);

b. Growth of propagules in containers in a greenhouse;

c. Transplanting of propagated plantings to suitable habitats onsite;

d. Monitoring and maintenance of transplanted populations; and,

e. A contingency plan to be carried out in the event of high mortality of transplants.

Plan Requirements: Prior to issuance of the CDP, the applicant shall submit the revised BELP. **Timing:** Populations of rare plants grown from collected propagules shall be established in advance of the removal of natural populations from the site. Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use.

MONITORING: RMD/EQAP staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance signature is required for performance security release.

15. (T1) Traffic. The applicant shall provide low vegetation (trees and shrubs) adjacent to the tee boxes on Holes 1, 3 and 4 to minimize the risk of errant tee shots entering the highway and impacting passing motorists. Fencing or netting to prevent errant golf balls from entering the highway shall not be permitted. Final golf hole routing shall be reviewed and approved by Caltrans for avoidance of errant golf ball shots entering the highway. **Plan Requirements:** Prior to Coastal Development Permit (CDP) a landscape plan as part of the Biological Enhancement/Landscape Plan showing the vegetation to be planted adjacent to holes 1, 3, and 4 shall be submitted by the applicant and reviewed and approved by RMD and hole routing shall be reviewed and approved by Caltrans. **Timing:** Landscaping shall be in place prior to occupancy clearance (OC).

MONITORING: Prior to Occupancy Clearance, RMD shall visit the site to ensure landscaping is in place.

16. (T2) Trails. The applicant shall dedicate to the County in perpetuity a 24-foot-wide lateral access area (narrowing to 16 feet over each of the proposed tunnels) for the future development and exclusive use of a biking, hiking and equestrian trail. The applicant shall dedicate an easement allowing for limited parking (15 spaces) and access from the parking lot to the trail. The 15 spaces shall be clearly marked and reserved for public trail users during the hours that the golf course parking lot is open to golfing patrons. The applicant shall construct a stairway from the existing bridge to the trail and construct the trail east of the bridge to the vertical viewing area near Eagle Canyon. The applicant shall construct a locked gate east of the vertical viewing area to prevent public access to Eagle Canyon until such time that either the Coastal Trail is opened for public use through the adjacent property to the east or until the vertical beach access and monitoring program is in effect, whichever occurs first. In the event that

Revised

EX. 27 A-5 307

BELP 11/98

site for the Southern Tarplant.

The vernal pool is currently surrounded by the non-native, invasive iceplant known as Hottentot fig (*Carpobrotus edulis*). The Hottentot fig will be sprayed with a systemic herbicide suitable for use adjacent to wetland areas, such as Rodeo at a time of year when there is no standing water. The Dos Pueblos Golf Links biological consultant shall monitor the herbicide application, to be conducted in the summer of 1999. One month after spraying, the site will be checked for completeness of plant eradication, and re-sprayed if necessary. Once the Hottentot fig is thoroughly dead (brown and brittle), ~~approximately 2/3 of~~ the dead material will be removed and disposed of off-site. ~~The remaining 1/3 will be left in place to serve as an organic mulch.~~

5.1.2 Seed and Plant Collection

Seeds will be collected from the ~~parent tarplants within the one~~ all populations located on site. Southern tarplant goes to seed in the late summer to fall. (Seeds were collected previously in November 1997.) Adult plants will also be dug up and directly re-planted within the receiver site. Adult plants will also be maintained at a nursery location, for continuing use in collecting seeds and propagation. Approximately ¼ of the collected seeds will be placed in long-term storage. Of the remaining seeds, approximately ½ will be grown at the nursery and ½ will be sown directly into the receiver site. The various plots at the receiver site shall be staked and marked for future reference and identification of the revegetation treatments.

5.1.3 Planting Plan

Adult plants retrieved from the parent population will be directly planted within the receiver site in spring and summer 1999. Tarplant seeds from 1997 collection were planted in pots and liners in a nursery in Fall 1998. Tarplant seeds will be scattered by hand throughout the receiver site in the late summer through early fall ~~1998~~, 1999. Seeds will be placed ~~both within the area containing dead Hottentot fig and~~ in the cleared areas at the Vernal Pool and Lake Edge. See Sheet LR-4.

Ex. 27 pg 6

29

BELP 11/98

watering will be of longer duration than the last to encourage deep rooting, and the interval between waterings will be gradually increased. Seedlings should be able to be weaned from supplemental irrigation by their third winter in the ground (approximately two years from planting). Reference Permit Condition 5(A)(4).

Slow-release Gro-Power fertilizer tablets will be placed in the planting pit of trees and shrubs at the time of planting. No additional fertilizer is anticipated during the maintenance period.

7.3 Tarplant Maintenance

Maintenance of the southern tarplant planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants. The project biological monitor shall flag all tarplant locations for protection prior to the weeding effort.

Seedlings ~~will be irrigated for approximately~~ two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

7.4 Native Grasslands Maintenance

Maintenance of the native grassland planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

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8.0 MONITORING

8.1 Seeded Areas

8.1.1 Hydroseeded Areas: Native Grassland, Erosion Control Area, Barranca Edge

Hydroseeded areas will be evaluated two to three months after seeding (spring and summer 1999) by the Dos Pueblos Golf Links Revegetation Specialist and the

BELP 11/98

Ornamental trees and shrubs will be planted at a 3:1 replacement ratio with the intent to successfully establish tree and shrub at a minimal 1:1 final replacement ratio; i.e."no-net-loss." When one third of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Willows will be planted at a 5:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal + 4:1 final replacement ratio; ~~i.e. "no-net-loss."~~ When four fifths of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Oaks will be planted at a 10:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal + 5:1 final replacement ratio; ~~i.e. "no-net-loss."~~ When one half of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

~~8.3 Fresh Water Marsh Monitoring~~

~~The newly created Fresh Water Marsh at the lake edge will be monitored monthly for weed invasion and health of plants for the first year (1999), and quarterly thereafter for a total of five years (2000-2003).~~

~~Weeds will be hand-pulled. Dead plants will be replaced with the like plants from liners. The focus of the monitoring effort will be to ensure the creation of a viable, self-regulating fresh water marsh. Refer to Revegetation Success Criteria (TABLE C) for additional information.~~

8.4 Tarplant Monitoring

Permanent monitoring transects will be installed to facilitate long-term monitoring of the southern tarplant receiver site, including photo-documentation stations. Photos will be collected both before and during the initial site preparation and planting phase, and throughout the monitoring period. Monitoring will be conducted on a quarterly basis for the

Ex. 27738 310

BELP 11/98

first year, and then on a semi-annual basis thereafter. Monitoring will be conducted in the spring of each year to check for invasion by non-native weedy plant species, and again in the late summer to early fall to check the growth of the southern tarplant. Qualitative and quantitative data shall be collected during the late summer/early fall visits.

8.5 Native Grassland Monitoring

Hydroseeded Native Grassland areas will be monitored as per Section 8.1.1. Native Grassland areas planted from pots will be evaluated monthly for six months for weed invasion and health of seedlings, and quarterly thereafter for a total of five years. Refer to Revegetation Success Criteria (Table C) for additional information.

8.6 Year End Reporting

The Dos Pueblos Golf Links Revegetation Specialist and the OEC shall prepare a year end monitoring report, due at the anniversary date of completion of the installation each year for five years, summarizing the years' maintenance activities, the status of establishment of the seeded and planted areas, achievement of success criteria standards, and the need for remedial measures. Reports will include photo documentation for all native plant revegetation and restoration areas. The year end report shall be submitted to the County of Santa Barbara and the applicable resource agencies (permitting agencies) for review and approval each year.

9.0 REVEGETATION SUCCESS CRITERIA

Table C, adapted from the Celeron Pipeline Revegetation Plan and the Exxon Las Flores Canyon Revegetation Plan, outline the Revegetation Success Criteria proposed for the Dos Pueblos Golf Links Biological Enhancement Landscape Plan.

10.0 GOLF BALL RECOVERY PROGRAM

Condition 5.e. of the Conditional Use Permit #91-CP-085 for the Dos Pueblos Golf Links project requires the development of a golf ball recovery program for retrieval of balls in drainages, sensitive biological areas (i.e., native restoration areas, wetlands, etc.) and on the beach. In accordance with Condition 5.e. the following program will be implemented:

EX. 27 A-5-99 311

BELP 11/98

** Irrigation scheduling shall be coordinated between the landscape contractor and the biological monitor to assure adequate watering and to facilitate weaning off irrigation by the end of the maintenance period.

*** Each tree has attained six feet in height, is in healthy condition verified by an arborist or biologist acceptable to the County, has been independent of supplemental water, fertilizer, pesticide and fungal treatments, protection from herbivores, and other maintenance for a minimum of two full years. At acceptance by the County for release, trees shall exhibit sufficient spacing to allow them to grow to maturity in a normal manner.

REVEGETATION SUCCESS CRITERIA: SOUTHERN TARPLANT

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for 1st year; quarterly for years 2-5	Invasive weeds interfering with growth of tarplant	Hand pull; re-spray Hottentot fig with herbicide "Rodeo"
Seeded Tarplant	Evaluate quarterly after seeding for one year	>70% cover by visual observation with at least 75% of plants in flower and/or producing fruit.	Continue to monitor
		<60% cover	Reseed in fall
Planted Tarplant	Evaluate quarterly after planting for one year	1 healthy transplant/ each removed	Continue to monitor
	Evaluate semi-annually for 4 additional years	Survival of approximate number of plants same as original population	Acceptable*

*Indicates partial release of Revegetation Bond.

RECEIVED
MAR 13 2002
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

TABLE C

* has not included the goals section appended to that documents 4,505 plants (in 1998) per footnote + text

C4

312 EX 27 12 of 10

BOWLAND & ASSOCIATES
Biological & Environmental Consulting Services
2674 East Main Street, Suite C-205
Ventura, CA 93003-2899
805-652-0577, fax: 652-0576

FAX MEMO

TO: Sherri Miller **FAX:** 760-632-0164 **PHONE:** 760-942-5147
FROM: Jackie Bowland **PAGES:** 1
DATE: October 6, 1998 **RE:** Dos Pueblos Golf Links - Tarplant Count

I completed the estimated population count today, using the method that we discussed, as summarized below. I laid a meter tape out along the long axis of the roughly rectangular population. I placed pin flags at 10 meter intervals, using three flags to mark each transect location. The transects were run from north to south, through the short axis of the rectangle. I marked the center of a one-meter pole, and counted all southern tarplants within a one meter swath along each transect, keeping the transect at the center point of the pole. Any tarplants which touched the pole were counted. I used my foot and/or the pole to check where plants were rooted, to assure that I was not double-counting any individuals due to large canopy cover. The results are below:

TRANSECT NUMBER	TARPLANT COUNTED WITHIN TRANSECT
Start (0)	42
1	112
2	97
3	78
4	62
5	64
6	23
TOTAL	478

Approximate size of the entire population: 66 meters long by about 25 meters wide; equalling 1650 square meters. Therefore;

Total square meters in sampled area = 175 meters (7 x 25)
Plant density in sample = 478 divided by 175 = 2.73 plants/square meter
Estimated population = 2.73 x 1650 = 4505 tarplants.

* agent indicates max of only a few hundred - overlooking last sentence perhaps.

RECEIVED MAR 13 2002 CALIFORNIA COASTAL COMMISSION SOUTH CENTRAL COAST DISTRICT

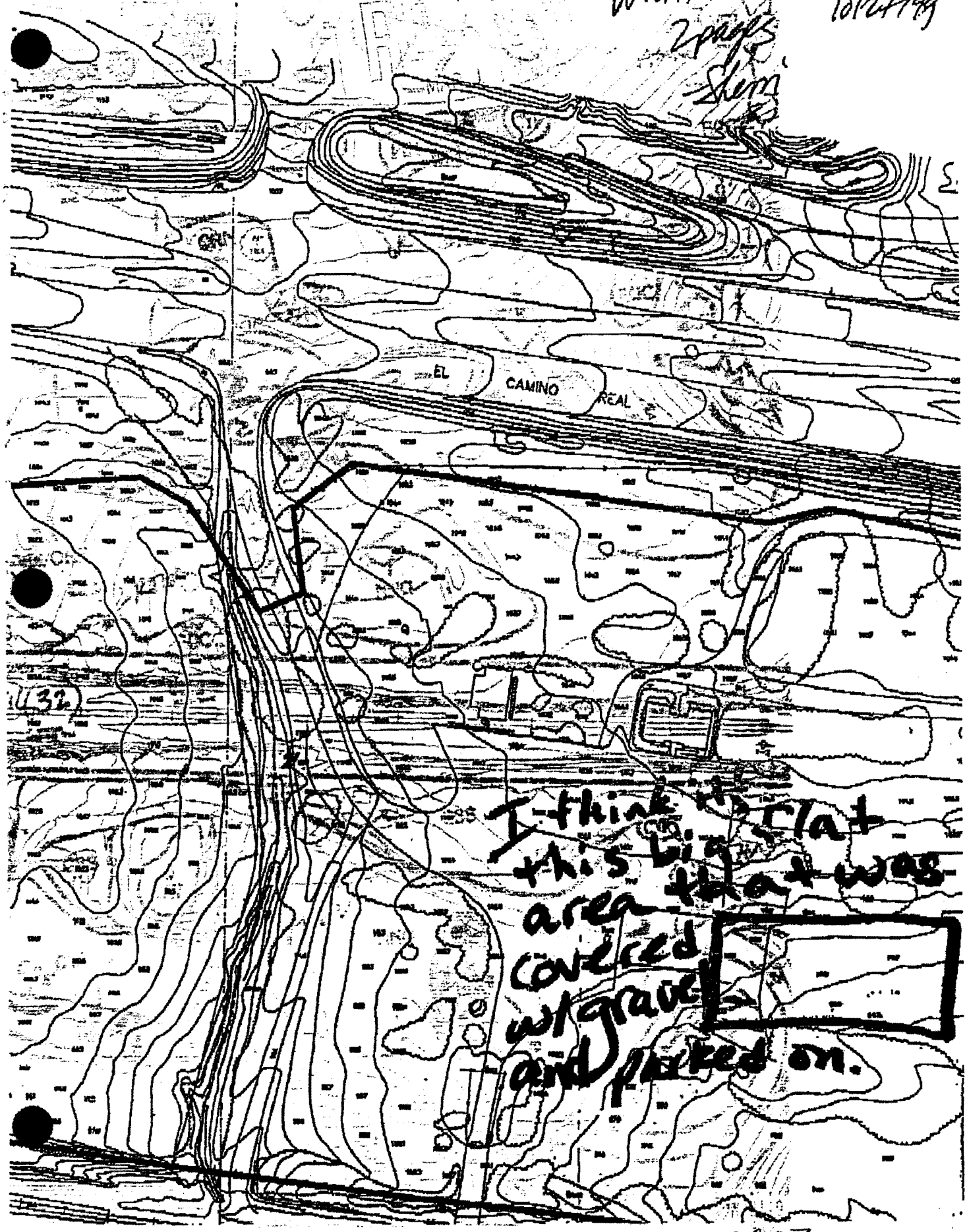
EX. 27 313
13.11

OCT. 27. 1999-11:56AM NO. 5151 P. 1

TO:WHITT HOLLIS BFIELD

Whitt
2 pages
Sherm

10/27/99



I think that this big flat area that was covered w/ gravel and parked on.

Ex. 27
12-15-12 314

DUDEK & ASSOCIATES, INC.
Professional Teams for Complex Projects

Engineering, Planning,
Environmental Sciences and
Management Services

Corporate Office:
605 Third Street
Encinitas, California 92024

760.942.5147
Fax 760.632.0164

MEMORANDUM

Date: November 29, 1999

To: R. Whitt Hollis, Capital Pacific Holdings

From: Sherri Miller, Dudek & Associates

Re: ***Fall 1999 Survey for Southern Tarplant***
Dos Pueblos Golf Links
Dudek Project No. 1737-06

On Tuesday, November 16, 1999, Dudek & Associates, Inc. (DUDEK), conducted a site visit at the Dos Pueblos Golf Links project site. The purpose of the site visit was to survey for the southern tarplant (*Hemizonia parryi* ssp. *australis*). The plants were counted individually; where several plants were growing in a clump the number of individual plants was counted using central axis stems. In total, 372 plants were observed onsite:

- Four plants were observed near the bluff, west of the bridge;
- One plant was observed within the southeast corner of the project site;
- Four plants were observed in the vicinity (west) of the previously removed ARCO offices;
- 363 plants were observed in the vicinity (east) of the previously removed ARCO offices.

TO: WHITT HOLLIS BFIELD

To: Ken Merkel
Whitt Hollis

403

Hs and locations of Hemizonia

482 sked

EXISTING BIOLOGICAL CONDITIONS
DOS PUEBLOS GOLF LINKS
SANTA BARBARA CALIFORNIA

PHONE: 585-1800
DATE: March

information

PAGE

Los P lf Links – Sou

Whitt ern Calif

21

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Co. ESAP botanical monitor), Sher

n appropriate method.

plant has been changed, the genus is

the name is the same. So now it's

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estimating the popul ners. The ma

determined in consul n Marine

Miller and Howe w and hov

By your uniform of the

now *Centromadia* of Hemizonia

Centromadia pun ssima

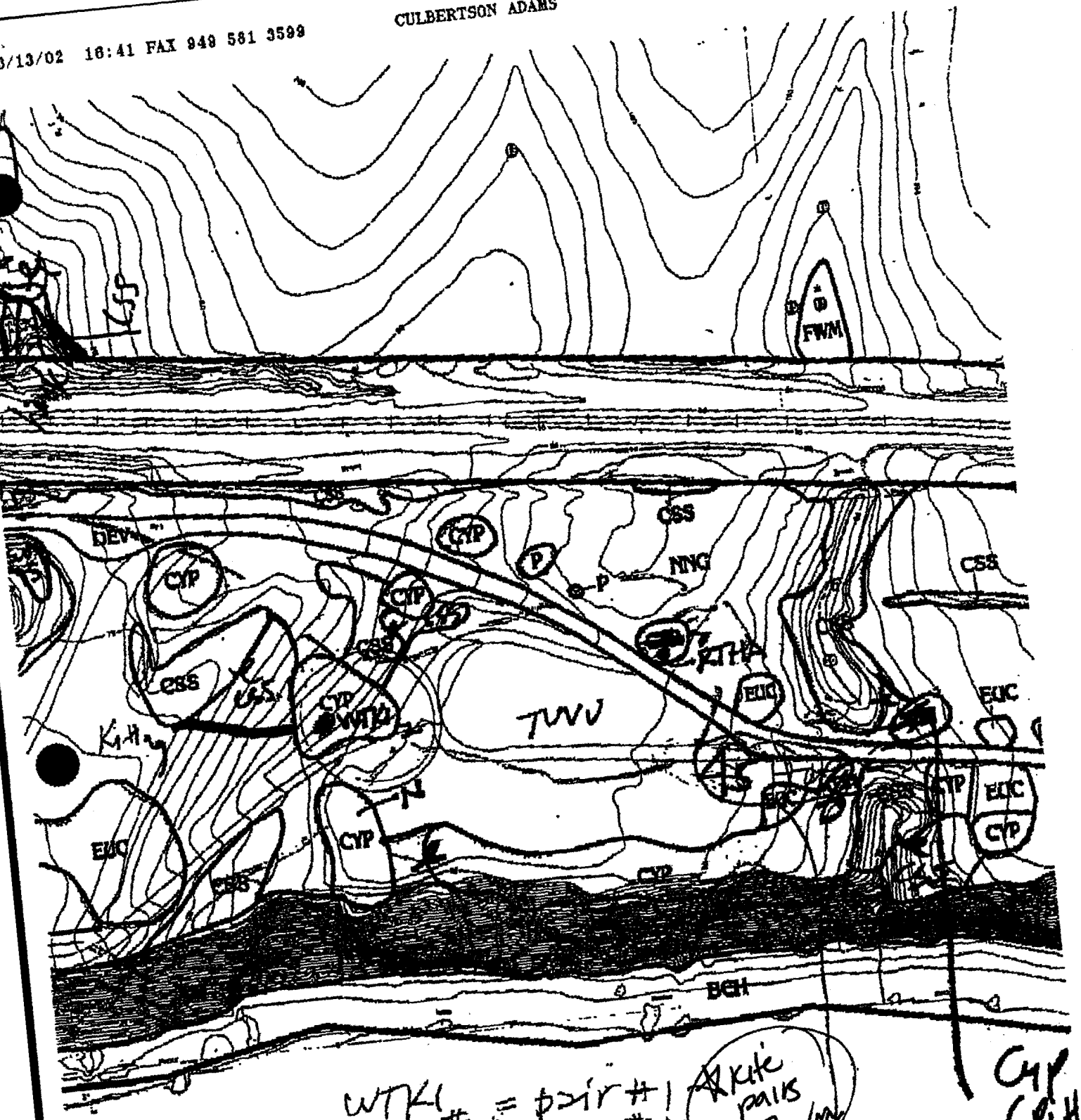
LEGEND

EX. 27
3.14
316

2001 Field Maps for tarplant

EX 27 PG 15

317



WTKI # = pair # ! Arkie pairs ? VRG

45 Hemizonia

others #605

NO. 4690 P. 1/1 MAR. 6. 2002 6:11PM

BOWLAND & ASSOCIATES
Biological & Environmental Consulting Services
PMB-205, 2674 East Main Street, Suite D
Ventura, CA 93003-2830
805-652-0577/fax 652-0576

FAX MEMO

TO:	Melanie Hale	FAX: 641-1732	PHONE: 585-1800
FROM:	Jackie B. Worden	PAGES: 2	DATE: March 13, 2002
RE:	Dos Pueblos Golf Links – Southern Tarplant information		
CC:	Whitt Hollis; Andriette Culbertson		

Howdy! I have attached the only info I have regarding the southern tarplant population on the north side of the railroad tracks. I recall that I did not produce a map, because we were estimating the population numbers. The method I used to estimate the population number was determined in consultation with Katherine Rindlaub (SB Co. EQAP botanical monitor), Sherri Miller and Howie Wier of Dudek, and myself as being an appropriate method.

For your information, the scientific name of southern tarplant has been changed; the genus is now *Centromadia* instead of *Hemizonia*; the remainder of the name is the same. So now it's *Centromadia parryi* ssp. *australis*.

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MAR 13 2002
CALIFORNIA
COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

EP. 2775.17

319

BOWLAND & ASSOCIATES
Biological & Environmental Consulting Services
2674 East Main Street, Suite C-205
Ventura, CA 93003-2899
805-652-0577 fax: 652-0576

FAX MEMO

TO: Sherri Miller **FAX:** 760-632-0164 **PHONE:** 760-942-5147
FROM: Jackie Bowland **PAGES:** 1
DATE: October 6, 1998 **RE:** Dos Pueblos Golf Links - Tarplant Count

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Estimated population = 2.73 x 1650 = 4505 tarplants.

#=4,505

EP. 2-7-18 320

file copy

MEMORANDUM TO DOS PUEBLOS GOLF LINKS FILE

TO: Whitt Hollis
FROM: Jackie Bowland
DATE: May 14, 1992
RE: Southern Tarplant

As reported in Section IX of the original application (November 1991), a small population of southern tarplant (Hemizonia australis) occurs within the proposed golf links, adjacent to barranca # 3 (hole # 18 - see attached maps). The purpose of this memo is to inform you that the listing status of this plant may soon change to afford a higher level of protection. This species is currently listed by the California Native Plant Society (CNPS) on List 3 of their Inventory of Rare and Endangered Plants of California (Sept. 1988). List 3 is a review list that includes plants for which CNPS needs more information. A new edition of this publication is due out this fall, which will list the southern tarplant as 1B. List 1B includes "plants rare, threatened or endangered in California and elsewhere." The importance of this change is that all plants listed in the Inventory as 1B are considered rare under Section 15380 of the State CEQA Guidelines, whether they are listed as such by the California Department of Fish and Game (CDFG) or not.

This change elevates the importance of this plant population, and may require mitigation measures to reduce or eliminate potential adverse impacts. Acceptable mitigation measures are subject to approval by the CDFG and Santa Barbara County, and could include such approaches as avoidance and ongoing protection of the population, avoidance with a minimum buffer area of undisturbed habitat surrounding the population, transplantation elsewhere, or a combination of some or all of these measures. I am currently investigating the status of knowledge of this species with the CDFG; they may not have clear ideas of suitable mitigation at this time, particularly if no one has approached this subject yet, or if no research has been done on the feasibility of various approaches for this species. The CDFG is getting away from accepting mitigation programs that they considered to be experimental (i.e., no one has tried before), based largely on how rare they consider the plant to be (i.e., if this were the only population, they would not let us mess with it). Avoidance with a buffer means a minimum distance of status quo surrounding the plant -- no grading, irrigation, or other changes to the existing land uses within the buffer area. Again, the minimum buffer area will depend on how much they know about the biology of this species.

EXHIBIT NO. 28
APPLICATION NO.
A-4-STB-93-154-CC-AR
Southern Tarplant List 1(6) memo 1992

...e 1, Box 275
Goleta, California 93117
(805) 968-1587

#7

LATE
DIST

DOS PUEBLOS GOLF LINKS

August 12, 1993

Chairman Mike Stoker and Members
Board of Supervisors County of Santa Barbara
123 East Anapamu Street
Santa Barbara, CA 93101

Subject: Dos Pueblos Golf Links (91-CP-085) Responses to Questions Raised at the August 3, 1993 Board of Supervisors Hearing

Dear Chairman Mike Stoker and Members of the Board Supervisors:

We appreciate the opportunity to respond to questions raised by the Board during the August 3, 1993 Board Supervisors hearing on the Dos Pueblos Golf Links. We have divided our comments into the following six attachments for your convenience.

- Attachment A is a response to Supervisor Chamberlin's concern regarding ARCO's responsibility for errant golf balls and the harbor seal haul-out area, associated with the operation of the Golf Links;
- Attachment B is a response to Supervisors Schwartz and Rogers concern regarding the policy consistency analysis regarding agriculture;
- Attachment C is a response to Supervisors Schwartz and Rogers concerns regarding the project's impacts on sensitive on-site resources;
- Attachment D is a response to Supervisor Schwartz's and Supervisor Rogers' concerns regarding coastal access and parking issues; and,
- Attachment E addresses the "Findings" which must be made by the Board of Supervisors as part of the approval of the Golf Links project.

In addition to these attachments, Ms. Jacqueline L. Bowland, Senior Biologist with Interface Planning and Counseling Corporation, will be submitting two ...ers under seperate cover; one which addresses issues related to the

EXHIBIT NO. 28
APPLICATION NO.
A-4-STB-93-154/CC-92
Aug. 12, 1993 letter for
Wm. Hollis/ARCO

from "...C/sensitive plants" on site

18853

EX. 28 of 2

Integrated Pest Management Plan (IPM)/Biological Enhancement and Landscape Plan (BELP), and one which address issues associated with harbor seal protection/vertical access.

We remain available to discuss the Golf Links at your convenience. Should you wish to contact us, please feel free to call us at (805) 321-4093 or the above number.

Very truly yours,

R.W. Hollis, Jr.
Senior Landman

cc: w/attachments
Ms. Colleen Parent Beall, Deputy County Counsel
Ms. Dianne Meester, RMD
Mr. Steve Goggia, RMD
Ms. Gilda Wheeler, RMD
Clerk of the Board of Supervisors

EX. 28 pg 3

ATTACHMENT C

ARCO's Response to Supervisors Schwartz and Rogers Comments Regarding Golf Links Effects on Sensitive Resources

Supervisors Schwartz and Rogers requested clarification on the existence of sensitive biological resources on the Dos Pueblos Golf Links (Golf Links) site, and on plans to protect, preserve, or mitigate potential impacts to these resources. Specifically, vernal pools, native grasses, and sensitive plants were mentioned during the August 3, 1993 Board of Supervisor's hearing. These issue areas are discussed below.

1. Vernal Pools

According to Mr. Wayne Ferren, local wetland expert and co-author of a wetland evaluation report for the subject property, there are no natural vernal pools west of the More Ranch fault (generally the Ellwood Shores area). There is only one artificial vernal pool on the subject property located at the south end of the existing bridge over the railroad tracks in the eastern portion of the property. This artificial vernal pool has become established in a depression apparently created by an oil tank farm. Native plants indicative of vernal pool conditions are present in the depression, and the non-native Hottentot fig (iceplant) surrounds the pool along the banks. The pool is bordered on two sides by an asphalt roadway, and by regularly mowed non-native grassland on the other sides. Wildlife uses of the pool are limited to insects, Pacific tree frogs, and the occasional use by common urban bird species such as starlings and blackbirds, generally during the few months when surface water is present. There is no evidence of use by mammals or by sensitive species of either plants or animals.

The following excerpt from the May 26, 1993 Planning Commission Conditions of Approval describe the protective measures that will be incorporated into the project design to preserve and enhance the artificial vernal pool.

> 13. (B7) Vernal Pool. The following requirements apply to the vernal pool designated in Figure 5.1-1 and shall be a component of the BELP and shall be incorporated into the final grading and building plans for the project:
>
> a. Construction other than that shown on the site plan, or required to build the staircase from the existing bridge to access the Coastal Trail shall be prohibited within 100 feet of the pool.
>
> b. A permanent fence at the edge of the cart path as shown in the site plan, and at least 50 feet from the pool edge in all other areas shall be installed around the pool to protect the pool against humans and vehicles. The fencing shall be split rail (or equivalent) to allow for wildlife use of the pool. The fence shall have signs posted

EX 28 pg 4

less than significant (Class III)." (Refer to Page 5.1-31.) Therefore, no mitigation measure is required for this plant.

14. (B8) Sensitive Plants. The applicant shall submit a revised BELP, including a component addressing revegetation for the southern turnout, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

a. Collection of propagules (seeds, cuttings, rootstock)

b. Growth of propagules in containers in a greenhouse

c. Transplanting of propagated plantings to suitable habitat onsite

d. Monitoring and maintenance of transplanted populations; and

e. A contingency plan to be carried out in the event of high mortality of transplants.

ATTACHMENT C

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>
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to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.

c. Grass cutting or disking for fire control shall not be permitted within buffer zone established by Measure b.

d. The applicant shall remove the non-native Hottentot fig along the edge of the pool and replace it with a native plant that is compatible with the vernal pool and ecosystem.

Plan Requirements: The above measures shall be noted on all grading and construction plans. **Timing:**. The revised BELP shall be reviewed and approved prior to issuance of CDP.

MONITORING: RMD/EQAP staff shall ensure compliance during construction and prior to occupancy through site inspection.

2. Native Grasses

Three species of native bunchgrass have been found on the site; purple needlegrass (*Stipa pulchra*); small-flowered needlegrass (*Stipa lepida*); and, meadow barley (*Hordeum californicum*). Small pockets of bunchgrass occur in scattered locations represented in low overall numbers, generally in the extreme northeast and northwest portions of the property. The BELP includes the planting of these and other species of native grasses throughout the property. The Final EIR concluded that a beneficial impact would result through the planting of native grasslands (Page 5.1-29).

3. Sensitive Plants

There are no plants species listed or proposed for federal or state listing as threatened or rare on the Golf Links site. There are two species considered to be sensitive by the County of Santa Barbara: southern tarplant (*Hemizonia australis*) and cliff aster (*Malacothrix saxatilis saxatilis*). The southern tarplant is considered sensitive because it is at the northern extent of its range on the project site. Southern tarplant occurs in one location on the property, adjacent to the existing paved access road. The cliff aster is considered sensitive because it occurs within a narrow set of habitat requirements; generally on outcrops of Monterey shale on the immediate coast, within or associated with a sensitive plant community, coastal bluff scrub. On the project site, cliff aster occurs along the bluffs in areas that will not be disturbed by the Golf Links, and in one disjunct location within the proposed development area.

The following excerpt from the May 26, 1993 Planning Commission Conditions of Approval describes the mitigation measures that will be incorporated into the BELP to assure the continuation of a population of southern tarplant on the project site. (Note: The EIR made the following determination regarding loss of the one cliff aster population located within the disturbance area: "Since this species suffers no current regional threats, this impact is considered

Ex. 28 pg. 5

less than significant (Class III)." (Refer to Page 5.1-31.) Therefore, no mitigation measure is required for this plant.

14. (B8) Sensitive Plants. The applicant shall submit a revised BELP, including as component addressing revegetation for the southern tarplant, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

a. Collection of propagules (seeds, cuttings, rootstock);

b. Growth of propagules in containers in a greenhouse;

c. Transplanting of propagated plantings to suitable habitats onsite;

d. Monitoring and maintenance of transplanted populations; and,

d. A contingency plan to be carried out in the event of high mortality of transplants.

Plan Requirements: Prior to issuance of the CDP, the applicant shall submit the revised BELP. **Timing:** Populations of rare plants grow from collected propagules shall be established in advance of the removal of natural populations from the site. Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use.

MONITORING: RMD/EQAP staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance signature is required for performance security release.

Ex. 28 pg 6

TO: DUDEK ENVIRO

Dudek & Associates
621 Chapala Street
Santa Barbara, CA 93101
(805) 963-0651 FAX 963-2074

DUDEK & ASSOCIATES
A California Corporation

MEMO

To: Jackie Bowland, Bowland & Associates

Cc: Whitt Hollis, Sherri Miller, Katie O'Reilly Rogers

From: Samantha Kim, Dudek & Associates

Date: September 29, 1998

Subject: Dos Pueblos Golf Links Project

As we discussed last week, I will need your assistance in completing the following tasks for the Dos Pueblos Golf Links Project:

1. Southern Tarplant Survey – A population of southern tarplant currently exists by the old warehouse area. This area will need to be surveyed; a transect survey will be adequate to estimate the number of plants that may be potentially impacted during construction of the golf course. (It is my understanding that you will conduct this survey on Monday, October 5th and provide the data by October 6th for incorporation into the revised BELP document.)

2. Southern Tarplant Seeds – In the next few weeks, we may want to collect additional seeds from the southern tarplants in the old warehouse area. Please provide any input/comments you have regarding this item.

3. Revised BELP – The BELP Team will be revising the BELP document to address the County's comments. They will need your assistance in addressing any comments that the County may have regarding the southern tarplant. I anticipate receiving the formal comment letter from the County in the next day or so. I will fax you a copy of the comment letter as soon as I receive it.

If you have any questions regarding this memo, please do not hesitate to call me at 963-0651, ext. 32. Thank you for your assistance with this project.

Above transmitted via: *mail* ☐ *fax* ☒

EXHIBIT NO. 29
APPLICATION NO.
A-4-STB-93-154-CC-A2
new tarplant population survey request 1998
327

BOWLAND & ASSOCIATES
Biological & Environmental Consulting Services
2674 East Main Street, Suite C-205
Ventura, CA 93003-2899
805-652-0577 fax: 652-0576

FAX MEMO

TO: Sherri Miller **FAX:** 760-632-0164 **PHONE:** 760-942-5147
FROM: Jackie Bowland **PAGES:** 1
DATE: October 6, 1998 **RE:** Dos Pueblos Golf Links - Tarplant Count

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Approximate size of the entire population: 66 meters long by about 25 meters wide; equalling 1650 square meters. Therefore;

Total square meters in sampled area = 175 meters (7 x 25)
Plant density in sample = 478 divided by 175 = 2.73 plants/square meter
Estimated population = 2.73 x 1650 = 4505 tarplants.

EXHIBIT NO. 30
APPLICATION NO.
A-4-STB-93-154
Result of tarplant survey (see EX 29)

BOWLAND & ASSOCIATES
Biological and Environmental Consulting Services
2674 East Main Street, Suite C-205
Ventura, CA 93003-2899
(805) 652-0577 fax 652-0576

FAX MEMO

To: Katie O
From: JB
Date: 10/12/98
RE: Tarplant contingency plan
cc: Sherri Miller

Thanks for faxing me the revised BELP -- it looks great! I would suggest adding to item 2.1.2 something about removing dead trees that are (or become) a safety hazard to humans and/or occupied structures.

TARPLANT CONTINGENCY

The project biologist will continue to collect seeds from southern tarplants growing on the project site. Seeds will also be collected from any nursery-grown tarplants that go into seed (these seeds will be stored separately from seeds collected from natural populations).

Southern tarplant seeds will be held at the nursery or other acceptable storage location for use in propagation as needed. Stored seeds will be periodically checked for viability through simple germination testing at the nursery.

In the event that tarplant revegetation efforts at the site fail, the stored seeds will be used to propagate additional plants. Planting locations and strategies will be re-evaluated, based on information gained during previous revegetation attempts.

EXHIBIT NO. 3
APPLICATION NO.
A-4-STB-93184-CC-A2
tarplant /BELP

CULBERTSON, ADAMS & ASSOCIATES
PLANNING CONSULTANTS

Fax Transmittal

Date: March 13, 2002 Time Sent: 11:55 AM

To Melanie Hale

From: M. Andriette Culbertson

Subject: Dos Pueblos

Project #:

Fax Number: To: (805) 641-1732
From: (949) 581-3698

Total Pages Faxed (including cover page): 26

Comments:

Melanie-

Here are some materials for the project – I may have sent some before. It's a compendium of what I have been able to find to date on the tarplant, a fax from Jackie Bowland (in case you did not get it, and more complete answers to your questions, including the ball recovery program and the Althouse and Meade report from Feb. 18. I will be in tomorrow except for a meeting 9-10:30, and one at 4. Hope this helps.

If you have any questions, please call me at (949) 581-2888.

85 ARGONAUT, SUITE 220 ALISO VIEJO, CALIFORNIA 92656 (949) 581-2888 FAX (949) ...

3/13/02 faxed pre-site visit scheduled for 3/14/02

EXHIBIT NO. 32
APPLICATION NO. 14-95
A-4-STB-93-154-CC-A-...
Fax of southern tarplant-related ...

FEIR 3/93

- *Southern Tarplant.* The southern tarplant (*Hemizonia australis*) has no official status, but it is on List 3 of the California Native Plant Society's (CNPS Inventory of Rare and Endangered Vascular Plants of California (Smith and Berg, 1988). "List 3" is a compendium of plants for which CNPS lacks the information necessary to determine rare, threatened or endangered status. CNPS believes that many historic occurrences of southern tarplant have been extirpated but requests additional rarity or endangerment information. This species occurs throughout southern coastal California, from San Diego County to Santa Barbara County. According to Smith (1976), it is "common in many sandy fields near the ocean, between Goleta and Ellwood." The occurrence of this species on the project site appears to constitute a range extension since its northern limit is reported to be Ellwood Mesa. A small population of southern tarplant was located by Interface (1991) immediately south of the coastal road and west of Drainage #3 (Figure 5.1-1), as verified by the EIR consultants.

- *Cliff Aster.* The cliff aster (*Malacothrix saxatalis* var. *saxatalis*) also has no official status and is not on any CNPS list. It is designated by the County of Santa Barbara as "endemic," however, meaning that it is only known to occur within the region. Smith (1976) reports the cliff aster as occurring in scattered locations along coastal bluffs and canyon mouths from west of Gaviota to the vicinity of Ventura and inland to Santa Rosa Road near Lompoc and north of Casmalia. It was encountered west of the mouth of Eagle Canyon and between the mouth of Drainage #6 and Tomate Canyon on steep, eroding shale cliffs o coastal bluffs by Katherine Rindlaub (1992). These populations were verified by the EIR consultants, and several additional populations were encountered on coastal bluffs near the mouths of Drainage #5, Drainage #4, Drainage #3 and adjacent to an access road east of Drainage #4. Other populations may exist in less accessible locations, so it can be assumed this species occurs throughout the coastal bluffs on the project site in appropriate habitats (eroding shale cliffs).

3. *Sensitive Taxa - Fauna.* Springtime surveys indicated the potential presence of several species considered sensitive by one or more monitoring agencies including the U.S. Fish and Wildlife Service (FWS), California Department of Fish and Game (DFG), National Audubon Society, National Park Service (NPS) and local monitors. Based on available habitat types, sightings and species records for the Santa Barbara area, many sensitive animals are expected to use the project site as residents, breeders, foragers or migrants. Table 5.1-2 provides a list of these sensitive species with their legal status. A description of federal- and/or state-listed endangered species which may occur at the project site and are legally protected from "taking" (which includes harassment) is provided below.

- *Red-legged Frog.* The red-legged frog (*Rana aurora*) is a California Species of Special Concern and a candidate for Federal listing as endangered or threatened. The red-legged frog occurs west of the Sierra-Cascade crest from southwes

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signs posted to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.

c. Grass cutting or disking for fire control shall not be permitted within buffer zone established by Measure b.

d. The applicant shall remove the non-native Hottentot fig along the edge of the pool and replace it with a native plant that is compatible with the vernal pool and ecosystem.

Plan Requirements: The above measures shall be noted on all grading and construction plans. **Timing:** The revised BELP shall be reviewed and approved prior to issuance of CDP.

MONITORING: RMD shall ensure compliance during construction and prior to occupancy through site inspection.

Implementation of this measure would reduce impacts to vernal pool wildlife values to less than significant (Class II) levels.

B8 Sensitive Plants. The applicant shall submit a revised BELP, including a component addressing revegetation for the southern tarplant, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

- Collection of propagules (seeds, cuttings, rootstock);
- Growth of propagules in containers in a greenhouse;
- Transplanting of propagated plantings to suitable habitats onsite;
- Monitoring and maintenance of transplanted populations; and,
- A contingency plan to be carried out in the event of high mortality of transplants.

Plan Requirements: Prior to issuance of the CDP, the applicant shall submit the revised BELP. **Timing:** Populations of rare plants grown from collected propagules shall be established in advance of the removal of natural populations from the site. Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use.

MONITORING: RMD staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance signature is required for performance security release.

Implementation of the above measure would reduce impacts to sensitive plants occurring onsite to less than significant levels (Class II).

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MONITORING: RMD/EQAP staff shall ensure compliance by conducting periodic site inspections throughout the life of the project.

13. (B7) Vernal Pool. The following requirements apply to the vernal pool designated in Figure 5.1-1 and shall be a component of the BELP and shall be incorporated into the final grading and building plans for the project:

a. Construction other than that shown on the site plan, or required to build the staircase from the existing bridge to access the Coastal Trail shall be prohibited within 100 feet of the pool.

b. A permanent fence at the edge of the cart path as shown in the site plan, and at least 50 feet from the pool edge in all other areas shall be installed around the pool to protect the pool against humans and vehicles. The fencing shall be split rail (or equivalent) to allow for wildlife use of the pool. The fence shall have signs posted to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.

c. Grass cutting or disking for fire control shall not be permitted within buffer zone established by Measure b.

d. The applicant shall remove the non-native Hottentot fig along the edge of the pool and replace it with a native plant that is compatible with the vernal pool and ecosystem.

Plan Requirements: The above measures shall be noted on all grading and construction plans. **Timing:** The revised BELP shall be reviewed and approved prior to issuance of CDP.

MONITORING: RMD/EQAP staff shall ensure compliance during construction and prior to occupancy through site inspection.

14. (B8) Sensitive Plants. The applicant shall submit a revised BELP, including a component addressing revegetation for the southern tarplant, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

a. Collection of propagules (seeds, cuttings, rootstock);

b. Growth of propagules in containers in a greenhouse;

c. Transplanting of propagated plantings to suitable habitats onsite;

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d. Monitoring and maintenance of transplanted populations; and,

e. A contingency plan to be carried out in the event of high mortality of successfully established tree and shrub at a minimum 1:1 final replacement ratio, i.e. "no net loss." When one third of the replacement plants for each species is acceptable, the revegetation will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Ornamental trees and shrubs will be planted at a 3:1 replacement ratio with the intent to

Plan Requirements: Prior to issuance of the CDP, the applicant shall submit the revegetation BELP. Timing: Populations of rare plants grown from collected propagules shall be established in advance of the removal of natural populations from the site. Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use. a 5:1 replacement ratio with the intent to successfully establish

Criterion (Table

willows with a minimum 4:1 final replacement ratio, i.e. "no net loss." When four

MONITORING: RMD/EQAP staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance staff is required for performance security release.

15. (T1) Traffic. The applicant shall provide low vegetation (trees and shrubs) adjacent to the tee boxes on Holes 1, 3 and 4 to minimize the risk of errant golf balls entering the highway and impacting passing motorists. Fencing or netting to prevent errant golf balls from entering the highway shall not be permitted. Final golf hole routing shall be reviewed and approved by Caltrans for avoidance of errant golf ball shots entering the highway. Plan Requirements: Prior to Coastal Development Permit (CDP) a landscape plan as part of the Biological Enhancement/Landscape Plan showing the vegetation to be planted adjacent to holes 1, 3, and 4 shall be submitted by the applicant and reviewed and approved by Caltrans. Timing: Landscaping shall be in place prior to occupancy clearance (OC). Final golf hole routing shall be reviewed and approved by Caltrans. Timing: Landscaping shall be in place prior to occupancy clearance (OC). MONITORING: Prior to Occupancy Clearance, RMD shall visit the site to ensure landscaping is in place.

16. (T2) Trails. The applicant shall dedicate to the County in perpetuity a 24-foot-wide lateral access area (narrowing to 16 feet in front of the proposed tunnels) for the future development and exclusive use of a hiking, biking and equestrian trail. The applicant shall dedicate an easement allowing for limited parking (15 spaces) and access from the parking lot to the trail. The 15 spaces shall be clearly marked and reserved for public trail users during the hours that the golf course parking lot is open to golfing patrons. The applicant shall construct a stairway from the existing bridge to the trail and construct the trail east of the bridge to a vertical viewing area near Eagle Canyon. The applicant shall construct a locked gate east of the vertical viewing area to prevent access of the public to Eagle Canyon until such time that either the Coastal Trail is opened for public access through the adjacent property to the east or until the vertical beach access and monitoring program is in effect, whichever occurs first. Timing: Prior to issuance of the CDP, the applicant shall record an irrevocable offer to dedicate the trail easement. The trail shall be constructed and open for public use prior to occupancy clearance. Monitoring will be conducted on a quarterly basis for the

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Seedlings will be transplanted to larger containers as necessary to guard against root-bound plants. Seedlings will be planted in late fall, 1999/2000 to coincide with the natural cycle (seeds naturally drop in the fall).

Native grassland seedlings will be planted en masse at 12" on center spacing at areas selected by Dos Pueblos Golf Links' Revegetation Specialist and the On-site Environmental Coordinator. The area selected will be enclosed with a protective fence (reference Details 2 and 3). Approximate areas of seedling planting are shown on Exhibit A.

Irrigation will be installed prior to planting.

Seedlings will be encouraged to naturalize following planting. Minimal interference is proposed. Fertilizer will not be added to the plant pit. Seedlings will not be enclosed in gopher cages. Cages of this small size could inhibit root formation.

4.4.2 Revegetation from Seeds

See Section 4.1 for hydroseed installation. Approximate area of native grassland hydroseed area is shown on Exhibit A.

5.0 SENSITIVE PLANT COMMUNITY PLAN

5.1 Southern Tarplant (Hemizonia parryi spp. australis)

One population of southern tarplant occurs in an area planned for golf links construction. This population will be relocated to the area surrounding the vernal pool, lake edge, and area between, excluding the existing disturbed wetlands, through a combination of direct transplanting of mature plants, direct seeding, and planting of tarplant grown from seeds collected from the site. See Sheet LR-4.

5.1.1 Receiver Site Preparation

The 100 foot buffer zone around the existing Vernal Pool is the proposed receiver

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~~Irrigation will be for the Southern Tarplant between the landscape contractor and the biological monitor to assure adequate watering and to facilitate weaning off irrigation by the end of the maintenance period.~~

The vernal pool is currently surrounded by the non-native, invasive iceplant known

~~Each year has received six days of water, in 2 applications, but [illegible] will be reduced with a biologist acceptable to the County, has been independent of supplemental water, fertilizer, pesticide and control measures, protection from herbivores and other maintenance for a minimum of two full years without irrigation. The existing water [illegible] The Dos Pueblos Golf Links sufficient success to allow them to grow in maturity in a natural manner.~~

biological consultant shall monitor the herbicide application to be conducted in the summer of 1999. One month after spraying, the site will be checked for completeness of plant eradication, and re-sprayed if necessary. Once the Hottentot fig is thoroughly dead (brown and brittle), approximately 2/3 of the dead material will be removed and disposed of off-site. ~~The remaining 1/3 will be left in place to~~ [illegible]

~~5.1.2 Seed and Plant Collection~~

Seeds will be collected from the parent tarplants within the [illegible] located on site. Southern tarplant goes to seed in the late summer to fall. (Seeds were collected previously in November 1997.) Adult plants will also be dug up and directly re-planted within the receiver site. Adult plants will also be maintained at a nursery location for continuing [illegible] collecting seeds and propagation. Approximately ¼ of the collected seeds will be placed in long-term storage. Of the remaining seeds, approximately ½ will be grown at the nursery and ½ will be sown directly into the receiver site. The various plots at the receiver site shall be staked and marked for future reference and identification of the revegetation treatments.

~~5.1.3 Planting Plan~~

Adult plants retrieved from the parent population will be directly planted within the receiver site in spring and summer 1999. Seedlings from 1997 collection were planted in pots and liners in a nursery in Fall 1998. Tarplant seeds will be scattered by hand throughout the receiver site in the late summer through early fall 1998, 1999. Seeds will be placed ~~both within the area containing dead Hottentot~~ [illegible]

~~Indicates~~ [illegible] the Vernal Pool and Lake Edge. See Sheet LR-1

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TABLE C
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watering will be of longer duration than the last to encourage deep rooting, and the interval between waterings will be gradually increased. Seedlings should be able to be weaned from supplemental irrigation by their third winter in the ground (approximately two years from planting). Reference Permit Condition 5(A)(4).

Slow-release Gro-Power fertilizer tablets will be placed in the planting pit of trees and shrubs at the time of planting. No additional fertilizer is anticipated during the maintenance period.

7.3 **Tarplant Maintenance**

Maintenance of the southern tarplant planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants. The project biological monitor shall flag all tarplant locations for protection prior to the weeding effort.

Seedlings ~~will be irrigated for approximately~~ two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

7.4 **Native Grasslands Maintenance**

Maintenance of the native grassland planting area will entail weed removal through hand removal and/or weed whacking to remove invasive plants.

Seedlings will be irrigated for approximately two years to supplement natural rainfall. Irrigation scheduling will be carefully monitored to coincide with the actual water needs of the plants. No fertilizing is anticipated.

8.0 MONITORING

8.1 **Seeded Areas**

8.1.1 **Hydroseeded Areas: Native Grassland, Erosion Control Area, Barranca Edge**

Hydroseeded areas will be evaluated two to three months after seeding (spring and summer 1999) by the Dos Pueblos Golf Links Revegetation Specialist and the

Ornamental trees and shrubs will be planted at a 3:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal +1:1 replacement ratio; i.e. "no-net-loss". When one-third of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Willows will be planted at a 5:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal +4:1 final replacement ratio; i.e. "no net loss". When four-fifths of the replacement plants for each species is acceptable, the revegetation effort will be considered a success. Refer to the Revegetation Success Criterion (Table C).

Oaks will be planted at a 10:1 replacement ratio with the intent to successfully establish trees and shrubs at a minimal +5:1 final replacement ratio; i.e. "no net loss". When one-half of the replacement plants for each species is acceptable, the revegetation effort will be considered successful. Refer to the Revegetation Success Criterion (Table C).

8.3 Fresh Water Marsh Monitoring

For newly created Fresh Water Marsh at the lake edge, will be monitored monthly for weed invasion and survival of plants for the first year (2003) and quarterly thereafter for a total of five years (2003-2007).

Weeds will be controlled. Dead plants will be replaced with the like plants from liners. The focus of the monitoring effort will be to assure the establishment of native, self-sustaining fresh water marsh. Refer to Revegetation Success Criteria (Table C) for additional information.

8.4 Transplant Monitoring

Permanent monitoring transects will be installed to facilitate long-term monitoring of the southern willow scrub receiver site, including photo documentation locations. Photos will be collected both before and during the initial site preparation and planting phases and throughout the monitoring period. Monitoring will be conducted quarterly during the

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first year, and then on a semi-annual basis thereafter. Monitoring will be conducted in the spring of each year to check for invasion by non-native weedy plant species, and again in the late summer to early fall to check the growth of the southern tarplant. Qualitative and quantitative data shall be collected during the late summer/early fall visits.

8.5 **Native Grassland Monitoring**

Hydroseeded Native Grassland areas will be monitored as per Section 8.1.1. Native Grassland areas planted from pots will be evaluated monthly for six months for weed invasion and health of seedlings, and quarterly thereafter for a total of five years. Refer to Revegetation Success Criteria (Table C) for additional information.

8.6 **Year End Reporting**

The Dos Pueblos Golf Links Revegetation Specialist and the OEC shall prepare a year end monitoring report, due at the anniversary date of completion of the installation each year for five years, summarizing the years' maintenance activities, the status of establishment of the seeded and planted areas, achievement of success criteria standards, and the need for remedial measures. Reports will include photo documentation for all native plant revegetation and restoration areas. The year end report shall be submitted to the County of Santa Barbara and the applicable resource agencies (permitting agencies) for review and approval each year.

9.0 REVEGETATION SUCCESS CRITERIA

Table C, adapted from the Celeron Pipeline Revegetation Plan and the Exxon Las Flores Canyon Revegetation Plan, outline the Revegetation Success Criteria proposed for the Dos Pueblos Golf Links Biological Enhancement Landscape Plan.

10.0 GOLF BALL RECOVERY PROGRAM

Condition 5.e. of the Conditional Use Permit #91-CP-085 for the Dos Pueblos Golf Links project requires the development of a golf ball recovery program for retrieval of balls in drainages, sensitive biological areas (i.e. native restoration areas, wetlands, etc.) and on the beach. In accordance with Condition 5.e., the following program will be implemented:

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** Irrigation scheduling shall be coordinated between the landscape contractor and the biological monitor to assure adequate watering and to facilitate weaning off irrigation by the end of the maintenance period.

*** Each tree has attained six feet in height, is in healthy condition verified by an arborist or biologist acceptable to the County, has been independent of supplemental water, fertilizer, pesticide and fungal treatments, protection from herbivores, and other maintenance for a minimum of two full years. At acceptance by the County for release, trees shall exhibit sufficient spacing to allow them to grow to maturity in a normal manner.

REVEGETATION SUCCESS CRITERIA: SOUTHERN TARPLANT

Feature	Performance Criterion	Findings	Action
Weed Invasion	Evaluate monthly for 1st year; quarterly for years 2-5	Invasive weeds interfering with growth of tarplant	Hand pull; re-spray Hottentot fig with herbicide "Rodeo"
Seeded Tarplant	Evaluate quarterly after seeding for one year	>70% cover by visual observation with at least 75% of plants in flower and/or producing fruit.	Continue to monitor
		<60% cover	Reseed in fall
Planted Tarplant	Evaluate quarterly after planting for one year	1 healthy transplant/ each removed	Continue to monitor
	Evaluate semi-annually for 4 additional years	Survival of approximate number of plants same as original population	Acceptable *

*Indicates partial release of Revegetation Bond.

BOWLAND & ASSOCIATES
Biological & Environmental Consulting Services
2674 East Main Street, Suite C-205
Ventura, CA 93003-2899
805-652-0577 fax: 652-0576

FAX MEMO

TO: Sherri Miller **FAX:** 760-632-0164 **PHONE:** 760-942-5147
FROM: Jackie Bowland **PAGES:** 1
DATE: October 6, 1998 **RE:** Dos Pueblos Golf Links - Tarplant Count

I completed the estimated population count today, using the method that we discussed, as summarized below. I laid a meter tape out along the long axis of the roughly rectangular population. I placed pin flags at 10 meter intervals, using three flags to mark each transect location. The transects were run from north to south, through the short axis of the rectangle. I marked the center of a one-meter pole, and counted all southern tarplants within a one meter swath along each transect, keeping the transect at the center point of the pole. Any tarplants which touched the pole were counted. I used my foot and/or the pole to check where plants were rooted, to assure that I was not double-counting any individuals due to large canopy cover. The results are below:

TRANSECT NUMBER	TARPLANT COUNTED WITHIN TRANSECT
Start (0)	42
1	112
2	97
3	78
4	62
5	64
6	23
TOTAL	478

Approximate size of the entire population: 66 meters long by about 25 meters wide; equalling 1650 square meters. Therefore;

Total square meters in sampled area = 175 meters (7 x 25)
Plant density in sample = 478 divided by 175 = 2.73 plants/square meter
Estimated population = 2.73 x 1650 = 4505 tarplants.

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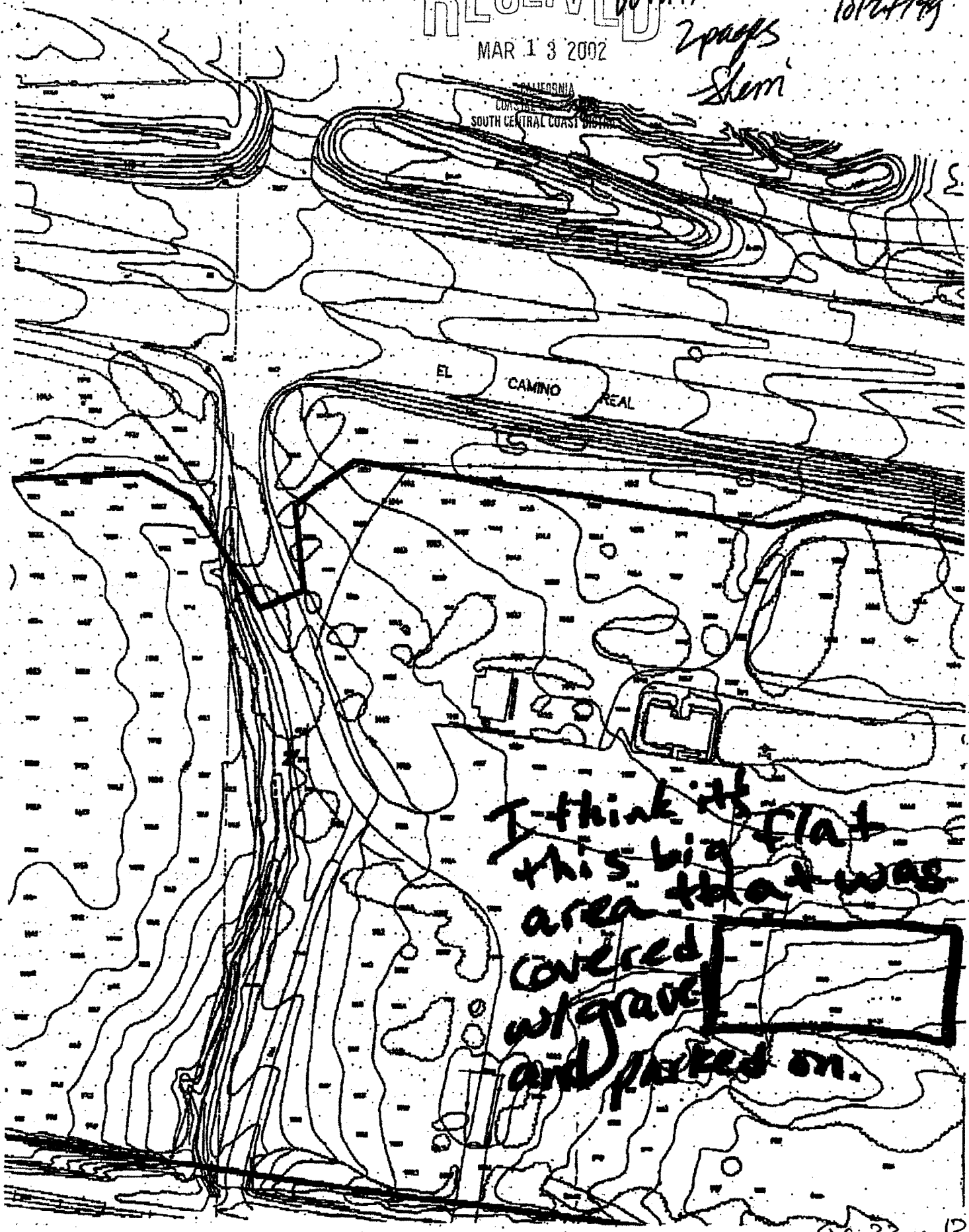
OCT. 27. 1999 11:56AM NO. 5151 P. 1

TO: WHITT HOLLIS BFIELD

Whitt - 2 pages Sherilyn 10/27/99



Ex. 33 p. 13

DUDEK & ASSOCIATES, INC.
Professional Teams for Complex Projects

Engineering, Planning,
Environmental Sciences and
Management Services

Corporate Office
605 Third Street
Encinitas, California 92024

760.942.5147
Fax 760.632.0164

MEMORANDUM

Date: November 29, 1999

To: R. Whitt Hollis, Capital Pacific Holdings

From: Sherri Miller, Dudek & Associates

Re: Fall 1999 Survey for Southern Tarplant
Dos Pueblos Golf Links
Dudek Project No. 1737-06

On Tuesday, November 16, 1999, Dudek & Associates, Inc. (DUDEK), conducted a site visit at the Dos Pueblos Golf Links project site. The purpose of the site visit was to survey for the southern tarplant (*Hemizonia parryi* ssp. *australis*). The plants were counted individually; where several plants were growing in a clump the number of individual plants was counted using central axis stems. In total, 372 plants were observed onsite:

- Four plants were observed near the bluff, west of the bridge;
- One plant was observed within the southeast corner of the project site;
- Four plants were observed in the vicinity (west) of the previously removed ARCO offices;
- 363 plants were observed in the vicinity (east) of the previously removed ARCO offices.

STORRER
ENVIRONMENTAL
SERVICES

2565 Puesta Del Sol Road #3
Santa Barbara, CA 93105
(805) 682-2065
Fax (805) 569-9394

April 1, 2002

Kristen Getler
Santa Barbara County
Planning & Development Department
Energy Division
30 E. Figueroa Street, 2nd Floor
Santa Barbara, CA 93101

Re: Status of Southern Tarplant at the Dos Pueblos Golf Links Project Site

Dear Ms. Getler:

This correspondence provides background information relative to the distribution of southern tarplant (*Hemizonia australis* ssp. *parryi*) at the Dos Pueblos Golf Links project site. Discussions and observations from our meeting with California Coastal Commission (CCC) staff on March 14, 2002 are summarized. I have also included some insights concerning the regional occurrence, life history, management considerations, and restoration potential for southern tarplant.

My familiarity with southern tarplant stems primarily from my experience with oil and gas compliance monitoring along the south coast of Santa Barbara County. This includes my work as Onsite Environmental Coordinator (OEC) for the ARCO Dos Pueblos Lease Facilities Abandonment Project from spring of 1996 through summer of 1998. In my capacity as the County's OEC, I have also dealt with management of a significant southern tarplant population at Venoco's Ellwood Marine Terminal near Coal Oil Point.

I learned more regarding the status of southern tarplant on the subject property during our site visit on March 14th. You and I met Melanie Hale of the CCC, CCC consultants Klaus Radtke and John Thomas (Geo Safety, Inc.), and Whit Hollis (representing the applicant). The purpose of our meeting was to discuss the history and current status of southern tarplant at the project site. We attempted to locate three of the previously mapped occurrences and determine whether these subpopulations were extant. Our efforts were hampered by the fact that southern tarplant is a late-flowering annual species that is most conspicuous from early summer through late fall, depending on annual weather patterns. Thus, the timing of our inspection was not optimal for detecting southern tarplant. We saw no evidence of recent germination, however we were able to identify approximately 50 desiccated tarplant specimens from last year's crop. This facilitated our efforts to locate the plant and to extrapolate its distribution at this location.

5 pages

EXHIBIT NO. 33
APPLICATION NO.
A-4-SB-93-154-CC A2
John Storrer - monitor tarplant site visit 3/14/02.

My understanding is that southern tarplant was first recorded onsite during surveys for the project Environmental Impact Report (EIR) in 1993. Apparently, only one occurrence was recorded at that time. This location, along the access road approximately 100 yards west of south end of the railroad bridge, was mapped in the EIR.

During the abandonment work for the oil and gas facilities, a second subpopulation was observed by me, in the vicinity of the warehouse and loading rack in the northeast portion of the site. I believe that this was in June or July of 1998. Interestingly, the distribution of southern tarplant here conformed almost exactly to the location of the former loading rack facility. I have since speculated that the germination may have been stimulated by removal of the structure which was completed in October of the previous year. Members of the genus *Hemizonia* often respond to soil disturbance with profuse flower and seed production. A search of my files from the lease abandonment work failed to reveal a map or other reference to the plant. Consultants for the applicant reported that this subpopulation consisted of approximately 4,500 individuals in 1998. I believe this to be a reasonable estimation.

The attached maps show the approximate distribution of southern tarplant at the larger, northern site location (the one discovered in summer of 1998), as determined during our March 14th site visit. One map shows the distribution of tarplant relative to the former oil and gas facilities, the other in relation to the proposed golf course development. We used a topographic map and various physical features (e.g. berms, remnants of driveways, building footprints, abrupt changes in vegetation type), as well as my recollection, to interpret the area of occupied and suitable habitat for southern tarplant. I later inspected aerial photographs at the Planning & Development Department (P&D) to further refine the map. The P&D archives contained a photo taken on 6 June 1997 (PW SB10-36). At this point in time, the loading rack had been demolished but the nearby warehouse structure remained in place. The photo clearly showed the "footprint" of the loading rack and was therefore useful in verifying the distribution of southern tarplant at that time. Our inspection on March 14th indicated that some southern tarplant specimens had become established approximately 20 feet beyond its former western limit, presumably as a result of natural (unaided) dispersal. I paced off the area of "occupied" southern tarplant habitat as measuring 60 x 180 feet, or 10,800 square feet. We did not generate a precise estimate of the number of tarplant specimens that occurred within that area, because of the seasonal timing of our inspection. However, we observed at least 50 specimens within this 10,800 square-foot area.

In 1998, the applicant developed a Biological Enhancement and Landscape Plan (BELP). A mitigation component of the BELP entailed seed collection, nursery propagation, and restoration of southern tarplant. It is my understanding that the population has been surveyed each fall by the applicant's consulting biologist and that seed has been collected and propagated so that seedlings may be subsequently installed onsite. Because of delays in getting the project started, the plants have been discarded and the restoration work has not yet begun. Maps were produced during the course of the annual surveys and a census of plants was taken at each location, including the one recorded in the EIR and the one discovered during the lease abandonment work. Four additional occurrences of southern tarplant have been found in the course of these annual surveys, bringing the total to six mapped subpopulations onsite. These data were presented in rough format (i.e. general location of subpopulations indicated on site maps; numbers of plants hand-written on the maps) during our meeting on March 14th. We located the northern subpopulation described above and the site mapped in the EIR. We were unable to locate another mapped subpopulation on the west side of Tomate Canyon during a cursory reconnaissance of that portion of the site. We did not attempt to find the other three mapped occurrences.

During our site visit, we also looked at the proposed southern tarplant restoration site in the vicinity of the vernal pool at the southwest end of the railroad bridge. The site was likely chosen because it lies within the wetland buffer and is outside the development footprint. Additionally, southern tarplant is often found in association with vernal pools, so the habitat context is appropriate for this species.

Some background on the status of southern tarplant at the Ellwood Marine Terminal (EMT) near Coal Oil Point may be useful. Though no attempt has been made to estimate the size of this population within this five-acre facility, it has been sustained at several thousand individuals for at least the past four years. Venoco has modified their operations and maintenance practices to some extent, in order to maintain the viability of this population. The best example of these protective measures is the seasonal timing and method of suppressing vegetation for fire abatement. Weeds are selectively controlled through mechanical, rather than chemical means early in the growing season, to avoid incidental impacts to the later-flowering tarplant. This approach has encouraged the proliferation of southern tarplant with nominal increase in cost of operations. The EMT population would be an excellent seed source for southern tarplant restoration projects.

In my opinion, it would be best to mitigate impacts to this annual species in terms of unit area, rather than number of specimens. The number of tarplants that germinate in any given year can vary significantly, depending on factors such as weather and competition from other plants. I would also plant the material by direct seeding, rather than nursery propagation, though this option would require a greater level of pre-treatment to remove non-native annuals (i.e. competitors). Additionally, I would recommend that there be more than one restoration site, in the event that the primary site is unsuccessful. My experience with southern tarplant, as well as its congener Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) suggests that this is a good candidate for restoration. It germinates readily and occupies a variety of microhabitats; including sandy terrace or bluff situations, flat coastal meadows with clayey soils, and slightly wetter areas such as those found on the margin of vernal pools. Reducing competition from undesirable plants is probably the most important consideration in successful restoration of this species.

I hope that this information provides useful background in your current review of the project. Please call me if you have any questions concerning my correspondence.

Yours truly,

John Storrer

John Storrer
Storrer Environmental Services

enclosures: figures showing approximate distribution of southern tarplant in the northeastern portion of the site in relative to previous and proposed developments

cc: Michelle Pasini, SBCo P&D Energy Division

EXHIBIT NO. 10.33
APPLICATION NO. 93
A-4-STB-93-154-CC-A2
So. Tarplant Report

Dos Pueblos Golf Links Project

Approximate Distribution of Southern Tarplant

(Hemizonia australis ssp. parryi)

Based on field survey on 14 March 2002 and
review of aerial photograph (PW SB10-36) taken 6 June 1997
Mapped by John Storrer

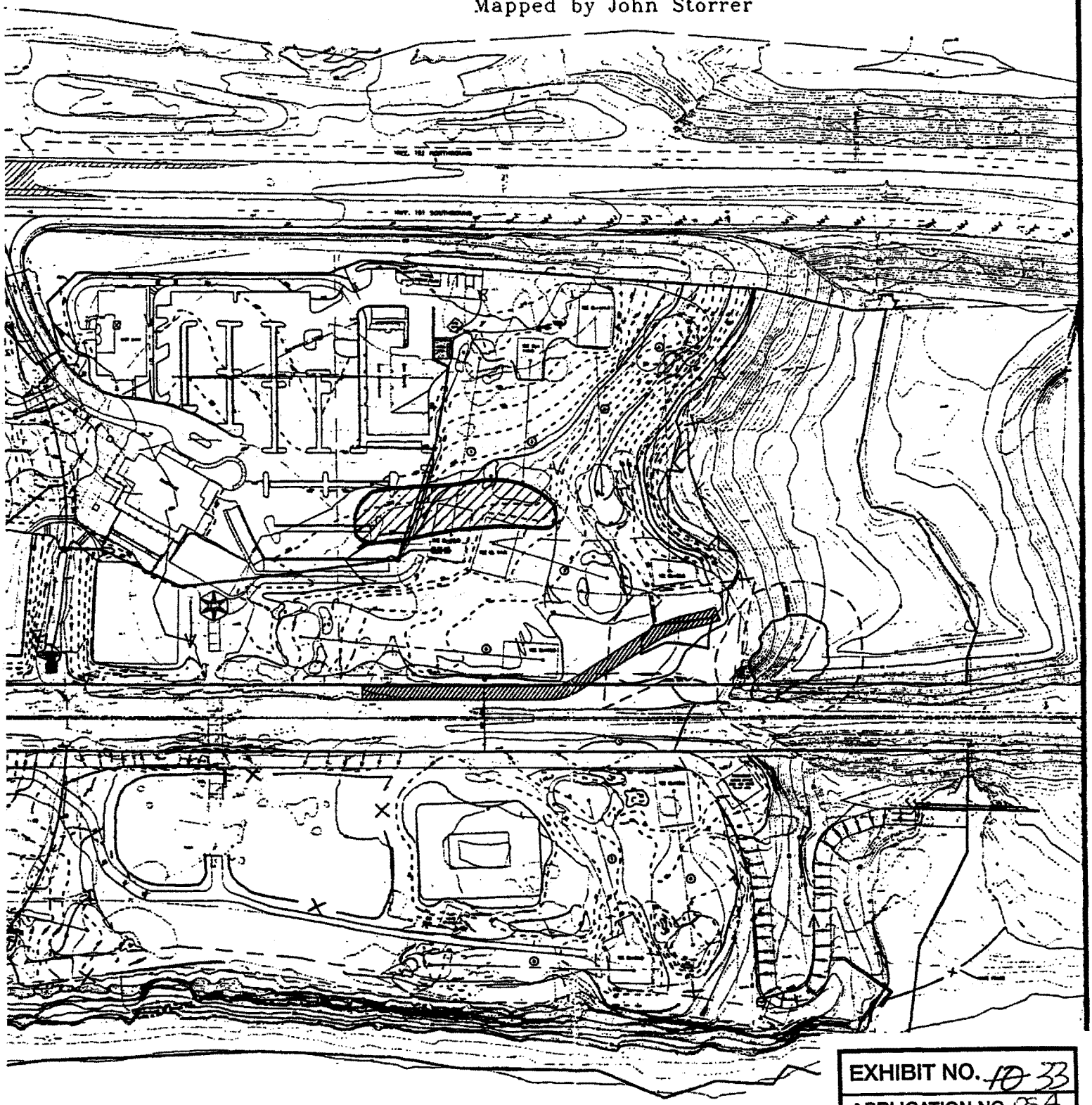
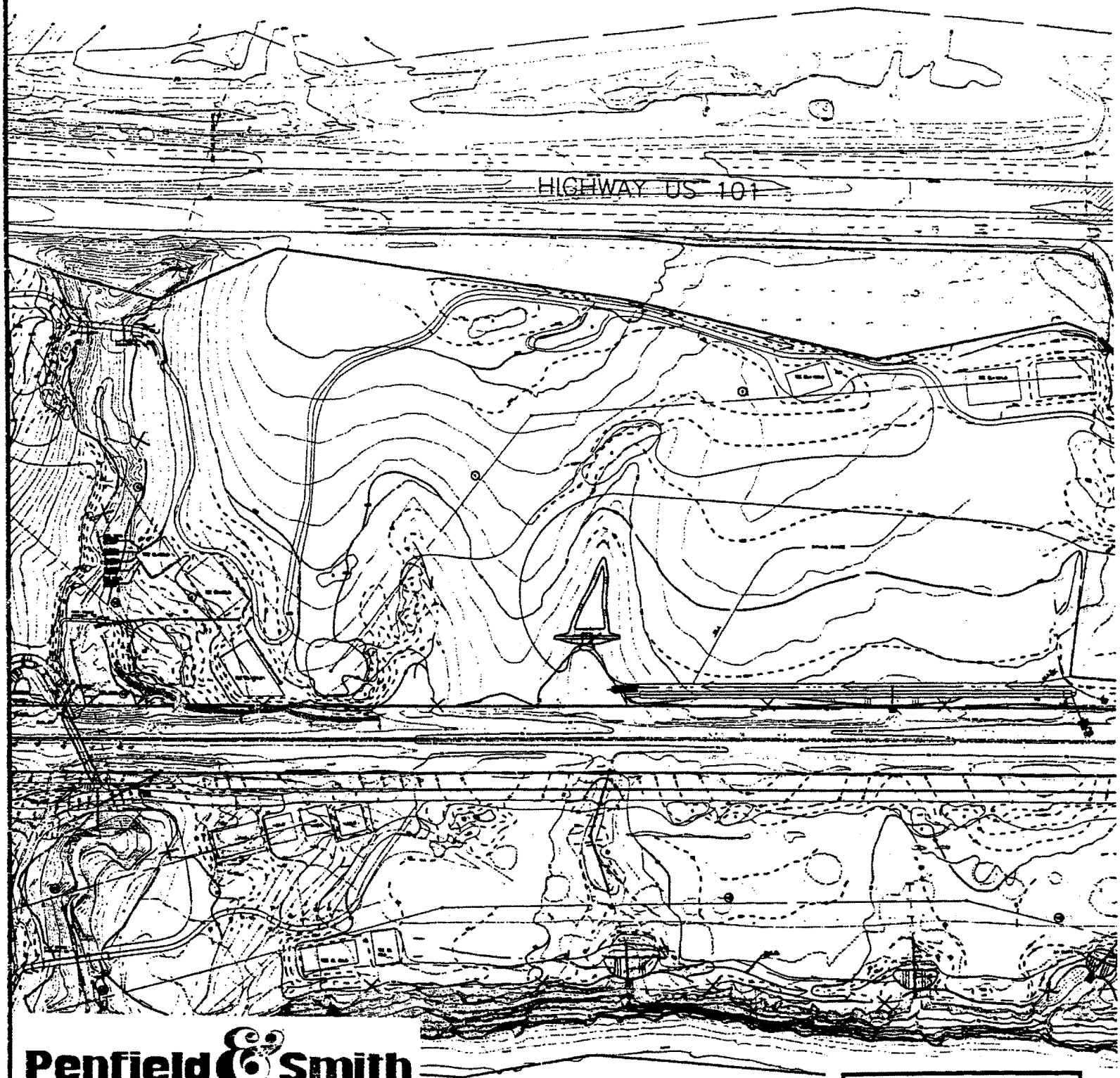


EXHIBIT NO. 10-33
APPLICATION NO. P54
A-4-STB-93-154-CC-A2
50 Tarplant Report



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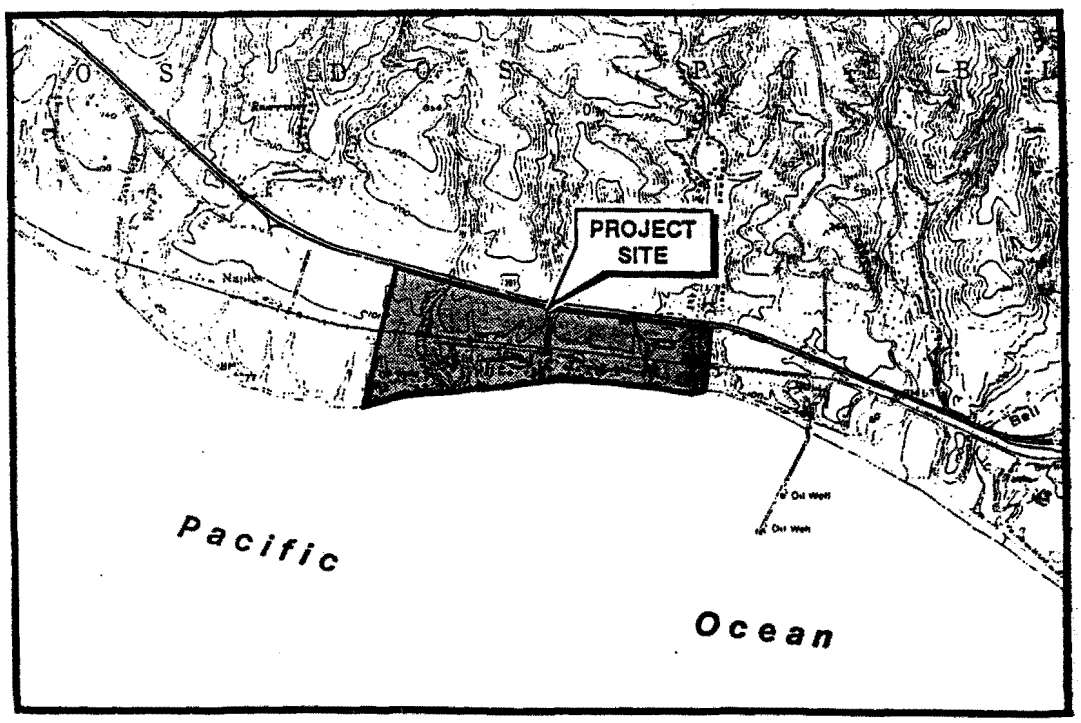
SCALE: 1" = 200'
0 100 200 300

EXHIBIT NO. 4033
APPLICATION NO. 155
A-4-STB-93-154-EC-A2
So. Tarplant Report

FINAL ENVIRONMENTAL IMPACT REPORT
FOR THE
ARCO DOS PUEBLOS GOLF LINKS PROJECT

92-EIR-16

SCH: 92041056
Case # 91-CP-085



Prepared for:
COUNTY OF SANTA BARBARA
RESOURCE MANAGEMENT DEPARTMENT

March 1993

4 pages

EXHIBIT NO. 12-34
APPLICATION NO.
A-4-STB-93-154-EC-A2
So. Tarplant analysis 1993 FEIR
92-EIR-16

page 1 of 4

Southern Tarplant

- *Southern Tarplant.* The southern tarplant (*Hemizonia australis*) has no official status, but it is on List 3 of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Smith and Berg, 1988). "List 3" is a compendium of plants for which CNPS lacks the information necessary to determine rare, threatened or endangered status. CNPS believes that many historic occurrences of southern tarplant have been extirpated but requests additional rarity or endangerment information. This species occurs throughout southern coastal California, from San Diego County to Santa Barbara County. According to Smith (1976), it is "common in many sandy fields near the ocean, between Goleta and Ellwood." The occurrence of this species on the project site appears to constitute a range extension since its northern limit is reported to be Ellwood Mesa. A small population of southern tarplant was located by Interface (1991) immediately south of the coastal road and west of Drainage #3 (Figure 5.1-1), as verified by the EIR consultants.

- *Cliff Aster.* The cliff aster (*Malacothrix saxatalis* var. *saxatalis*) also has no official status and is not on any CNPS list. It is designated by the County of Santa Barbara as "endemic," however, meaning that it is only known to occur within the region. Smith (1976) reports the cliff aster as occurring in scattered locations along coastal bluffs and canyon mouths from west of Gaviota to the vicinity of Ventura and inland to Santa Rosa Road near Lompoc and north of Casmalia. It was encountered west of the mouth of Eagle Canyon and between the mouth of Drainage #6 and Tomate Canyon on steep, eroding shale cliffs of coastal bluffs by Katherine Rindlaub (1992). These populations were verified by the EIR consultants, and several additional populations were encountered on coastal bluffs near the mouths of Drainage #5, Drainage #4, Drainage #3 and adjacent to an access road east of Drainage #4. Other populations may exist in less accessible locations, so it can be assumed this species occurs throughout the coastal bluffs on the project site in appropriate habitats (eroding shale cliffs).

3. *Sensitive Taxa - Fauna.* Springtime surveys indicated the potential presence of several species considered sensitive by one or more monitoring agencies including the U.S. Fish and Wildlife Service (FWS), California Department of Fish and Game (DFG), National Audubon Society, National Park Service (NPS) and local monitors. Based on available habitat types, sightings and species records for the Santa Barbara area, many sensitive animals are expected to use the project site as residents, breeders, foragers or migrants. Table 5.1-2 provides a list of these sensitive species with their legal status. A description of federal- and/or state-listed endangered species which may occur at the project site and are legally protected from "taking" (which includes harassment) is provided below.

- *Red-legged Frog.* The red-legged frog (*Rana aurora*) is a California Species of Special Concern and a candidate for Federal listing as endangered or threatened. The red-legged frog occurs west of m southwest

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signs posted to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.

c. Grass cutting or disking for fire control shall not be permitted within buffer zone established by Measure b.

d. The applicant shall remove the non-native Hottentot fig along the edge of the pool and replace it with a native plant that is compatible with the vernal pool and ecosystem.

Plan Requirements: The above measures shall be noted on all grading and construction plans. **Timing:** The revised BELP shall be reviewed and approved prior to issuance of CDP.

MONITORING: RMD shall ensure compliance during construction and prior to occupancy through site inspection.

Implementation of this measure would reduce impacts to vernal pool wildlife values to less than significant (Class II) levels.

B8 Sensitive Plants. The applicant shall submit a revised BELP, including a component addressing revegetation for the southern tarplant, prepared by a RMD approved biologist, to RMD for review and approval. The plan shall follow the California Department of Fish and Game Rare Plant Mitigation Guidelines and shall include, but not be limited to the following elements:

-- Collection of propagules (seeds, cuttings, rootstock);
-- Growth of propagules in containers in a greenhouse;
-- Transplanting of propagated plantings to suitable habitats onsite;
-- Monitoring and maintenance of transplanted populations; and,
-- A contingency plan to be carried out in the event of high mortality of transplants.

Plan Requirements: Prior to issuance of the CDP, the applicant shall submit the revised BELP. **Timing:** Populations of rare plants grown from collected propagules shall be established in advance of the removal of natural populations from the site. Revegetation work shall commence immediately following the completion of construction activity and be completed prior to opening of the golf course for public use.

MONITORING: RMD staff shall site inspect for restoration. Maintenance shall be ensured through site inspections. Permit Compliance signature is required for performance security release.

Implementation of the above measure woul[illegible]e plants occurring onsite to less than significant levels (Class II).

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file copy

MEMORANDUM TO DOS PUEBLOS GOLF LINKS FILE

TO: Whitt Hollis
FROM: Jackie Bowland
DATE: May 14, 1992
RE: Southern Tarplant

As reported in Section IX of the original application (November 1991), a small population of southern tarplant (Hemizonia australis) occurs within the proposed golf links, adjacent to barranca # 3 (hole # 18 - see attached maps). The purpose of this memo is to inform you that the listing status of this plant may soon change to afford a higher level of protection. This species is currently listed by the California Native Plant Society (CNPS) on List 3 of their Inventory of Rare and Endangered Plants of California (Sept. 1988). List 3 is a review list that includes plants for which CNPS needs more information. A new edition of this publication is due out this fall, which will list the southern tarplant as 1B. List 1B includes "plants rare, threatened or endangered in California and elsewhere." The importance of this change is that all plants listed in the Inventory as 1B are considered rare under Section 15380 of the State CEQA Guidelines, whether they are listed as such by the California Department of Fish and Game (CDFG) or not.

This change elevates the importance of this plant population, and may require mitigation measures to reduce or eliminate potential adverse impacts. Acceptable mitigation measures are subject to approval by the CDFG and Santa Barbara County, and could include such approaches as avoidance and ongoing protection of the population, avoidance with a minimum buffer area of undisturbed habitat surrounding the population, transplantation elsewhere, or a combination of some or all of these measures. I am currently investigating the status of knowledge of this species with the CDFG; they may not have clear ideas of suitable mitigation at this time, particularly if no one has approached this subject yet, or if no research has been done on the feasibility of various approaches for this species. The CDFG is getting away from accepting mitigation programs that they considered to be experimental (i.e., no one has tried before), based largely on how rare they consider the plant to be (i.e., if this were the only population, they would not let us mess with it). Avoidance with a buffer means a minimum distance of status quo surrounding the plant – no grading, irrigation, or other changes to the existing land uses within the buffer area. Again, the minimum buffer area will depend on how much they know about the biology of this species.

* So. Tarplant in fact was upgraded to List 1B status prior to finalization/certification of EIR. Comments of Ms. Bowland in Final EIR do not offer correction of So. Tarplant status as rare, threatened or endangered, rather than List 3.

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APPLICATION NO. A-4-STB-93-154-CC-A2
So. Tarplant memorandum written during EIR preparation prior to certification
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EXHIBIT NO. 35
APPLICATION NO.
A-4-STB-93-154-EC-A2
92-EIR-16 Final Comments/Responses
22-23 pages total

TWO ATTACHMENT -- BIOLOGICAL RESOURCES COMMENTS ON THE DEIR

PREPARED BY
JACQUELINE L. BOWLAND
INTERFACE PLANNING AND COUNSELING CORPORATION
JANUARY 20, 1993

(1) Table 2.2-1, Biological Resources. Please revise the table and text to indicate the revised tree removal numbers as follows: "Approximately ~~69~~ 52 willow trees (out of approximately 193 on-site) and ~~0.6~~ 0.4 acres of southern willow scrub habitat (out of approximately ** acres on-site) would be removed." (This number to be added by EIR preparer.) | 114

(2) Table 2.2-1, Page 2-5, Class II Biological Resources, second impact Biological Resources. Please revise this table to indicate that the applicant has accepted the recommended mitigation measures, in which case there would be no significant unavoidable impact. These mitigation measures include spanning across drainages with cart path bridges, avoidance of the majority of willow habitat, and redesign of the energy dissipators to allow for revegetation. | 115

(3) Table 2.2-1 Biological Resources. Please revise this table to remove the word "wetland." | 116

(4) Table 2.2-1, page 2-5 Class II Biological Resources, second impact. The first bullet under "Mitigation Measures" should be revised as follows: "The applicant shall replace all trees to be removed from the site (with the exception of tamarisk) ..." This comment also applies to pages 2-8 and 2-9. | 117

(5) Table 2.2-1, page 2-5 Class II Biological Resources, second. The second bullet under "Mitigation Measures" should be revised as follows: "The applicant shall ~~revegetate~~ enhance drainages 4-south, 5-north and south, 6-south, 7-north and south and Tomate north and south, and portions of drainages 4-north. The enhancement of these areas shall mitigate the loss of drainages 1, 2, 3, 4-north, and Tomate northwest." This comment also applies to pages 2-6, 2-8, and 2-9. | 118

(6) Table 2.2-1, page 2-5 Class II Biological Resources, second impact. The sixth bullet under "Mitigation Measures" should be revised to indicate that construction will be kept outside of the limits of disturbance as illustrated on the Biological Enhancement Plan. This comment also applies to pages 2-6, 2-7, 2-9, and 2-10. | 119

(7) Table 2.2-1, page 2-7 Class II Biological Resources. The "Residual Impact" under the "Fragmentation of on-site habitat" impact should be revised to delete the entire narrative discussion following "Less than significant." Refer to text comments. | 120

(8) Table 2.2-1, page 2-7 Class II Biological Resources, fourth impact. The last "Mitigation Measure" should be revised as follows: "The applicant shall replace all trees to be removed from the site (with the exception of tamarisk) and excavation work ~~adjacent~~ within the dripline and/or canopy of ~~to~~ the willows to be retained on-site shall be avoided to the maximum extent feasible | 121

23 total scanned
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Exhibit 35 22 pages total 11/22

(9) Table 2.2-1, page 2-8 Class II Biological Resources, first impact. The text within both the summary table and the biology section of the EIR should be revised to discuss use of the artificial vernal pool by wildlife. No sensitive species (mountain lion, ringtail) have been documented as using this pool, and because of its proximity to active oil and gas operations, such animals are not expected to use this site. Red-legged frogs, and two-striped garter snakes would not be expected to use the pool because it is not suitable habitat for these species because they require near-perennial water. Therefore, there are not "several sensitive taxa" foraging and drinking within the pool. Potential tracks of mountain lion and ringtail were seen by Interface biologists within only one drainage, to the west of the artificial vernal pool. Further, because the pool contains water only during the winter, when other surface water resources on the site and vicinity also have water, use of this pool for drinking by wildlife would be less likely than if it were the only surface water available. Wildlife use within this pool has been noted by Interface as including small birds (blackbirds, sparrows), tadpoles (probably bullfrogs), and insects during periods when water is present, and no specific wildlife use during other times. 122

(10) Table 2.2-1, page 2-8 Class II Biological Resources. The first "Mitigation Measure" should be revised to reflect the allowance of construction of the cart path and 18th green south of the artificial vernal pool; that fencing should only be temporary during construction and should be located along the perimeter of the artificial vernal pool (not 100 feet from the edge); and that grass cutting would be allowed south of the artificial vernal pool on the 18th green. Further, it is the applicant's intention to enhance this pool through the removal of the non-native Hottentot fig present along its banks. This invasive plant would be replaced by an appropriate native species compatible with the pool ecosystem. This enhancement would be included in the required revegetation and management plan to be approved by DER. 123

(11) Table 2.2-1, page 2-8 Class II Biological Resources, fourth "Description of Impacts." Are there known bat nursery roost sites present on-site? If so, please substantiate, if not, state that there is only a potential for nursery roost sites. The finding of a Class II impact is not supported by the discussion within the EIR text. This impact description should be revised to reflect that only 27% of the trees would be removed from the project site, and that roosting bats could occur on the site. Because 73% of the trees will be retained, and because there is no documentation that the sensitive pallid bat occurs on-site, this impact should be reduced to a Class III, less than significant level. 124

(12) Table 2.2-1, page 2-8 Class II Biological Resources, first impact. This statement of impact contradicts the conclusion reached in Section 5.3, Water Resources, and repeated in 5.1 Biological Resources, page 5.1-33, third full paragraph: "...no significant water quality impacts are expected due to runoff of herbicides and pesticides with the implementation of applicant-proposed mitigation measures." (Emphasis added.) This impact should therefore be moved from the Class II category to the Class III, less than significant category. It should also be clarified in the text that suitable habitat is not present on-site for red-legged frog or two-striped garter snake. 125

(13) Table 2.2-1, page 2-9 Class II Biological Resources. The second impact regarding construction impacts to Ellwood Canyon. The proposed project would not include any construction activities in the vicinity of Ellwood Canyon. Construction of the reclaimed water pipeline west of Sandpiper Golf Course would be within the existing paved roadway. The reclaimed water pipeline east of Sandpiper Golf Course is not part of this project; it would be constructed by GSD. Ellwood Canyon lies to the east (down the coast) of Sandpiper Golf Course. Refer to "Proposed Pipeline Corridors" Figure 3.3-5 - 3.3-7, beginning on page 3-17 of the draft EIR. As illustrated, this project begins at Las Armas Road and continues west. If this impact is intended to refer to construction in the vicinity of Eagle Canyon, please note that Eagle Canyon is not a monarch overwintering site, but a "small autumnal site" (Calvert, December 1991). 126

(14) Table 2.2-1, page 2-9 Class II Biological Resources, third impact description, last sentence. Assuming that this statement is referring to mountain lion and ringtail, the text should be revised to reflect that both of these animals are nocturnal, with the ringtail strongly nocturnal, and therefore unlikely to be substantially impacted by light diurnal recreational activities (a Class III impact would be appropriate). Because the applicant has already agreed to enhance the drainages, overall habitat values should be improved from the existing conditions, through the removal of non-native plants and the incorporation of both more species and more density of native plants. These actions will increase cover within the drainages, and improve wildlife movement habitat. 127

(15) Table 2.2-1, page 2-10 Class II Biological Resources, first impact description. This impact should be moved to Class III, less than significant. The project description, as proposed by the applicant, includes measures to protect the harbor seals, including a permanent setback, construction scheduling to avoid the pupping season, a permanent fence, and no access provision to the beach. 128

(16) Table 2.2-1, page 2-11 Class II Water Resources. The second bullet under "Mitigation Measures" should be revised as follows: "Final landscape and ~~development~~ design plans ~~showing 30-foot buffer of undisturbed vegetation between drainages and golf course where feasible~~ shall follow the limits of disturbance as illustrated on the Biological Enhancement Plan dated January 1993 and shall be submitted to RMD for review and approval." 129

(17) Page 4-1, last paragraph. The first sentence should be revised as follows: One small area of Eucalyptus within Eagle Canyon, north of the railroad tracks, on the eastern boundary of the site ~~have~~ has been identified as a small monarch butterfly autumnal ~~roosting~~ site. It should be noted page 5.1-19 correctly states that "...the eucalyptus trees onsite provides nectaring habitat for monarchs, but do not constitute a significant or sensitive monarch resource." 130

(18) Table 2.2-1, page 2-22 Cumulative Impacts, Biological Resources. The "Description of Impact" should be revised to reflect that the proposed Golf Links Project will actually create a net benefit to on-site biological resources through restoration and revegetation efforts, the preservation of open space, provision of year-round water, substantial increase in the number and 131

diversity of native plants, etc. Therefore, there should not be a Class I project contribution to cumulative biological resources; there should actually be a Class IV beneficial impact.

(19) Page 4-1, last paragraph. The statement that Burmah beach is a rookery should be clarified to indicate what animal(s) use the beach as such. This use is not mentioned elsewhere in the text (e.g. in Section 5, Biological Resources), and should be deleted from this location if no rookery exists. 132

(20) Page 5.1-1, first paragraph. The text should be expanded to provide the reader with the full title of documents incorporated by reference. This should include the August 1992 "Draft Wetland Classification and Environmental Analysis for the Dos Pueblos Golf Links" prepared by Bowland and Ferren. 133

(21) Page 5.1-7, first full paragraph. The text should be revised to clarify that the plant community described in line 7-9 occurs only in drainage #7-south (California sagebrush, coast goldenbush, sawtooth goldenbush and giant wild rye). The mesic community described in line 10-12 occurs only in drainages on the south side of the railroad tracks, and in some locations, only south of the existing access road. 134

(22) Page 5.1-7, second full paragraph. Include the total number of non-native trees that occur on-site (approximately 700 trees, exclusive of tamarisk). This is necessary for the impact and mitigation discussions. 135

(23) Page 5.1-7, last paragraph. Please add the total number of willows counted on the site (approximately 193 trees.) Wild rose was found only in drainage #4-north, and Mexican elderberry occurs only in a few locations. 136

(24) Page 5.1-8, fourth paragraph. Reference to mountain lions should be moved to Section 3, Sensitive Taxa, since elsewhere in the text it is considered as such. It should also be clarified (in the appropriate location) that possible mountain lion tracks were seen only in one location on-site. This section should include discussion of coyote and deer as other large mammals present within the project vicinity, particularly since deer is a primary prey species for mountain lion. Neither coyote or deer have been seen on the site during the Interface surveys. Other canid tracks have been seen on-site, these could be domestic dogs which frequent the area with surfers. Deer tracks have not been seen on-site. 137

(25) Page 5.1-9, first full paragraph, line 1. The first sentence should be revised as follows: "The four seasonal surface water resources (three seasonal ponds and an artificial vernal pool) on the project site..." 138

(26) Page 5.1-9, first full paragraph, line 10-11. Reference to the seasonal pond at Tomate Canyon-north should be clarified to indicate the seasonal values of this location (i.e., highest values during the short period of inundation) and the high level of disturbance from cattle grazing. 139

(27) Page 5.1-10, first partial paragraph, line 5. The discussion of red-legged frog should occur under Section 3. Sensitive Taxa for consistency. | 140

(28) Page 5.1-10, first full paragraph. The discussion of sensitive insect species should occur under Section 3. Sensitive Taxa for consistency. | 141

(29) Page 5.1-10, 1. Sensitive Habitats. The text should include a definition of the term "sensitive," as distinct from "special interest." | 142

(30) Page 5.1-11, first full paragraph, Southern Bluff Scrub. The text should be revised to reflect the occurrence of this community in small patches on the south side of the existing paved access road. Indicator species include saltbush (Atriplex lentiformis), Australian saltbush (Atriplex semibaccata), and California sunflower (Encelia californica). A cliff aster considered sensitive by Santa Barbara County (Malacothrix saxatilis saxatilis) occurs within this community, as correctly noted in the text under Section 2. Sensitive Taxa - Flora. | 143

(31) Page 5.1-11, second paragraph, Wetland Communities. The text should include discussion of the difficulty in reaching a widely accepted definition of "wetland," and indicate how that term will be used in the EIR to narrowly define specific areas, versus a broad, all-inclusive use of the term. | 144

(32) Page 5.1-12, second paragraph. In describing those areas potentially subject to federal Section 404 jurisdiction, the text should include discussion of "man-induced" and "problem wetlands" as defined by the U.S. Army Corps of Engineers. Because the wetlands found on-site can be defined as man-induced, they may not be subject to 404 requirements. The text should also discuss Nationwide permits, the size of the potentially regulated wetlands on-site, and the District Engineer's role in determining what, if any, permit is required. | 145

(33) Page 5.1-12, third paragraph. A reference should be included citing the U.S. Fish and Wildlife Service value categories that are briefly mentioned in this paragraph (Sather and Smith [1984], An Overview of Major Wetland Functions and Values.). | 146

(34) Page 5.1-12, fourth paragraph. The text should be revised as follows: "A draft 'Wetland Classification ....'." | 147

(35) Page 5.1-12, fifth paragraph. Please clarify the text to indicate that the mapping was conducted by the EIR preparation team, and is illustrated in Figure 5.1-1. No habitat or community mapping was prepared by Bowland and Ferren. | 148

(36) Page 5.1-14, third paragraph. Revise text as follows to clarify: "Most of the areas designated "southern willow scrub" on Figure 5.1-1 support small..." | 149

(37) Page 5.1-15, first full paragraph, last line. The text should include a definition of the term "special interest," as distinct from ~~"sensitive" species~~. | 150

(38) Page 5.1-15, last paragraph, continuing to Page 5.1-16. The description of the occurrence of cliff aster on the project site should be expanded to include one additional population found by Bowland and Ferren (July 1992). This disjunct population occurs on an outcrop of Monterey shale adjacent to the existing paved access road, on the east side of a side road leading to a closed-in well, to the east of drainage #4-south. 151

(39) Page 5.1-16, second paragraph. The discussion of habitat requirements of the red-legged frog should be expanded to include the species' preference for creeks with perennial or near-perennial surface water containing a series alternating of pools and riffles. It should also note that this habitat is not present on the project site, and that this species has not been found to occur on-site. 152

(40) Page 5.1-16. A discussion of the two-striped garter snake should be included here, since the text mentions potential impacts to this species elsewhere. Habitat preferences of the species should be included (permanent fresh water, rocky perennial creeks) along with note that suitable habitat is lacking on the project site and that this species has not been found to occur on-site. A discussion of the southwestern pond turtle should also be included, including habitat requirements. These turtles have not been found on-site during Interface surveys, and suitable aquatic habitat may only be present in Eagle Canyon. Suitable upland nesting habitat does not appear to be present on the project site. 153

(41) Page 5.1-16, third paragraph. The California brown pelican has been seen resting on many sections of the beach adjacent to the project site and throughout the vicinity, using broad stretches of beach exposed during low tides. In the immediate vicinity of the project site, the pelicans appear to use Burmah Beach most often. 154

(42) Page 5.1-16, last paragraph, continuing to Page 5.1-17. The peregrine falcon most commonly nests on rocky ledges, a habitat that is not present on the project site. Suitable foraging habitat is present on and near the site, and occasional foraging peregrines would be expected to occur. 155

(43) Page 5.1-17. The text should include a general discussion of raptors that could occur on the site, given the protected status of these birds. During surveys conducted by Interface, few raptors were seen. These included soaring red-tail hawks, turkey vultures, and kestrels. No roosts or nests were identified on the project site. Discussions with Paul Collins of the Santa Barbara Museum of Natural History of the habitat quality of this site indicates a possible lack of sufficient prey base for raptors in the project vicinity, as a result of ongoing cattle grazing and other agricultural land uses. 156

(44) Page 5.1-18, first full paragraph. The discussion of ringtails should include a discussion of habitat preferences (rocky areas near water and brush) and their strictly nocturnal nature, and should clarify that ringtail tracks were seen only in one drainage on-site during the various Interface surveys. 157

(45) Page 5.1-18. The text should be amended to include separate paragraphs each on mountain lions and on bats, since elsewhere in the impacts discussion these animals are referred to as sensitive. These should include habitat preferences, documented findings of their occurrence on the project site, and the relative probability, based on existing habitat conditions, of these animals occurring on the site. These discussions should note that possible mountain lion tracks were seen by Interface in only one drainage. Bats have not been seen by Interface on-site; however, we have never been on-site in the evening to observe them. A discussion of American badger should be included, because it is a California Species of Special Concern. Although no evidence off their occurrence on the project site has been discovered by Interface, suitable habitat is present. 158

(46) Page 5.1-19, first partial paragraph, line 8-10. The December 1991 Calvert report reviewed by Interface states that Eagle Canyon "... is a small autumnal site." It does not provide the additional information given in the EIR of "... aggregation site that is abandoned early in the season by monarchs searching for a higher quality wintering site." Please verify this information as originating from the Calvert report, or provide the correct reference. 159

(47) Page 5.1-19, first partial paragraph, lines 10-12. The December 1991 Calvert report reviewed by Interface does not contain the information summarized in the draft EIR that Ellwood Canyon may constitute a major aggregation. Calvert sites two monarch locations for Ellwood Canyon, concluding that the Ellwood Canyon site (#52) "... appears to be a small permanent colony" and that the Ellwood area, the Grove Apartments site (#53) "... is an autumnal site." 160

The statement that the Ellwood Canyon [Monarch wintering roost] site occurs within the boundaries of the proposed desalination pipeline is incorrect, because the proposed desalination pipeline would run west of the Ellwood pier. 161

(48) Page 5.1-19, last paragraph, fifth line. "Small culverts are present on most of the drainages to allow movement of smaller wildlife species across these barriers." The text should be amended to note that most, if not all, of these culverts are presently either undersized or have become blocked, thereby reducing or blocking wildlife movement through them. It should also be clarified that the culverts were originally installed for drainage, not for wildlife movement. 162

(49) Page 5.1-19, lines 10-12. The text should be clarified to indicate that only portions of the drainages on-site have dense vegetative cover. 163

(50) Page 5.1-22, last paragraph. The first sentence in this paragraph states: "When development occurs in natural areas, the biological resources of the site and the surrounding area are affected." While this is a true statement, the text must be clarified to indicate the disturbed conditions of the site that have resulted from the creation and operation of an oil and gas facility and the historic use of the land for grazing., and that the dominant vegetation is non-native grasses and planted, non-native trees. 164

(51) Page 5.1-24, last paragraph. The second sentence should be revised as follows: "The 165

communities that would be affected to the greatest areal extent would be ~~non-native~~ grasslands and coastal sage scrub; ..."

(52) Pages 5.1-24 and 25, last sentence on page 5.1-24 and first sentence on page 5.1-25. This sentence should be revised as follows: "The proposed grading plan indicates that the majority of grading would occur outside of the five drainages on the site, allowing ~~some~~ the majority of these areas to be retained as riparian/coastal sage scrub habitats within the proposed golf course." 166

(53) Page 5.1-25, first partial paragraph, line 4-5. The reference to habitat for a "variety of sensitive taxa" should be deleted. Based on review of the text, this would include only four animals (mountain lion, ringtail, red-legged frog, and two-striped garter snake), not a "variety" of species. 167

(54) Page 5.1-25, second paragraph. The discussion of the potential creation of "island" habitats should be revised. Please describe how landscaping for the golf links, restoration, and revegetation of native plant habitats and the replacement of non-native plants with native plants would result in the limitation of wildlife movement. The text should be clarified to indicate that the applicant's proposed landscape plan would use few non-native plant species, and those would be the carefully manicured and maintained turf grasses within the greens, tees, and fairways. Native plants, native to the project site, would be used elsewhere, and as borders between non-native plantings and natural and/or revegetated native habitats. Human entry into natural areas (i.e. drainages on the south side of the railroad tracks) will be controlled through the use of barrier plantings to discourage entry, and in some areas, protective fencing. The concepts discussed in Lieberstein's 1987 report apply well to urban development, such as residential and commercial land uses. However, he does not discuss how (or if) this type of recreational open space (i.e. golf course) could effect wildlife movement patterns. Thus, these concepts do not appear to apply to the proposed project. 168

(55) Page 5.1-25, second paragraph. The text should be expanded to explain how the "... manicured greens and fairways would tend to limit movement between riparian strips," and what animals would be impacted by this result of project development. 169

(56) Page 5.1-26, 5. Southern Willow Scrub. The text should be revised as follows: "Approximately ~~69~~ 47 willow trees (or ~~66~~ 24 percent of the ~~104~~ 195 willow trees present on the project..." The text should also be expanded to state where the "most sensitive willow scrub areas" are on the site. The referenced Section 5.1.3.1 does not discuss where they are, or which ones should be avoided. The applicant has designed the project to avoid the largest intact stands of willows, and has proposed to revegetate removed willows at the ratio of 5:1 and therefore will be planting 235 willows on the project site. Given these facts, this impact should be reduced to a Class II, potentially significant but mitigable, impact. The text should substantiate the statement in the second sentence of this paragraph "... the risk and length of time involved in replacing ..." this willow habitat. Willows are adapted to rapid regrowth after flood events, and there are many documented successes with various willow species. 170

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(57) Page 5.1-26, 6. Wetlands. The text should be revised as follows: "... southern willow scrub ~~wetlands~~ discussed above, ..." This section should list, under each community type, which drainages would be effected. 171

(58) Page 5.1-26, 6. Wetlands. The use of the term "wetland" must be defined as including only Cowardin wetlands, as defined in the Bowland and Ferren wetland report. The distinction is important from a land use policy standpoint, since Cowardin wetlands do not necessarily include jurisdictional wetlands. 172

(59) Page 5.1-27, first full paragraph. The text should be revised as follows: "... marsh at the northeast ~~channel~~ ~~end~~ of Tomate Canyon." In the middle of this paragraph a statement is made that grading activities would probably require a Section 404 permit and would be considered potentially significant due to net losses of County and State defined wetland habitats. The text of section c. Sensitive Habitats/Taxa (DEIR page 5.1-11-14) should be clarified to define what is meant by "County and State defined wetland habitats," since this terminology is not found elsewhere in the EIR. 173

(60) Page 5.1-27, second full paragraph. The text should be revised as follows: "... be lost in Drainages #1, 2, 3, ~~5~~ and ~~6 north~~." 174

(61) Page 5.1-27, 7. Sensitive Plants. The text should be revised to indicate that the one population of cliff aster located adjacent to the access road east of drainage #4 may be impacted, although it appears to be outside the disturbance area indicated on the Cut and Fill map (Figure 3.3-9). 175

(62) Page 5.1-28, second full paragraph, line 5. The setting section of the text should be revised to include a discussion of raptors, including habitat preferences, suitability of existing and proposed habitat, and species known or likely to occur on-site. 176

(63) Page 5.1-28, second full paragraph, line 8. The text should be revised as follows: "The ~~temporary~~ displacement... " The text should be expanded to indicate that once landscaping and restoration has occurred, animals would be expected to recolonize the site. 177

(64) Page 5.1-28, second full paragraph, line 11-12. The statement: "The removal of native habitats could therefore substantially decrease animal populations presently occupying the project site" (emphasis added) is not supported by the text of the EIR. Under the preceding section (5.1.2.2 b. Vegetation), the EIR states that 95 acres of non-native grassland would be removed. This amounts to 89.29% of the area to be developed for the golf links (using the figure of 106.4 acres for the golf links portion of the site derived from the chart on Page 3-1 of the draft EIR). Native habitats would therefore equal only 11.4 acres (approximately 10.7%) of the developed area. Permanent open space would equal 95.6 acres. Given the applicant's proposed landscape plan that incorporates a high percentage of native plants, and the mitigation measures already accepted by the applicant for the revegetation of drainages and other habitats, this impact should be revised to a Class III, less than significant impact, or Class IV, beneficial impact. (Please note 178

that revised acreage figures based on the new route plan are being calculated and will be provided for inclusion in the revised EIR. The figures cited above may require revision.)

(65) Page 5.1-28, second full paragraph, line 13-16. It is arguable whether the present site conditions contain "contiguous" open space, given the barrier presented by Highway 101 and the railroad and their undersized, absent, and/or blocked culverts, as well as fencing (generally barbed wired) in several areas. 179

(66) Page 5.1-28, fourth paragraph, line 2. Based on the chart contained on Page 3-1 of the draft EIR, there would be 95.6 acres of open space. 180

(67) Page 5.1-28, second full paragraph through Page 5.1-29, second full paragraph. Please refer to the previous comments under Page 5.1-25. We disagree that there would be an overall decrease in contiguous open space as the result of the project as proposed, along with the mitigation measures (revegetation, restoration, etc.) already agreed to by the applicant. A Class III less than significant level would be appropriate. These paragraphs are redundant, rehashing the same idea that is more succinctly stated on Page 5.1-25. 181

(68) Page 5.1-28, last paragraph. The first sentence states: "The 202 acres of contiguous open space presently comprising the site would become fragmented by development of the proposed golf course." The text should be revised to indicate that the site is already bisected by the railroad tracks, and fragmented by the existing oil an gas facilities. 182

(69) Page 5.1-29, second full paragraph. The text should be revised to reflect that the proposed golf links would result in higher quality wildlife habitat than the present conditions on the site. This would occur through the planting of native plant species within both landscaped areas and open space areas, the planting of approximately 817 native trees and the provision of a permanent source of surface water. Overall habitat diversity will be substantially increased on the project site as compared to the present conditions of a site dominated by non-native grasslands. Numerous species of animals will use the project site, including a variety of birds in addition to those common species listed in the EIR. Carefully selected native trees and shrubs should provide food, cover, and nesting habitat for resident and migratory birds, as well as for bats, insects, and mammals. 183

(70) Page 5.1-29, third paragraph. The text should be revised to indicate that only 28 percent of the existing non-native trees on the project site would be removed, leaving 506 mature windrow trees (72% of existing trees) for wildlife uses (numbers are exclusive of tamarisk). Additionally, the text should acknowledge that the applicant has agreed to the mitigation of the replacement of all removed trees (except tamarisk) at the ratio of 3:1. The combination of the 506 existing mature trees to be retained (primarily occurring in windrows) along with 582 native sapling trees that will be planted would result in the overall enhancement of wildlife values through the increased availability of vertical habitats provided by a variety of tree species and age classes. The removal of 28% of the site's non-native trees should be considered a Class III, less than significant impact to wildlife. 184

The discussion of the potential impact from the removal of willow trees should reflect the applicant's acceptance of the 5:1 replacement of removed willows, as well as the revegetation that the applicant has agreed to conduct within the drainages. The overall result would be an increase in habitat diversity, and therefore enhanced wildlife habitat values, with substantially increased habitat quality due to the planting of a diversity of native plants, and due to the age stratification that will result from the planting of the replacement willows in the vicinity of the mature willows to be left intact.

(71) Page 5.1-29, last paragraph. The second sentence should be revised as follows: "The artificial vernal pool in the western portion of the property..." The text within both the summary table and the biology section of the EIR should be revised to discuss use of the artificial vernal pool by wildlife. No sensitive species (mountain lion, ringtail) have been documented as using this pool, and because of its proximity to active oil and gas operations, such animals are not expected to use this site. Red-legged frogs and two-striped garter snakes would not be expected to use the pool because it is not suitable habitat for these species that require near-perennial water. Therefore, there are not "several sensitive taxa" foraging and drinking within the pool. Possible tracks of mountain lion and ringtail were seen by Interface biologists within only one drainage, to the west of the artificial vernal pool. Further, because the pool contains water only during the winter, when other surface water resources on the site and vicinity also have water, use of this pool for drinking by wildlife would be less likely than if it were the only surface water available. Wildlife use within this pool has been noted by Interface as including small birds (blackbirds, sparrows), tadpoles (probably bullfrogs), and insects during periods when water is present, and no specific wildlife use during other times. Impacts to the artificial vernal pool should be considered as Class III, less than significant. 185

The text should include a discussion of the proposed storage lake and its value for wildlife. Please note that the applicant proposes to plant the margins of this lake with native plants, and that biological methods would be used to control mosquitoes, such as the mosquito eating fish (mosquitofish; Gambusia affinis) and native frogs. 186

(72) Page 5.1-30, first paragraph. The text should be revised to describe the existing night lighting conditions on the project site. The existing operations facilities have night lighting which is substantially brighter than the night lighting proposed for the club house vicinity. The proposed lighting would include hooded lights within the parking lot and security lighting around the club house. It should be noted that wildlife currently using the project site have habituated to these existing night lighting levels, and would therefore not be impacted by lower lighting levels that would result from the proposed project. 187

(73) Page 5.1-31, first full paragraph. Are there known bat nursery roost sites present on-site? If so, please substantiate, if not, state that there is only a potential for nursery roost sites. The finding of a Class II impact is not supported by discussion within the EIR text. This impact description should be revised to reflect ~~that only 28% of the~~ trees would be removed from the project site, and that roosting bats could occur on the site. Because 73% of the trees will be retained, and because there is no documentation that the sensitive pallid bat occurs on-site, this 188

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(73) Page 5.1-31, first full paragraph. Are there known bat nursery roost sites present on-site? If so, please substantiate, if not, state that there is only a potential for nursery roost sites. The finding of a Class II impact is not supported by discussion within the EIR text. This impact description should be revised to reflect that only 28% of the trees would be removed from the project site, and that roosting bats could occur on the site. Because 73% of the trees will be retained, and because there is no documentation that the sensitive pallid bat occurs on-site, this 188

impact should be reduced to a Class III, less than ~~significant level~~.

(74) Page 5.1-31, last paragraph. The first sentence should be revised as follows: "The loss of 103 acres of ~~non-native~~ grassland and coastal sage scrub habitats ..." 189

(75) Page 5.1-32, first partial paragraph. The text should be revised in the last sentence to reflect that only 28% of the trees suitable for use by raptors would be removed, and that they would be replanted at the ratio of 3:1. This should be considered as a Class III, less than significant impact, or the text should be expanded to support the Class II finding. 190

(76) Page 5.1-32, first full paragraph, last sentence. The description of impacts should be revised to indicate that these are short-term, construction impacts, and that the on-going maintenance of the debris basins would occur no more than once per year, possible less. Thus, with the exception of the debris basins, habitat for reptiles and amphibians should actually improve with project implementation through the applicant's proposed revegetation and restoration of disturbed and degraded areas. 191

(77) Page 5.1-32, second paragraph. This statement contradicts the statement found on Page 5.1-33, third paragraph, which states: "...no significant water quality impacts are expected due to runoff of herbicides and pesticides with the implementation of applicant proposed mitigation measures. 192

(78) Page 5.1-33, last paragraph. The applicant has incorporated measures to protect the harbor seals that use Burmah Beach for pupping and hauling out. These measures include a permanent setback, construction scheduling to avoid the pupping season, a permanent fence, and no access provision to the beach. Therefore, this should be considered a Class III, less than significant impact. 193

(79) Page 5.1-35, third full paragraph. Near the end of this paragraph a statement is made that sensitive habitats and associated wildlife occurring on the site and in the vicinity are presently somewhat protected by the rural character of the area. However, as stated previously, the project site has historically been and is presently used as an oil and gas facility and as such should not be considered rural. This issue should be clarified in the Final EIR. 194

(80) Page 5.1-35, last paragraph, first sentence. The text should be revised to reflect the future possibility of build-out of the pending projects at Naples and Santa Barbara Shores by changing the word "will" to "would." 195

(81) Pages 5.1-35 and 5.1-36, last sentence on Page 5.1-35, first sentence on Page 5.1-36. Something is missing here. This should be corrected in the Final EIR. 196

(82) Page 5.1-36, 5.1.3. The mitigation measures should be clarified to delete the use of the terms restoration and revegetation, and replace them with the consistent use of the term enhancement. Although the three terms can be interpreted to either indicate the same actions or 197

very different actions, the applicant intends the term enhancement to be a general term that encompasses all three concepts. To avoid reader confusion, the applicant requests that only the one term is used throughout the document.

The Biological Enhancement Plan illustrates three different types of enhancement envisioned for the project site: native tree replacement (to satisfy mitigation ratios of 5:1 for willows and 3:1 for non-native trees); native grasslands (to replace removed native bunchgrasses and expand their extent and diversity); and, other native plantings (coastal sage scrub, etc.). These concepts will be included in the applicant's proposed enhancement program, as required by DER.

The goal of the enhancement plan will be to improve existing functional biological habitat values and provide opportunities for wildlife movement through the site. This would be achieved through the planting of native plants native to the project vicinity, including groundcovers, vines, grasses, shrubs and trees, possibly including species that would limit human entry. Suitable native groundcover species include salt grass (Disticlis spicata), lythrum (Lythrum hyssopifolia), California croton (Croton californica); suitable ~~grasses include~~ creeping rye (Elymus triticoides) and bunchgrass (Stipa lepida; S. pulchra). These species presently occur on the project site; there are many other native plant species that would also be appropriate for this application. Other appropriate species include coyote bush (Baccharis pilularis), willow (Salix lasiolepis), Mexican elderberry (Sambucus mexicana), toyon (Heteromoles arbutifolia), California wild rose (Rosa californica), and wild blackberry (Rubus ursinus). Please refer to the application packet, Table 5.4 Native Plants Recommended for Landscaping additional species that may be used on the project site.

(83) Page 5.1-36, B1a. This paragraph should be revised to use the term enhance in place of restore and revegetate, and by defining enhancement, as described above. 198

(84) Page 5.1-36, B1a, last "dash." This paragraph should be revised by referencing to the Biological Enhancement Plan dated January 1993 and the parameters outlined in it which define setbacks and enhancement requirements for each drainage. 199

(85) Page 5.1-37, second "dash." This sentence should be revised as follows: "~~Revegetation~~ enhancement areas will be fenced during the establishment period and shall ~~but~~ allow free passage of wildlife." 200

(86) Page 5.1-37, c. This sentence should be revised as follows: "Cart bridges shall be constructed to span over drainages ~~the northern portion of Drainage 4, Drainage 5~~...." 201

(87) Page 5.1-37, e. This sentence should be revised as follows: "~~Construction related~~ Erosion control measures shall be implemented..." 202

(88) Page 5.1-37, f. This paragraph should be revised as follows: "Construction envelopes shall ~~lie at least 50 feet outside all drainages onsite (with the exception of drainage facilities.)~~ follow the area and parameters illustrated on the Biological Enhancement Plan dated January 203

108. See Responses 104, 105, 106 and 107 above. No change has been made to the text in response to this comment.

109. The referenced figure has been revised to reflect the changes regarding the determination of a less than significant impact for solid waste and the beneficial fire hazard reduction impact that would not result under the "No Project" alternative.

110. We fully concur with Mr. Wilcoxon's comments and have recommended that Phase II testing be performed at the two localities where a maintenance building and desalination facility are proposed for development.

It is quite true that specific archaeological data from the proposed sites of the maintenance building and desalination facility is lacking, and no Phase II evaluation was conducted in these localities as part of the current project. Limited Phase II testing, only within the areas of potential impact from the pipeline route, was conducted. This testing revealed that a "significant" archaeological deposit exists in this portion of the site, capable of addressing important research questions as outlined in the, Proposed Archaeological Element Of The Santa Barbara County Cultural Resources Management Plan (n.d.), and it was determined that excavation for a buried pipeline in this area would have a significant impact on the site (CEQA, Appendix G). If project designs cannot be altered to avoid the site, Phase III work is recommended for the pipeline route, and if plans for the development of the desalination plant and the maintenance building are accepted, a Phase II study is recommended for these areas. We agree that areas outside of where we tested may contain disturbed or damaged deposits, but that remains to be seen. Therefore, Mitigation Measure A4 (A3 in the FEIR) has been revised (please see revised text in Section 5.5.4.1).

111. Mitigation Measure A5 (A4 in the FEIR) has been modified to reflect the requirement for a Phase II subsurface testing program pursuant to County guidelines for the repair or replacement of the existing pipe rack.

112. Any significant findings made during the Phase II survey would be followed up by Phase III mitigation excavations; this measure can provide adequate mitigation if it is included as a condition of approval and monitored as required under law.

113. Comment provides support information and requires no response.

114. The text has been amended to indicate the revised tree removal numbers.

115. The text has been amended as per your comment.

116. This comment is too vague to allow response. The word "wetland" is used correctly.

117. The text has been amended as per your comment.

118. The text has been amended to require full implementation of the applicant proposed Biological Enhancement Plan.

119. "Limits of disturbance" are not illustrated on the Biological Enhancement Plan. No changes have been made to the text to address this comment.

120. The text has been deleted since it is inconsistent with the table format. However, the deleted information is correct.

121. The text has been amended as per your comment.

122. Mountain lion and ringtail have been documented as occurring in the immediate vicinity of the vernal pool, therefore it is anticipated that these species utilize the pool for foraging and drinking. The word "several" has been deleted as per your comment.

123. Mitigation measure B7 has been revised in response to your comment.

124. The text has been amended to reflect that trees on the project site represent potential bat roosting sites. The sensitive pallid bat may occur on the project site, therefore impacts to this species are considered potentially significant, but mitigable (Class II).

125. The statement of impact referenced in your comment is consistent with the statement in EIR Section 5.1.2.2(c) that "no significant water quality impacts are expected due to runoff of herbicides and pesticides with the implementation of applicant-proposed mitigation measures". Although applicant-proposed measures would prevent significant impacts from "routine activities and maintenance" (Section 5.3.2.2) additional measures were added by the EIR and all measures combined into one mitigation measure so that monitoring will occur to ensure compliance. Therefore, the impact is considered Class II and not Class III.

The EIR (Section 5.1.1.2[c]) acknowledges that the red-legged frog is not likely to inhabit the project site due to the lack of sufficient surface water in the drainages and poor water quality associated with the existing stock ponds. The text has been amended to clarify that the two-striped garter snake is unlikely to occur on the project site due to the absence of suitable habitat.

126. The text has been amended as per your comment to refer to Eagle Canyon.

127. Based upon the new applicant-proposed Biological Enhancement Plan, this impact has been reduced to Class III.

128. Although the 30 foot setback to protect harbor seals is included in the applicant's project description, additional measures were added by the EIR consultant and all measures

combined into one mitigation measure so that monitoring will occur to ensure compliance. Therefore, the impact is considered Class II and not Class III.

129. See comment and response to Comment #23.

130. Opinion of the commentor is noted. Comment suggests alternative wording which would not affect the adequacy of the EIR.

131. Opinion of the commentor is noted. For the reasons presented in Section 5.1, project-specific impacts are not beneficial and cumulative impacts to biological resources are considered significant and unavoidable.

132. Burmah beach is identified as a harbor seal haulout/rookery in the EIR Biological Resources Section 5.1.2.2(c). An additional reference has been added to Section 5.1.1.2(c).

133. The appropriate documents have been referenced and included in Section 10.0 of the EIR.

134. Comment noted. The requested changes do not affect the adequacy of the EIR and have not been implemented.

135. These values are presented in Section 5.1.2.2 and have been updated based upon the January 1993 Tree Inventory submitted by the applicant.

136. See response to Comment #135.

137. Only the Yuma subspecies of the mountain lion is considered sensitive. All text referring to mountain lions as sensitive has been deleted. The species mentioned are noted on page 5.1-8.

138. The origin of the vernal pool has no effect upon its biological value. The requested change does not affect the adequacy of the EIR and has not been implemented.

139. The term "seasonal pond" adequately describes the pond's seasonal nature. The requested change does not affect the adequacy of the EIR and has not been implemented.

140. A discussion of the red-legged frog is included under "Sensitive Taxa" on page 5.1-16 of the Draft EIR.

141. A discussion of sensitive insects is included under "Sensitive Taxa" on page 5.1-18 of the Draft EIR.

142. A definition of "sensitive" taxa has been added to Section 5.1.2 of the EIR.

143. This community is included within the coastal sage scrub designation and is mapped as such.

144. The Draft EIR contains a four page discussion (pages 5.1-11 to 5.1-14) concerning the definition of wetlands. An amendment stating that riparian wetlands (versus estuaries, vernal pools, etc.) are evaluated under stream and creek policies of the LCP, rather than wetland policies.

145. A discussion of the potential for Federal jurisdiction relative to the existing information concerning wetland classification on the project site is provided in the Draft EIR text. However, until a jurisdictional wetland delineation is completed by the applicant, the applicability of nationwide permits and the existence of an atypical situation (man-induced wetlands) or problem areas (seasonal wetlands) cannot be determined.

146. The EIR text has been modified to be consistent with this comment.

147. The EIR text has been modified to be consistent with this comment.

148. Mapping referenced in the Draft EIR text is from the Biological Resources Analysis prepared by Interface. This reference has been added to the EIR.

149. Comment noted. The requested change does not affect the adequacy of the EIR and has not been implemented.

150. See response to Comment #142.

151. The requested change has been made to the text of the EIR.

152. The EIR acknowledges that the red-legged frog is not likely to occur on the project site due to the absence of suitable habitat.

153. The EIR discussion referenced in your comment is a description of Federal and State listed endangered and threatened species and candidates for listing. The two striped garter snake and southwestern pond turtle do not fit this description and therefore are not included in the discussion. However, a discussion of potential impacts to these species has been added to the EIR.

154. Comment noted. The Brown pelican roost site at Burmah beach and potential roost site identified by Fugro-McClelland biologists constitute communal roost sites used regularly by large numbers of birds. Individual birds may rest at various locations along the beach adjacent to the project site. The text has been amended to clarify this point.

155. The peregrine falcon has been observed nesting in similar habitat as exists on the coastal bluffs at the project site. The EIR acknowledges that suitable foraging habitat for this species is present on the project site.

156. A general discussion of potential impacts to raptors is included in Section 5.1.2.2(c). Hawks, owls, turkey vultures and several individual sensitive raptor species are mentioned in this section. The EIR acknowledges that the removal of habitat for sensitive raptors is considered a significant impact. A complete inventory of raptors that could occur on the project site is beyond the scope of the EIR.

157. The information presented in your comment has been included in a discussion of potential impacts to the ringtail in Section 5.2.2.2(c). The observation of ringtail tracks in the drainage at Eagle Canyon by Fugro-McClelland biologists indicates the potential presence of this species on the project site. The sandy, moist condition of the soil in this drainage is ideal for the creation and preservation of wildlife tracks, as evidenced by the wide variety of tracks observed (mountain lion, bobcat, raccoon, coyote, various rodents). It is anticipated that this species occurs in other drainages where tracks may not be as easily recorded.

158. The EIR discussion referenced in your comment is a description of Federal and State listed endangered and threatened species and candidates for listing. The species mentioned do not fit this description and therefore are not included in the discussion. Only the Yuma subspecies of the mountain lion is considered sensitive. All text referring to mountain lions as sensitive has been deleted. The species mentioned in the comment are included in Section 5.1.2 of the EIR.

159. The referenced text is an explanation of the term "autumnal site" used by Calvert (1991).

160. The referenced text concerns the Ellwood Main site (#57). This site is located over 3,000 feet southeast of the proposed reclaimed pipeline alignment. The Ellwood Canyon site (#52) is located about 3,000 feet northeast of the proposed reclaimed water pipeline crossing of Bell Canyon. The Ellwood area, Grove apartments site is located north of Hollister Boulevard. The Bell Canyon site does not support monarch activity. It appears that the only potential impacts to monarchs would occur in Eagle Canyon. Section 5.1.1.2 and Mitigation Measure B4 of the Draft EIR have been modified to reflect this fact.

161. See response to Comment #160.

162. The text has been amended as per your comment.

163. The EIR states that "vegetative cover is present in some portions of these drainages" (Section 5.1.1.2[d]).

164. The EIR acknowledges that non-native grassland occupies the largest area of the project site and that recent disturbances include cattle grazing and oil and gas facility operation.

165. The text has been amended as per your comment.

166. Comment noted. Comment suggests a minor change in wording which would not affect the adequacy or findings of the EIR.

167. Sensitive taxa referred to in the EIR text referenced in your comment include several species in addition to the four mentioned, including but not limited to sensitive raptors and bats.

168. Text has been added to Section 5.1.2.2 (c) to reflect the planting of native red fescue for roughs and native grasslands as indicated in the applicant's new Biological Enhancement Plan. These features would reduce the isolation of natural areas imposed by the greens, fairways and human activity. Concerning protective fencing to discourage human entry, the applicant's project description only includes perimeter fencing and fencing along the railroad right-of-way.

169. The referenced concepts are fully explained in Section 5.1.2.2(c) of the EIR.

170. Section 5.1.2.2(b) has been updated based upon the January 1993 Tree Inventory and the Biological Enhancement Plan such that impacts to southern willow scrub are reduced to Class II.

171. The drainages affected are listed in the text on pages 5.1-26 and 5.1-27 of the Draft EIR.

172. The use of the term "wetland" in the EIR is fully described in Section 5.1.1.2.

173. See response to Comment #172.

174. The text has been amended as per your comment.

175. A discussion regarding the potential for impacts to this species has been added to the EIR text.

176. See response to Comment #156.

177. Opinion of the commentor is noted. The majority of species likely to recolonize the site following golf course construction would be "edge" associated species which are generally more tolerant of human related disturbances.

178. The text has been amended to replace the word "native" with "existing" and to incorporate the provisions of the Biological Enhancement plan. As indicated in the EIR, the Plan indicates that loss of wildlife habitat associated with project grading would be reduced by "Native Planting Mitigation Areas." The native plant species to be planted, planting density and methodology and maintenance procedures have not been identified such that the overall project impact cannot be fully evaluated. Should native plant communities such as coastal sage scrub or southern willow scrub be planted and maintained in the areas indicated on the Biological Enhancement Plan, the loss of wildlife habitat would be reduced to less than significant levels.

179. The EIR acknowledges that U.S. Highway 101 and the S.P. railroad tracks constitute barriers to wildlife movement on the project site and reduce the value of the drainages as migration corridors (Section 5.1.1.2[d]). In consideration of these and other factors considered in this section, the EIR concludes that the drainages provide suitable conditions for utilization as local and potentially as regional wildlife migration routes.

180. The EIR text referenced in your comment has been amended to reflect the provisions of the Biological Enhancement Plan.

181. Due to the confusion over the definition of "open space", the referenced text has been deleted. However, impacts associated with fragmentation of habitat are still considered to be Class II (please see revised discussion in Section 5.1.2.2.b).

182. The site as a whole retains a relatively rural quality under existing conditions, with human activity and disturbances being limited to sporadic, temporary occurrences such as the passing of trains, and maintenance activities associated with oil and gas facilities. The overall continuity of open space presently characterizing the site would be substantially disrupted by the construction of fairways, landscape areas and ancillary facilities associated with development of the golf course.

183. See response to Comment #178.

184. See response to Comments #135 and #178.

185. See response to Comments #122 and #138.

186. The storage lake would be surrounded by the Par 3 golf course such that wildlife using the storage lake for a water source could only do so during off hours. The lack of vegetative cover would increase predation risk for wildlife using the storage lake. The applicant's project description and permit application materials do not commit to planting of the lake margins. However, mitigation measure B4 requires that a qualified biologist participate in the final design of the storage lake to maximize its wildlife values.

187. The text has been amended as per your comment.

188. See response to Comment #124.

189. The text has been amended as per your comment.

190. The EIR text has been expanded to support the Class II finding.

191. Construction-related direct mortality of sensitive animals may result in long-term impacts to population dynamics. The project description does not specify how often maintenance of the debris basins would be required. It is anticipated that corrective actions would be required in addition to regular, scheduled maintenance activities. Potential impacts to reptiles and amphibians are not limited to those activities but, as indicated in the EIR, include other disturbances to drainage courses. See response to Comment #178 regarding the evaluation of impacts in consideration of the applicant proposed Biological Enhancement Plan.

192. This statement is in reference to marine resources only. Both sections 5.1 and 5.3 indicate that the use of pesticides at the site could result in significant (Class II) impacts on terrestrial biological systems due to the potential for certain pesticides to leach from the site. Applicant-proposed measures (avoidance of the higher quality drainages) and EIR-proposed measures (IPM program) would reduce impacts to less than significant.

193. See response to Comment #128.

194. See response to Comment #182.

195. The text has been amended as per your comment.

196. The text has been amended.

197. See response to Comment #178. Mitigation Measure B1 has been revised to require the applicant to submit a revised Biological Enhancement/Landscape Plan (BELP), describing in detail the methodology used to implement the Biological Enhancement Plan. Revised Mitigation Measure B1 uses the term "revegetation" exclusively. The term "enhancement" is vague.

198. See response to Comment #197.

199. Mitigation Measure B1 has been amended to reference the Biological Enhancement Plan and require the submittal of a revised BELP plan describing the implementation of the Plan.

200. The text has been amended as per your comment only using the term "revegetated areas".

201. The January 1993 site plans include cart bridges over all drainages. Therefore, this measure has been deleted.

202. The text has been amended to be consistent with your comment.

203. The measure has been modified to indicate setbacks of at least 30 feet. The Biological Enhancement Plan shows setbacks of 30 feet or more.

204. The text has been modified as per your comment.

205. The text has been amended to be consistent with your comment.

206. See response to Comment #160.

207. The text has been amended as per your comment.

208. The text has been amended as per your comment.

209. As indicated in the EIR, the overall species composition of the local wildlife community would be altered with implementation of the proposed project. A comprehensive wildlife survey of the project site and surrounding areas is beyond the scope of this EIR analysis. The information presented in the EIR does substantiate and support a Class I residual impact.

210. Comment provides agricultural setting and historical information on agricultural land use and requires no response.

211. Comment regarding soil classification has been noted and requires no response.

212. The requested change has been made to the text of the EIR.

213. The 91 acre estimate was taken from the Agricultural Resources Analysis for the proposed project prepared by Interface Planning and Counseling Corporation on behalf of the applicant. In response to this comment, the EIR consultant has also electronically planimetered the area of DaC soil coverage on the site (as indicated on the soils map). The result was an estimate of 89.7 acres; netting out the 3.8 acre area that is not a part, the total area is 85.9 acres. It is agreed that part of the area indicated on the soils map as being covered with DaC soils has been disturbed by railroad and oil and gas production activities. Assuming that the field investigation conducted by Sage and Associates is correct, another 24.95 acres can be subtracted from the DaC soil coverage area estimate. The resulting estimate is then 60.95 acres of Class II soil on the site. The difference in the acreage estimates does not effect the agricultural impact determination; however, the text of Section 5.10 and the Summary Table has been revised to reflect the new estimate.

California Native Plant Society

CNPS *Inventory*

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The Rare, Threatened, and Endangered Plants of California

(from CNPS *Inventory*, 6th Edition, 2001)

The heart of the CNPS *Inventory* is our assessment of the current conservation status of each of our state's rare, threatened, and endangered plants. We present these assessments together with a summary of current information on the distribution and ecology of each taxon. We also include entries for plants that were considered but rejected for one or more reasons, as well as other scientific names that have been used in the standard literature or in previous editions of this *Inventory*.

Basis for Inclusion

The vast majority of the taxa in this *Inventory* are vascular plants (ferns, fern allies, gymnosperms, and flowering plants). With this edition, we for the first time also present our evaluation of rarity and endangerment of California's bryophytes (mosses, liverworts, and hornworts). Algae, fungi, and lichens are not treated here.

A plant must be native to California to be included. Ornamentals, plants escaped from cultivation, and naturalized plants are excluded. So are the sporadic hybrids that sometimes occur under natural conditions. The relatively trivial color variants and occasional departures from typical vegetative or floral conditions, referred to by botanists as "forma," are similarly excluded.

This *Inventory* focuses on plants that are rare in California. A very small number of plants that are still somewhat common in California are included because they are in decline and face further immediate threats. We recognize that extensive habitat alteration and pervasive human impacts pose serious threats to many other species that are still common. However, evaluation of threats to species that are neither rare nor imminently becoming so is outside the scope of this *Inventory*. By limiti our scope in this way, we in no way imply that these specie not of major concern.

Scientific Names

The plants in this *Inventory* are presented alphabetically by their scientific names, the technical names that have been properly published for them according to the *International Code* of Botanical Nomenclature. See Shevock (1993) for a general discussion of nomenclature.

In its simplest form, a scientific name has three parts. The first is the genus or generic name. It is always capitalized. The second part is the specific epithet, often incorrectly called "the species name." Together, these two components make up the species name. If a scientific name is presented in its most complete form, these two words will be followed by the names of one or more persons, often in an abbreviated form, who first published the specific epithet or subsequently published a taxonomic modification of the plant. These names are the authorities. If a portion of an authority occurs within parentheses, then the author in parentheses originally placed the epithet in a different genus or species, or once assigned it to a different taxonomic rank. The name cited outside the parentheses is that of the person who published the combination as it now appears.

Often the scientific name is more complex because botanists have recognized categories below the level of species. The two most useful are the subspecies (abbreviated ssp.) and the variety (abbreviated var.) These names are also given according the *International Code* and they have their own authorities.

Consider the example *Penstemon newberryi* Gray var. *sonomensis* (Greene) Jeps. *Penstemon* is the genus or generic name; *newberryi* is the specific epithet; Gray, for Asa Gray, is the author of the specific epithet; var. is the abbreviation for variety; *sonomensis* is the subspecific epithet; (Greene), for Edward L. Greene, first described the var. *sonomensis* as a full species; and Jeps., for Willis Lynn Jepson, modified its taxonomic position and made it a variety of *P. newberryi*. Following the general practice for foreign words and phrases, Latin portions of the name (genus, species, and infraspecific epithet) are typically distinguished from surrounding text with underlining or italic typeface.

Common Names

Each of the plants also has a common or vernacular name (except for the 28 nonvascular plants). We include these because it is often easier for many of us to refer to a plant by a more familiar sounding name. Of course, the majority of the plants in this book have no real common names. Most of them

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were coined by Leroy Abrams for his Illustrated Flora of the Pacific States. In other instances, we simply followed his lead by contriving names, usually by translating the Latin or Greek roots into English or by selecting an appropriate geographical reference or person's name. We have attempted to follow Kartesz and Thieret (1991) in matters of capitalization, spelling, and hyphenation of common names. Please see Appendix IV for an index between common and scientific names.

Family Names

Each entry also includes the technical name of the family to which the plant belongs. Note that all of these names end with the suffix "-aceae." A few plant families have older, alternative names that the *International Code* allows to be used because their widespread acceptance predates formal nomenclature. Gramineae is a perfectly acceptable alternative for Poaceae; Compositae for Asteraceae; Cruciferae for Brassicaceae; Umbelliferae for Apiaceae; Leguminosae for Fabaceae; and Labiatae for Lamiaceae. However, these old names are gradually losing favor, so we have used the standardized, modern names for these families.

Nomenclatural Usage

We use what we consider to be the current, best nomenclature based on the recommendations of RPSAC and consultation with taxonomic authorities. Many names in this *Inventory* have been in use for a long time, appearing in Munz (1959, 1968, 1974) and Abrams (1923-1960). Others have been introduced or reintroduced to us in The Jepson Manual (1993), or described new to science in the last several years.

The usage in this *Inventory* does not follow any single published source, though if other considerations are equal, we follow usage in the current list maintained by The Jepson Manual project. When the nomenclature we use varies from that of The Jepson Manual, we include information in the Notes section of each entry describing the situation. See Skinner and Ertter (1993) for a discussion of taxonomic coordination between the *Inventory* and The Jepson Manual.

Where there is disagreement among experts on taxonomic distinctiveness, we lean toward recognizing doubtfully distinct taxa. Such taxa are typically assigned to List 3. By encouraging protection until taxonomic questions are resolved, we hope to reduce ex post facto lamentation over taxa that have been shown to be distinct only after their disappearance.

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We do not include taxa that lack formally published scientific names.

CNPS List

We have created five "lists" in an effort to categorize degrees of concern. They are described as follows:

List 1A: Plants Presumed Extinct in California

The 29 plants of List 1A are presumed extinct because they have not been seen or collected in the wild in California for many years. Although most of them are restricted to California, a few are found in other states as well. In many cases, repeated attempts have been made to rediscover these plants by visiting known historical locations. Even after such diligent searching, we are constrained against saying that they are extinct, since for most of them rediscovery remains a distinct possibility. Note that care should be taken to distinguish between "extinct" and "extirpated." A plant is extirpated if it has been locally eliminated, but it may be doing quite nicely elsewhere in its range.

We segregate these plants on their own list to highlight their plight and encourage field work to relocate extant populations. Since the publication of the fifth edition, eight plants thought to be extinct in California have been rediscovered. These are Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), Mojave tarplant (*Hemizonia mohavensis*), water howellia (*Howellia aquatilis*), Howell's montia (*Montia howellii*), northern adder's-tongue (*Ophioglossum pusillum*), and Shasta orthocarpus (*Orthocarpus pachystachyus*). One plant, frog's-bit buttercup (*Ranunculus hydrocharioides*), was inadvertently placed on List 1A in the fifth edition and is now correctly placed on List 2. Two plants that have not been seen recently have been moved onto List 1A: Santa Barbara morning-glory (*Calystegia sepium* ssp. *binghamiae*) and mesquite neststraw (*Stylocline sonorensis*).

All of the plants constituting List 1A meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing (see Conserving Plants with Laws and Programs..., above). Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to the California Environmental Quality Act (CEQA).

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List 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

The 1021 plants of List 1B are rare throughout their range. All but a few are endemic to California. All of them are judged to be vulnerable under present circumstances or to have a high potential for becoming so because of their limited or vulnerable habitat, their low numbers of individuals per population (even though they may be wide ranging), or their limited number of populations. Most of the plants of List 1B have declined significantly over the last century.

All of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

List 2: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

Except for being common beyond the boundaries of California, the 417 plants of List 2 would have appeared on List 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Endangered Species Act. Until 1979, a similar policy was followed in California. However, after the passage of the Native Plant Protection Act, plants were considered for protection without regard to their distribution outside the state.

With List 2, we recognize the importance of protecting the geographic range of widespread species. In this way we protect the diversity of our own state's flora and help maintain evolutionary process and genetic diversity within species. All of the plants constituting List 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

List 3: Plants About Which We Need More Information - A Review List

The 52 plants that comprise List 3 are united by one common theme - we lack the necessary information to assign them to one of the other lists or to reject them. Nearly all of the plants

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remaining on List 3 are taxonomically problematic. For each List 3 plant we have provided the known information, indicated in the Note where assistance is needed, and tentatively assigned the taxon to a more definite list. Data regarding distribution, endangerment, ecology, and taxonomic validity will be gratefully received.

Some of the plants constituting List 3 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. We strongly recommend that List 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

List 4: Plants of Limited Distribution - A Watch List

The 554 plants in this category are of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears relatively low at this time. While we cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a List 4 plant change, we will transfer it to a more appropriate list.

Very few of the plants constituting List 4 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and we strongly recommend that List 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA. This may be particularly appropriate for the type locality of a List 4 plant, for populations at the periphery of a species' range or in areas where the taxon is especially uncommon or has sustained heavy losses, or for populations exhibiting unusual morphology or occurring on unusual substrates.

CNPS R-E-D Code

With the five CNPS Lists we maintain a simple classification that reflects an overall level of conservation concern. However, rarity and endangerment are not strictly correlated, and our approach to protecting plants that occur only in California is somewhat different from our approach to protecting plants that also occur elsewhere. Developing effective conservation strategies requires that we distinguish among the separate factors that contribute to

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our List assignments. These are: rarity, which addresses numbers of individuals and distribution within California; endangerment, which addresses the plant's vulnerability to extinction for any reason; and distribution, which describes the overall range of the plant. Together these three elements form the R-E-D Code. Each element in the code is divided into three classes or degrees of concern, represented by the number 1, 2, or 3. In each case, higher numbers indicate greater concern. The system is summarized as follows:

R - Rarity

1 - Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time

2 - Distributed in a limited number of occurrences, occasionally more if each occurrence is small

3 - Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported

E - Endangerment

1 - Not endangered

2 - Endangered in a portion of its range

3 - Endangered throughout its range

D - Distribution

1 - More or less widespread outside California

2 - Rare outside California

3 - Endemic to California

For example, an R-E-D Code of 3-3-3 indicates that the plant in question is limited to one population or several restricted ones, that it is endangered throughout its range, and that it is endemic to California. A summary of the R-E-D code system appears on the inside front cover for easy reference.

State and Federal Status

For each taxon with official status under the state and/or Federal endangered species acts, the plant's status is presented. Our definitions conform to those found in California state law and

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Plant	Rank	R-E-D Code
Castilleja latifolia	4	1-1-3
Castilleja mendocinensis	1B	2-2-3
Castilleja miniata ssp. elata	2	2-2-1
Castilleja mollis	1B	3-3-3
Castilleja montigena	4	1-1-3
Castilleja plagiotoma	4	1-1-3
Castilleja rubicundula ssp. rubicundula	1B	2-2-3
Castilleja schizotricha	4	1-1-2
Castilleja uliginosa	1A	*
Caulanthus amplexicaulis var. barbarae	1B	3-1-3
Caulanthus californicus	1B	3-3-3
Caulanthus coulteri var. lemmonii	1B	2-2-3
Caulanthus major var. nevadensis	4	1-1-1
Caulanthus simulans	4	1-2-3
Caulostramina jaegeri	1B	3-2-3
Ceanothus confusus	1B	3-3-3
Ceanothus cuneatus var. fascicularis	4	1-2-3
Ceanothus cuneatus var. rigidus	4	1-2-3
Ceanothus cyaneus	1B	3-2-2
Ceanothus divergens	1B	3-2-3
Ceanothus ferrisae	1B	3-3-3
Ceanothus foliosus var. vineatus	1B	3-3-3
Ceanothus fresnensis	4	1-1-3
Ceanothus gloriosus var. exaltatus	4	1-1-3
Ceanothus gloriosus var. gloriosus	4	1-1-3
Ceanothus gloriosus var. porrectus	1B	3-1-3
Ceanothus hearstiorum	1B	3-2-3
Ceanothus maritimus	1B	3-2-3
Ceanothus masonii	1B	3-2-3
Ceanothus megacarpus var. insularis	4	1-1-3
Ceanothus ophiochilus	1B	3-3-3
Ceanothus otayensis	1B	3-2-2
Ceanothus pinetorum	4	1-1-3
Ceanothus purpureus	1B	2-2-3
Ceanothus roderickii	1B	3-2-3
Ceanothus sonomensis	1B	3-2-3
Ceanothus verrucosus	2	2-2-1
Centromadia parryi ssp. australis	1B	3-3-2
Centromadia parryi ssp. congdonii	1B	3-3-3
Centromadia pungens ssp. laevis	1B	2-3-3
Cercidium microphyllum	4	1-1-1
Cercocarpus betuloides var. blancheae	4	1-1-3
Cercocarpus traskiae	1B	3-3-3
Chaenactis carphoclinia var. peirsonii	1B	2-1-3
Chaenactis douglasii var. alpina	2	2-1-1
Chaenactis glabriuscula var. orcuttiana	1B	2-3-2
Chaenactis parishii	1B	2-1-2
Chaenactis suffrutescens	1B	2-1-3
Chaetadelpha wheeleri	2	2-2-1
Chamaebatia australis	4	1-2-1
Chamaesyce abramsiana	2	3-2-1
Chamaesyce arizonica	2	2-1-1
Chamaesyce hooveri	1B	3-2-3
Chamaesyce ocellata ssp. rattanii	1B	2-2-3
Chamaesyce parryi	2	3-1-1
Chamaesyce platysperma	1B	3-2-2
Chamaesyce revoluta	4	1-1-1
Chamaesyce vallis-mortae	4	1-2-3
Cheilanthes wootonii	2	2-1-1

formerly: Hemizonia parryi ssp. australis → Centromadia parryi ssp. australis

(Southern Tarplant)

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6th Inventory of Rare Plants - online edition

Status: record centromadia_parryi_ssp._australis

scientific name Centromadia parryi ssp. australis

common name southern tarplant

Southern tarplant

family, scientific Asteraceae

life form Annual herb

CNPS List CNPS List and RED key List 1B

CNPS R-E-D code 3-3-2

CA state listing None

federal listing None

global rank G5T2

state rank S2.1

Counties, states, regions Los Angeles (LAX), Orange (ORA), Santa Barbara (SBA), Santa Catalina Isl. (LAX Co.) (SCT) [?], San Diego (SDG), Ventura (VEN), Baja California (BA)

Topographic Quads - CNPS Anaheim (88C) [extirpated], Beverly Hills (111C) [extirpated], Canada Gobernadora (70D), Del Mar (22B), Dos Pueblos Canyon (143B), Escondido (35D), Goleta (143A), Hollywood (111D) [extirpated], Inglewood (90A) [extirpated], Long Beach (89C) [extirpated], Los Alamitos (89D), Newbury Park (113B), Newport Beach (71B), Pasadena (110B) [extirpated], Pitas Point (141C) [possibly extirpated], Ramona (34D), San Marcos (35B), San Pasqual (34C), Santa Catalina East (SCTE) [?], Seal Beach (72A), South Gate (89B) [extirpated], Torrance (90D), Tustin (71A), Van Nuys (111B) [extirpated], Venice (90B) [extirpated], Ventura (141D), Yorba Linda (88A)

CNPS habitat names Marshes and Swamps (margins)
Valley and foothill grassland (vernally mesic)
Vernal pools

blooming period May-Nov

elevation range 0 - 425 meters

notes Need confirmation of SCT Isl. occurrences. Many ORA Co. occurrences recently extirpated. Many historical occurrences also extirpated; need information. Population fragmentation a serious problem, and plant continues to be threatened by urbanization, vehicles, and foot traffic. A synonym of Hemizonia parryi ssp. australis in The Jepson Manual. See Madrono 3 (1):15 (1935) for original description, and Novon 9:462-471 (1999) for revised nomenclature.

full scientific name Centromadia parryi (Greene) Greene ssp. australis (Keck) B.G. Baldwin

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Other sources and information:

CalFlora genus this genus at CalFlora (explore related species)

search the web Search AltaVista for this species.

EXHIBIT NO. 36
APPLICATION NO. 97

Hemizonia arida
Deinandra arida
Hemizonia clementina
Deinandra clementina
Hemizonia conjugens
Deinandra conjugens
Hemizonia floribunda
Deinandra floribunda
Hemizonia halliana
Deinandra halliana
Hemizonia increscens ssp. villosa
Deinandra increscens ssp. villosa
Hemizonia minthornii
Deinandra minthornii
Hemizonia mohavensis
Deinandra mohavensis
Hemizonia parryi ssp. australis
Centromadia parryi ssp. australis
Hemizonia parryi ssp. congdonii
Centromadia parryi ssp. congdonii
Hemizonia pungens ssp. laevis
Centromadia pungens ssp. laevis
Heterotheca villosa var. shevockii
Heterotheca shevockii
Juglans californica var. californica
Juglans californica
Juglans californica var. hindsii
Juglans hindsii
Lembertia congdonii
Monolopia congdonii
Lomatium ciliolatum var. hooveri
Lomatium hooveri
Madia doris-nilesiae
Harmonia doris-nilesiae
Madia hallii
Harmonia hallii
Madia nutans
Harmonia nutans
Madia stebbinsii
Harmonia stebbinsii
Madia yosemitana
Jensia yosemitana
Malacothrix foliosa
Malacothrix foliosa ssp. foliosa
Navarretia myersii
Navarretia myersii ssp. myersii
Opuntia parryi var. serpentina
Opuntia californica var. californica
Parvisedum leiocarpum
Sedella leiocarpa

new name = Centromadia

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Numerical Analysis of this and Previous Editions

(from CNPS *Inventory*, 6th Edition, 2001)

As the following numerical comparison of the plants in the six Inventory editions demonstrates, the size of California's rare and endangered flora continues to grow (Table 1). The percentages given below indicate the portion of the total native flora in California represented by the plants on a particular list for the different editions. We estimate that the flora as currently described contains 6300 native species, subspecies, and varieties. This is the number of native taxa that are fully described in The *Jepson Manual* (about 6000), plus the approximate number that receive peripheral mention as minor taxa.

Table 1. Numerical comparison of the SIX CNPS *Inventory* editions. We have reevaluated percent of flora for past editions based on 6300 native plants in California.

List or Appendix	Taxa	% Flora
1974, 1st Edition		
1. Very Rare & Rare and Endangered	704	11.1%
Appendix I-- Rare and Not Endangered	554	8.8%
Appendix II-- Mostly of Limited Distribution	135	2.1%
TOTAL	**1393**	**22.0%**
1980, 2nd Edition		
1. Presumed Extinct in California	44	0.7%
2. Rare and Endangered	656	10.4%
3. Rare, But Not Endangered	446	7.1%
4. Rare in California, But Not Elsewhere	237	3.8%

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TOTAL	**1383**	**22.0%**
1984, 3rd Edition		
1A. Presumed Extinct in California	34	0.5%
1B. Rare or Endangered in California and Elsewhere	604	9.6%
2. R/E in California, More Common Elsewhere	198	3.1%
3. Need More Information	114	1.8%
4. Plants of Limited Distribution	449	7.1%
TOTAL	**1399**	**22.2%**
1988, 4th Edition		
1A. Presumed Extinct in California	39	0.6%
1B. Rare or Endangered in California and Elsewhere	675	10.7%
2. R/E in California, More Common Elsewhere	177	2.8%
3. Need More Information	149	2.4%
4. Plants of Limited Distribution	508	8.1%
TOTAL	**1548**	**24.6%**
1994, 5th Edition (current)		
1A. Presumed Extinct in California	34	0.5%
1B. Rare or Endangered in California and Elsewhere	857	13.6%
2. R/E in California, More Common Elsewhere	272	4.3%
3. Need More Information	47	0.8%
4. Plants of Limited Distribution	532	8.4%
TOTAL	**1742**	**27.6%**
2001, 6th Edition (current)		
1A. Presumed Extinct in California	29	0.4%

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1B. Rare or Endangered in California and Elsewhere	1021	16.2%
2. R/E in California, More Common Elsewhere	417	6.6%
3. Need More Information	52	0.8%
4. Plants of Limited Distribution	554	8.8%
TOTAL	**2073**	**32.9%**

There is a net addition of 164 plants (19% increase) to our highest priority list (1B) since the 1994 edition. Over 100 of these have been upgraded to List 1B from a lower priority list, in some cases because we have learned more about their rarity or endangerment, but often because conditions have worsened and they are now more seriously endangered than before. Two sobering facts have emerged during preparation of this edition: over 16% of California's native plants are either exceedingly rare or seriously endangered, and a full one third of our native flora is considered worthy of inclusion in the Inventory. Our best efforts to date simply have not been sufficient to stem the further deterioration of California's rich native flora.

In the last seven years we have identified 351 new rare and endangered plants (Table 2). These new taxa fall into at least five categories: rare plants which have been overlooked in previous editions, plants which are becoming endangered as habitat loss and other threats accelerate, new plants which have been described in California in the last seven years, plants newly "created" by taxonomic changes, and non-vascular plants (28 taxa) which have been added to the Inventory for the first time.

Table 2. Percentage of fifth edition taxa on each list compared to the number and percentage of new sixth edition taxa on each list.

CNPS List	% 4th Edition	Taxa New to 6th Edition	% New Taxa
1A. Presumed Extinct in California	2%	2	0.5%
1B. Rare or Endangered in CA and Elsewhere	49%	96	27%
2. R/E in California, More Common Elsewhere	16%	135	38%
3. Need More Information	3%	5	1.5%

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4. Plants of Limited Distribution	31%	113	32%
TOTAL	**100%**	**351**	**100%**

A disproportionate number of the taxa that are new to this *Inventory* have been assigned to List 2 (Table 2). In the 1994 edition, List 2 represented only 16% of the plants, but this list comprises 38% of the newly added plants in the sixth edition; this follows a trend also noted in the fifth edition. We assume this is primarily due to continued botanical exploration on California's fringes, where most List 2 plants occur, and to the addition of rare bryophytes to this volume, most of which also occur elsewhere in North America. The continued growth of List 2 matches our growing recognition of the importance of protecting plants that, although more common elsewhere, are rare here. By protecting populations that are disjunct or at edge of their range, we make an important contribution to the conservation of genetic diversity and evolutionary processes within species, and help to maintain the resilience species need for survival in the face of rapid environmental change.

California's rare flora is disproportionately rich in subspecies and varieties as compared to the flora as a whole (Table 3). This is unsurprising since subspecies and varieties typically have smaller ranges than species, and are thus biologically rarer to begin with, and consequently more susceptible to disruption. Subspecies and varieties are morphologically, genetically, and geographically distinctive, and much of California's floristic diversity is expressed at this infra-specific level. It is therefore essential that our conservation efforts include these ranks as well as full species if we are to preserve the California flora as the remarkable living evolutionary laboratory that it is.

Table 3. Comparison of taxonomic rank of plants in the California flora, in current and previous editions of the *Inventory*.

Taxonomic Rank	CA Native Flora	6th Edition
# Full Species	4839	1397
# Ssp or Var	1159	676
% Subspecies or Varieties	**18%**	**33%**

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California Department of Fish and Game
Natural Diversity Database

SPECIAL VASCULAR PLANTS, BRYOPHYTES, AND LICHENS LIST

July 2002

Citation: California Department of Fish and Game, Natural Diversity Database. July, 2002. Special Vascular Plants, Bryophytes, and Lichens List. Biannual publication, Mimeo. 141 pp.

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SPECIAL PLANTS

"Special Plants" is a broad term used to refer to all the plant taxa inventoried by the Department of Fish and Game's California Natural Diversity Database (CNDDB), regardless of their legal or protection status. Special Plants include vascular plants and high priority bryophytes (mosses, liverworts, and hornworts) which are a recent addition. Special Plant taxa are species, subspecies, or varieties that fall into one or more of the following categories:

- Officially listed by California or the Federal Government as Endangered, Threatened, or Rare;
- A candidate for state or federal listing as Endangered, Threatened, or Rare;
- A federal "Species of Concern," an unofficial designation sometimes seen on USFWS species lists. These indicate former C1 and C2 candidates which changed status in 1996, when the USFWS abandoned the C1/C2 model. However, these taxa still may meet the criteria for future listing by the USFWS and are important to include on "potentials lists." Since Species of Concern are not tracked consistently by all USFWS offices, the CNDDB does not indicate them under Federal Listing Status on the Special Plants List; contact the USFWS office in Sacramento at 916-414-6600 for more information;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- A Bureau of Land Management, U.S. Fish and Wildlife Service, or U.S. Forest Service Sensitive Species;
- Taxa listed in the California Native Plant Society's *Inventory of Rare and Endangered Plants of California*;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California; and
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, vernal pools, etc.).

This list contains taxa that are actively inventoried by the CNDDB (Note: a "yes" in the right column of the list) as well as an almost equal number of taxa which it tracks but as yet has no computerized site information. For the latter taxa, we maintain site and other information in manual files. These plants will be added to the computerized inventory as time permits or when we have enough information to determine that they fulfill our rarity and/or endangerment criteria. For more copies of this list or other CNDDB information, call (916) 324-3812 or email Karen Bates, Information Services, at kbates@dfg.ca.gov.

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SPECIAL LICHENS

There are a few lichens in California for which we have adequate information to place them on the list of Special taxa. We are not including lichens for which little is known, even if they are only known from a few sites in California because the level of information is not developed enough. As information on individual taxa becomes better developed, more lichens may be added.

Note that lichens are not plants, but a symbiotic relationship between a fungus and either green algae or cyanobacteria.

ELEMENT RANKING

GLOBAL RANKING

The *global rank* (G-rank) is a reflection of the overall condition of an element throughout its global range.

SPECIES OR NATURAL COMMUNITY LEVEL

G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.
G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.
G3 = 21-100 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

SUBSPECIES LEVEL

Subspecies receive a **T-rank** attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety.
For example: *Chorizanthe robusta* var. *hartwegii*. This plant is ranked G2T1. The G-rank refers to the whole species range i.e., *Chorizanthe robusta*. The T-rank refers only to the global condition of var. *hartwegii*.

STATE RANKING

The *state rank* (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
- S1.1 = very threatened
- S1.2 = threatened
- S1.3 = no current threats known

S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres
- S2.1 = very threatened
- S2.2 = threatened
- S2.3 = no current threats known

S3 = 21-100 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres
- S3.1 = very threatened
- S3.2 = threatened
- S3.3 = no current threats known

S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.

S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

Notes:

1. Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a **bird's eye or aerial view** when ranking sensitive elements rather than simply counting EOs.

2. Uncertainty about the rank of an element is expressed in two major ways:

   By expressing the rank as a **range** of values: e.g., S2S3 means the rank is somewhere between S2 and S3.

   By adding a **?** to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2.

3. Other symbols

   - GH All sites are **historical**; the element has not been seen for at least 20 years, but suitable habitat still exists (SH = All California sites are historical).
   - GX All sites are **extirpated**; this element is extinct in the wild (SX = All California sites are extirpated).
   - GXC Extinct in the wild; exists in cultivation.
   - G1Q The element is very rare, but there are **taxonomic questions** associated with it.

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The California Native Plant Society's (CNPS) Lists and R-E-D Code

1A. Presumed extinct in California
1B. Rare or Endangered in California and elsewhere
2. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

List 1A: Plants Presumed Extinct in California

The 29 plants of List 1A are presumed extinct because they have not been seen or collected in the wild in California for many years. Although most of them are restricted to California, a few are found in other states as well. In many cases, repeated attempts have been made to rediscover these plants by visiting known historical locations. Even after such diligent searching, we are constrained against saying that they are extinct, since for most of them rediscovery remains a distinct possibility. Note that care should be taken to distinguish between "extinct" and "extirpated." A plant is extirpated if it has been locally eliminated, but it may be doing well elsewhere in its range.

All of the plants constituting List 1A meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is **mandatory** that they be fully considered during preparation of environmental documents relating the California Environmental Quality Act (CEQA).

The R-E-D code for List 1A plants does not exist, but is designated by an "*" as a placeholder.

List 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere.

The 1021 plants of List 1B are rare throughout their range. All but a few are endemic to California. All of them are judged to be vulnerable under present circumstances or to have a high potential for becoming so because of their limited or vulnerable habitat, their low numbers of individuals per population (even though they may be wide ranging), or their limited number of populations. Most of the plants of List 1B have declined significantly over the last century.

All of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is **mandatory** that they be fully considered during preparation of environmental documents relating to CEQA.

List 2: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere

Except for being common beyond the boundaries of California, the 417 plants of List 2 would have appeared on List 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Endangered Species Act. Until 1979, a similar policy was followed in California. However, after the passage of the Native Plant Protection Act, plants were considered for protection without regard to their distribution outside the state.

All of the plants constituting List 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is **mandatory** that they be fully considered during preparation of environmental documents relating to CEQA.

List 3: Plants About Which We Need More Information - A Review list

The 52 plants that comprise List 3 are united by one common theme--we lack the necessary information to assign them to one of the other lists or to reject them. Nearly all of the plants remaining on List 3 are taxonomically problematic.

Some of the plants constituting List 3 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. We **strongly recommend** that List 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

List 4: Plants of Limited Distribution - A Watch list

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The 554 plants in this category are of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears low at this time. While we cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a List 4 plant change, we will transfer it to a more appropriate list or deleted from consideration.

Very few of the plants constituting List 4 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and we **strongly recommend** that List 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA. This may be particularly appropriate for the type locality of a List 4 plant, for populations at the periphery of a species' range or in areas where the taxon is especially uncommon or has sustained heavy losses, or for populations exhibiting unusual morphology or occurring on unusual substrates.

CNPS R-E-D Code

With the five CNPS Lists we maintain a simple classification that reflects an overall level of conservation concern. However, rarity and endangerment are not strictly correlated, and our approach to protecting plants that occur only in California is somewhat different from our approach to protecting plants that also occur elsewhere. Developing effective conservation strategies requires that we distinguish among the separate factors that contribute to our List assignments. These are: **rarity**, which addresses numbers of individuals and distribution within California; **endangerment**, which addresses the plant's vulnerability to extinction for any reason; and **distribution**, which describes the overall range of the plant. Together these three elements form the **R-E-D Code**. Each element in the code is divided into three classes or degrees of concern, represented by the number 1, 2, or 3. In each case, higher numbers indicate greater concern. The system is summarized as follows:

R - Rarity

1 Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time

2 Distributed in a limited number of occurrences, occasionally more if each occurrence is small

3 Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported

E - Endangerment

1 Not endangered

2 Endangered in a portion of its range

3 Endangered throughout it range

D - Distribution

1 More or less widespread outside California

2 Rare outside California

3 Endemic to California

For example, an R-E-D Code of 3-3-3 indicates that the plant in question is limited to one population or several restricted ones, that it is endangered throughout its range, and that it is endemic to California.

Note that the R-E-D Code for List 1A plants does not exist; an "*" indicates this is a placeholder.

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California Native Plant Society

Policies & Guidelines

[Policies] [PDF Format]

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Policy on Mitigation Guidelines Regarding Impacts to Rare, Threatened, and Endangered Plants

California Native Plant Society Rare Plant Scientific Advisory Committee (February 1991, revised April 1998)

This document is intended to guide in the assessment and mitigation of impacts to rare and endangered plants. It supports the California Native Plant Society Policy Regarding Mitigation of Impacts to Rare and Endangered Plants (Appendix A). The goals of the policy are to prevent decline of rare plants and their habitats and to ensure that effective rare plant preservation measures are implemented.

In California the right to develop land is subject to regulation by public agencies that have discretionary control over project approval. The National Environmental Policy Act of 1969 (NEPA) and the California Environmental Quality Act of 1970 (CEQA) require project applicants to disclose, consider and avoid or reduce significant project impacts to rare or endangered species. Environmental documents required under those laws contain the project disclosures and evaluations and are available for public review.

Evaluation Guidelines

Before identifying mitigation options for a project, the vegetation types, rare plants and habitats, and specialized biotic resource areas must be identified and the project impacts described and assessed. The Society recommends following the Department of Fish and Game's Guidelines for Assessing Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities (Appendix B). An important aspect of the evaluation is determining whether an impact is significant as defined by CEQA and NEPA. Under CEQA, for example, an significant impact is one which would produce a substantial, or potentially substantial, adverse change in the environment.

Mitigation Guidelines

The Society endorses the mitigation concepts in the California Environmental Quality Act, Statutes and Guidelines (1986) beca they may be applied specifically to rare plants. The types of miti

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for environmental impacts that are listed in CEQA (Section 15370) are:

(a) Avoiding the impact altogether by not taking a certain action.

(b) Minimizing impacts by limiting the degree or magnitude of the action.

(c) Rectifying the impact by repairing, rehabilitating or restoring the impacted environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project.

(e) Compensating for the impact by replacing or providing substitute resources or environments.

These mitigation measures can be applied to a variety of environmental impacts but are not always appropriate to mitigating rare plant impacts. Mitigation measures should be developed on a site-specific basis in consultation with appropriate resources agencies. Under existing laws, a project applicant or a local lead agency may have the responsibility of consulting with public regulatory agencies on matters relating to project impacts on rare species.

For rare plants, effective mitigation options that can avoid or reduce impacts may be limited. The use of more than one measure may be necessary depending upon the type of project and the factors that make plant species rare (e.g., unusual soils, microclimates, or water regimes). Each project must be individually evaluated to determine which mitigation method or methods will avoid or reduce impacts defined by CEQA or NEPA as significant to a less than significant level. Because the life history and ecological information needed to judge whether mitigation measures are adequate is often lacking, additional biological research may be necessary prior to mitigation design and/or implementation in order to determine which measures will be most appropriate.

Of the five mitigation types in the California Environmental Quality Act, the California Native Plant Society fully supports those which avoid net reduction of population size or species viability. For most plant species this requires the protection of habitat essential to the survival of the species. In some instances, this also requires that impacts be fully avoided in order to prevent a significant impact (i.e., a net loss of plant numbers, habitat, or genetic variability essential to the future existence and recovery of the species). Alternatives such as site restoration and off-site introduction are generally unproven, and usually unsuccessful.

Avoidance:

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Impacts to rare plants may be avoided by: (1) pre-project planning and design; (2) reconfiguring an existing project design; or (3) adopting the no-project alternative. Project planning and design measures to avoid impacts may include arrangement of facilities on-site to avoid sensitive features. Additional measures are almost always required to protect avoided sites from impacts associated with construction and operation of the project. Such protection can include, but is not limited to, fencing, open space or conservation easements, and transfer of development rights. See Appendix C for a brief discussion of conservation easements.

Each of the other mitigation alternatives included in the CEQA guidelines involves the acceptance of a net loss and/or use of transplantation, artificial propagation, seed transfer, or habitat restoration. The Society believes that these methods do not fully mitigate for significant impacts to rare plants and their habitats for three reasons:

(1) These alternatives compromise and ultimately negate mitigation by allowing net losses of rare plant populations and habitat. Mitigation must, according to CEQA, fully offset or reduce significant impacts to a less than significant level.

(2) Most rare plants are restricted to their known locations because they have specialized, poorly understood, habitat requirements. Creating the exact environmental conditions that these plants require may not be possible.

(3) The Society does not endorse alteration of naturally occurring plant communities through transplantation because the methodology for most rare plants is untested and therefore unreliable and because most past attempts have ultimately failed.

Although the Society does not endorse significant net losses of rare plant numbers or habitat, we recognize that where such losses are allowed or are deemed unavoidable, off-site restoration, compensation, transplantation or other salvage methods should be attempted to enhance degraded populations or provide for partial survival of the sacrificed population. Such measures also provide additional knowledge of the species' horticultural and ecological requirements. Such measures should never be performed so that an otherwise unaffected population is in any way jeopardized, for example by genetic contamination.

Mitigation alternatives other than avoidance are discussed below. These should be used alone or in combination to reduce impacts to less than significant levels. They should also be used in conjunction with monitoring and long-term management agreements.

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Reducing Impacts:

The significance of impacts may be minimized by reducing the size of the project (i.e., partial avoidance) and by locating the project in the least environmentally sensitive area. Areas where impacts are avoided should be surrounded by buffer zones where impacts are absorbed, and set aside and permanently protected in conservation or open space easements. Efforts should be made to salvage portions of the population that will be lost.

Restoration:

Restoration can be used to mitigate impacts from projects approved prior to environmental regulations, or impacts allowed through a "statement of overriding considerations."

Depending upon the degree of impact, habitat restoration may be as simple as removing debris and controlling public access. In more complex situations, however, partial or total restoration of degraded habitat may require extensive revegetation, and soil protection and stabilization programs. Restoration must be tailored to the specific project site based on the habitat and species involved. General guidelines for restoration projects involving rare plants are discussed in Appendix D.

Reduction Over Time:

Impacts may be significantly reduced or eliminated by controlling public access and by fencing or staking the habitat area to prevent accidental intrusion into the site. Monitoring rare plants and habitats during all phases of a project will help ensure that construction and operation activities do not encroach on protected habitat.

When project actions have ended, restraints may or may not be removed depending on the completed project's potential for long-term impacts on the sensitive area. In most instances, control of public access to sensitive habitat sites needs to be continued beyond the construction phase of an individual project, especially in moderate and high density development areas. Public education about the value of the protected resources should also be considered for these areas.

Attempts to reduce or eliminate impacts over the life of the project should be required for all projects if the potential exists for secondary impacts due to human access; mitigation agreements that require placement of a conservation or open space easement on the mitigation site should be considered to implement this measure.

Off-site Compensation:

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Compensating for the impact by protecting substitute resources or environments has been used in some instances to mitigate unavoidable impacts. In most instances off-site compensation does not fully reduce impacts to an insignificant level because a net loss of individuals or habitat that supports a natural self-sustaining rare plant population results. In spite of this, off-site compensation is a useful tool under specific circumstances where other mitigation alternatives cannot be applied or do not fully mitigate significant impacts.

Off-site compensation has been approached in several different ways, including: 1) permanent protection of an existing off-site native population; 2) permanent protection of an off-site introduced population; 3) a combination of 1) and 2); or 4) mitigation banking.

Determining habitat value for off-site compensation is difficult. The size of the acquisition will vary depending upon the type, condition, extent and rarity of the habitat and species. In any case, the acquisition and permanent protection of an alternative parcel does not alter the fact that the loss of the initial site brings the rare habitat and species one step closer to ultimate extinction. Species preservation is greatly enhanced when plants are protected at a number of separate sites. Although the permanent protection of a vigorous, self-sustaining population of the species tends to reduce the endangerment potential of the species at that particular site, it does not necessarily fully compensate for the loss of the habitat known to support a viable population. To further reduce the endangerment potential for the species and habitat, the ratio of acquisition to loss must in most cases exceed 1:1 for any species. The ratio should be higher for rarer species, particularly for those that occupy irreplaceable habitats. In addition, enhancing off-site compensation areas (e.g., reducing grazing or OHV impacts) can help to more fully compensate for the net loss of plants at a project site.

If transfer of the threatened population is being attempted, an ecological study of the site, including an inventory of rare species, is needed to identify the feasibility of introduction. Genetic contamination can occur by mixing of populations of the rare plants and needs to be avoided, as does hybridization between the rare plant and close relatives that could occur at the introduction site. In no case are unthreatened populations to be jeopardized by the transfer of genetic material from the threatened site. If the compensation site is considered suitable, acquisition or other permanent protection efforts are required to ensure adequate long-term protection, and therefore to mitigate for a net loss of rare plants or habitat. A propagation program should be developed for the salvage and transfer of rare plant populations from the initial parcel before initiating any activities. Permits may be required from California Department of Fish and Game (DFG) or the U.S. Fish and Wildlife Service. Propagation methods for the salvaged population must be developed on a case-specific basis. The propagation program schedule must provide adequate lead time to plan and carry

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out transfer at the correct time of the year. In order to serve as mitigation, the transfer must be successfully completed before the project's construction activities eliminate plants or habitats. Maintenance and monitoring programs which include the collection of data to document degree of success should also be developed for the compensation site to ensure the transplanted population is self-sufficient and thereby demonstrate success.

Mitigation Implementation

The mitigation design, implementation techniques and reporting procedures must be clearly documented. Responsibilities of the landowner/applicant, contractors, and agencies, and criteria that define successful mitigation, should be placed in writing to prevent later confusion or disagreement. The DFG Plant Conservation Program has prepared a mitigation plan annotated outline that includes the basic information needed to develop a mitigation plan for State-listed plant species that would be acceptable to the DFG. This document discusses important considerations in designing appropriate mitigation and monitoring plans and establishing appropriate performance criteria, and should be consulted when developing mitigation for impacts to any rare plant species.

Mitigation agreements entered into as a condition of a discretionary permit must contain assurances of implementation, monitoring and maintenance. Permits for development generally require a mitigation plan prior to approval. Project construction is sometimes completed before mitigation is fully implemented, especially where restoration or revegetation is involved. In these and related instances mitigation commitments should be guaranteed by a negotiable performance security. The amount of the negotiable security should be large enough to complete the mitigation and to purchase other rare plant habitat in the event the applicant fails to successfully complete the work in accordance with the approved mitigation agreement.

Clear criteria should be included in the mitigation agreement to define the conditions under which the mitigation measures are to be considered complete or successful, so that the performance security may be returned. Any mitigation effort requiring manipulation of plants or of habitats should be monitored for success or failure for a minimum of five years before relinquishing the performance security. The duration of the evaluation period must be based on the biological constraints of the species involved.

Maintenance and Monitoring Implementation

Maintenance and monitoring of rare plant populations and habitats are essential even where these are "protected" by mitigation measures. Monitoring enables project applicants and regulatory agencies to

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document compliance with mitigation agreements. Monitoring also enables scientists to gather valuable knowledge on the effectiveness of rare plant mitigation methods. The financial responsibility for monitoring and maintenance of rare plant populations and habitat is typically that of the project applicant. In all cases, monitoring should be conducted by an experienced botanist. Maintenance responsibilities must be clearly stated in contractual agreements to eliminate any confusion during future maintenance and monitoring.

Maintenance must consider the ecological needs of the species and habitat and the types of mitigation used. Where undisturbed habitat is set aside, maintenance may consist of little more than controlling public access, maintaining fences, or periodic weed removal. Restoration and revegetation programs may require more complex maintenance programs. For example, invasive non-native plants may require specialized control measures to keep them from spreading; herbivores may also need to be controlled to protect the native vegetation.

Monitoring programs must be developed to meet the needs of the specific mitigation program. For example, it may be necessary to monitor the progress of construction activities, if these activities have the potential to damage rare plant habitat. Monitoring of restoration and revegetation projects is essential to document success or failure and identify areas where additional work is needed. Monitoring undisturbed sites that have been set aside and are not likely to suffer direct or cumulative impacts may require only periodic visits to determine if easement violations have occurred. Requirements to correct violations should be described in the conservation easement or mitigation agreement.

In the past, mitigation for many approved projects was not properly implemented and agencies failed to enforce compliance by project developers. To rectify this, legislation passed in 1989 (AB 3180, Cortese) amended CEQA by adding section 21081.6 to allow California agencies to require monitoring of mitigation measures that were defined for a given project. The features to be monitored must be outlined in a formal monitoring plan which must be sufficient to identify failures in mitigation throughout the life of the project, not just during the construction phase. Agencies can enforce compliance with monitoring plans through several means, including specifying penalties for failure to meet monitoring obligations, through the use of existing police power such as fines or restraining orders, and/or by requiring a performance security of the project applicant.

Monitoring a conservation easement is the responsibility of the easement holder, whether this is a nonprofit organization or a public agency. The easement holder is also responsible for seeking redress for violations of the conservation easement contract.

Conclusion

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The Society supports project alternatives that completely avoid significant project impacts to rare and endangered plant species and their habitats. In cases where other mitigation alternatives are approved, mitigation plans should be designed based on the specific requirements of the species and habitat involved. Although the current limited understanding of the ecological requirements for most rare species makes this task difficult, the use of preliminary ecological studies in mitigation planning will help to develop successful mitigation programs. Emphasis must be placed on conserving not only the rare plant but its habitat. The increased awareness of the need for solutions to problems of human impact on the environment and endangered species is encouraging. This awareness and concern has led to the participation of many agencies, conservation organizations, and concerned individuals in an effort to develop the criteria needed for rare plant protection. The California Native Plant Society has dedicated itself to helping realize this goal, and is always available to assist private individuals, local governments, public agencies and others in designing truly effective mitigation measures. Some of the references cited in the bibliography contain information relating to studies of specific rare plants and mitigation implementations for specific development projects.

Acknowledgements

The CNPS Mitigation Policy and Guidelines were produced through the dedicated effort of many individuals. Special thanks go to Betty Guggolz for her lead role in the production of this document and her patient endurance of innumerable modifications to the text. Others who contributed valuable advice, criticism and support were: Ken Berg, Roxanne Bittman, Fredrica Bowcutt, Susan Cochrane, Charlice Danielsen, Phyllis Faber, Jack Guggolz, James Jokerst, Tim Messick, Mary Meyer, James Nelson, Thomas Oberbauer, David Schonum, Teresa Sholars, Mark Skinner, James Payne Smith, Joan Vilms, Laurie Wickenheiser, and Vernal Yadon.

Bibliography

Barrett, Thomas. S., and Putnam Livermore, for the Trust For Public Land. The Conservation Easement in California, Island Press, Covelo, California, 1983.

Christian, John. U.S. Fish and Wildlife Service Mitigation Policy, Federal Register, Vol. 46 No. 15, Department of the Interior, Washington D. C., 1981.

Elias, Thomas S. (ed.). Conservation and Management of Rare and Endangered Plants, California Native Plant Society, 1987.

Fahselt, D. The Dangers of Transplantation as a Conservation

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Technique. Natural Areas Journal 8:238-243, 1988.

Hall, Lauren A. Transplantation of Sensitive Plants as Mitigation for Environmental Impacts. Pages 413-420 in Elias, Thomas S. (ed.) "Conservation and Management of Rare and Endangered Plants", California Native Plant Society, 1987.

Hoose, Philip M. Building An Ark, Tools for Preservation of Natural Diversity through Land Protection, Island Press, 1981.

Howald, Ann M., and Laurie P. Wickenheiser. Mitigation Plan Annotated Outline for Endangered Plants of California. California Department of Fish and Game, Endangered Plant Program, 1990.

Nachlinger, Jan, Gankin, Roman and Robert Powell (eds.). C.N.P.S. Working Conference, Conservation, Rare Plants and Legislation, February 5-7, 1982, Yosemite Institute, Marin Headlands, California Native Plant Society, July 1982.

Remy, Michael H., Thomas, Tina A., Duggan, Sharon E., and James G. Moose. Guide to the California Environmental Quality Act, Solano Press Books, 1990.

Rieger, John P. and Bobbie A. Steele (eds.). Proceedings of the Native Plant Revegetation Symposium, Nov.15, 1984, San Diego, California, California Native Plant Society, 1985.

Smith, J.P., Jr. and Ken Berg (eds.). Inventory of Rare and Endangered Vascular Plants of California, 4th ed. Special Publication No.1, California Native Plant Society, Sacramento, California, 1988.

Relevant Legislation

California Endangered Species Act. Fish and Game Code, Sections 2050-2098.

Native Plant Protection Act. Fish and Game Code, Sections 1900-1913.

State of California, The California Environmental Quality Act, Statutes and Guidelines. Office of Planning and Research, 1986.

State of California. Tracking CEQA Mitigation Measures Under AB 3180, Office Of Planning and Research, 1989.

The Federal Endangered Species Act of 1973. (Public Law 93-295).

The National Environmental Policy Act of 1969. (42 USC 4321-4347).

APPENDIX A - <u>Policy Regarding Mitigation of Impacts to Rare</u>

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and Endangered Plants, CNPS, June 1987

APPENDIX B - Guidelines for Assessing Effects of Proposed Developments on Rare and Endangered Plant Communities
THE RESOURCES AGENCY, Department of Fish and Game (December 9, 1983, revised May 8, 2000)
NOTE - On June 2, 2001, the CNPS Board of Directors adopted a more rigorous set of survey guidelines entitled **CNPS Botanical Survey Guidelines** (December 9, 1983, revised June 2, 2001)

APPENDIX C - Conservation Easements

Open Space or Conservation Easements have been used in a number of jurisdictions throughout California. In open space or conservation easements the landowner transfers the rights to develop a parcel to a conservation organization or public agency. The legal basis for this action is found in Government Code Section 51050 et seq., particularly Section 51083.5 which describes the granting of easements to nonprofit organizations. Easements granted to an impartial third party, interested organization, or resource agency are the only secure types. Those granted to a local public jurisdiction can be eliminated or modified with a majority vote.

Determining the appropriate size of an easement is difficult. It must be large enough to support, in perpetuity, a biologically secure, reproducing population with an adequate buffer zone. The proposed land use surrounding the easement and current and future land uses of the conservation or open space easement area must also be taken into consideration. A land use or management plan that accounts for the type of rare plant habitat and the biology of the resident species needs to be developed for easement areas. The design of the protection area boundaries and management plan must be scientifically based, utilizing baseline studies and species biology information.

Conservation and open space easement contracts should include a legal description of the easement parcel, the purpose of the easement and describe the specific resources or conditions being protected by the easement. The contract should also include the rights of the grantee, the grantors rights and uses, restrictions of undesirable activities, and a general restriction of all uses inconsistent with the purposes of the easement. Language should be included that states that the conditions of the easement contract are binding not only on the grantor, but also on his heirs, assigns, and all other successors and interests so that the term of the easement runs with the land in perpetuity.

Conservation easement contracts should also include: (1) specific restrictions to protect the site from land use change, introduction of nonnative plant species and public access; and (2) the right of the grantee to enforce compliance with the terms of the easement and to require restoration of the habitat at the grantor's expense should damage

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to the habitat result from violation of the agreement by the grantor.

Maintenance and monitoring agreements and guideline documents for the conservation easement should be incorporated into the easement contract.

APPENDIX D - Brief Guidelines for Restoration Projects

General guidelines for restoration projects are as follows:

1. Prior to the development of a restoration program, the goals of the completed project must be established and a course of action developed to achieve that goal.

2. Pre-impact site conditions should be determined. Clues to this may be found in remnants of the existing habitat, in herbarium research, and from botanists who have collected in the area in the past. Local historical files or societies may be a source of information if the site is near an urban area.

3. Other site factors which may require study are land contours, soil types, erosion control, topsoil protection, and pre-impact hydrologic patterns.

4. An ecological study of the species being considered for reintroduction is necessary, including their total distribution, other habitat sites, associated species and pollinators.

5. Revegetation methodology research may include propagation techniques, material sources, propagule collection and preparation, planting densities, seedling protection, weed and invasive exotics control, site protection, public access and many other factors. The present knowledge of propagation requirements for rare plants is so limited that all efforts to propagate and reintroduce them in the wild should be carried out under the direct supervision of a specialist well versed in the cultural requirements of the genus.

6. A maintenance and monitoring program should also be included in the development of restoration/revegetation plans, and should utilize consistently documented data to further augment the existing knowledge of the species and to develop criteria for other revegetation projects.

APPENDIX E - Definitions

The following definitions are used in this document:

Maintenance: the process of ensuring that rare plants and their habitats remain viable and in good condition.

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Mitigation: actions taken to avoid or reduce significant adverse impacts. Impacts are less than significant if no net loss of population size or habitat quality results.

Mitigation banking: A large preserve or open space which individual developers buy into at a predetermined compensation ratio to satisfy their mitigation debt. Mitigation banking focuses mitigation efforts into significant amounts of habitat rather than permitting establishment of many smaller and less significant or less defensible preserves or open space areas.

Monitoring: periodic assessment of the status of a plant population or habitat to determine its condition and reveal trends in vigor and viability; should be conducted in a scientific and standardized fashion.

Off-site Compensation: preservation in perpetuity of alternate sites containing similar habitat types and species to offset or "compensate" for unavoidable losses. The ratio of acquisition to loss should be greater than one to one for any species. In lieu of this, an equitable sum of money may be paid for the purchase of an alternate site.

Preservation: the maintenance and protection of rare plants and habitats at levels that existed prior to the commencement of a project.

Rare Species: for the purpose of this policy, and to avoid undue repetition, the word "rare" is used to include "rare", "threatened", and "endangered" plant species as defined in Section 3(4)(15) of The Federal Endangered Species Act of 1973, and The California Environmental Quality Act Guidelines, Section 15380 (1986). The latter section is reproduced below:

(b) A species of plant is:

(1) "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or

(2) "Rare" when either:

(A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or

(B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.

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(c) A species of plant shall be presumed to be rare or endangered if it is listed in:

(1) Sections 670.2 or 670.5, Title 14, California Administrative Code; or

(2) Title 50, Code of Federal Regulations, Section 17.11 or 17.12 pursuant to the Federal Endangered Species Act as threatened or endangered; or

(d) A species not included in any listing identified in subsection (c) shall nevertheless be considered to be rare or endangered if the species can be shown to meet the criteria in subsection (b).

Division 2, Chapter 1.5 of the California Fish and Game Code (California Endangered Species Act Section 2067) defines a "threatened" species as a native species or subspecies of a plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts required in this chapter.

Transfer of Development Rights (TDR): Under this process, an applicant may gain density bonuses in designated development areas if rare plant populations and habitat are left in permanent open space. This alternative also requires an organized plan by a local agency identifying those areas to be left undisturbed and those that may be used by the applicant for density increases in return for protecting the areas to be left undisturbed. Protection in perpetuity is a necessary requirement of TDR proposals that are implemented to protect rare plant populations. TDR is being used increasingly as a mitigation tool for on-site rare plant protection.

Unavoidable significant impacts: impacts resulting from a "statement of overriding considerations" where the public benefits of a project have been determined to outweigh the significance of the environmental impact, or where an emergency situation or natural disaster may destroy, or has destroyed rare plant habitat and species.

APPENDIX F - CNPS Rare Plant Lists

Dedicated to the preservation of California native flora.

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Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities

State of California
THE RESOURCES AGENCY
Department of Fish and Game
December 9, 1983
Revised May 8, 2000

The following recommendations are intended to help those who prepare and review environmental documents determine **when** a botanical survey is needed, **who** should be considered qualified to conduct such surveys, **how** field surveys should be conducted, and **what** information should be contained in the survey report. The Department may recommend that lead agencies not accept the results of surveys that are not conducted according to these guidelines.

1. Botanical surveys are conducted in order to determine the environmental effects of proposed projects on all rare, threatened, and endangered plants and plant communities. Rare, threatened, and endangered plants are not necessarily limited to those species which have been "listed" by state and federal agencies but should include any species that, based on all available data, can be shown to be rare, threatened, and/or endangered under the following definitions:

A species, subspecies, or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease. A plant is "threatened" when it is likely to become endangered in the foreseeable future in the absence of protection measures. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.

Rare natural communities are those communities that are of highly limited distribution. These communities may or may not contain rare, threatened, or endangered species. The most current version of the California Natural Diversity Database's List of California Terrestrial Natural Communities may be used as a guide to the names and status of communities.

2. It is appropriate to conduct a botanical field survey to determine if, or to the extent that, rare, threatened, or endangered plants will be affected by a proposed project when:

a. Natural vegetation occurs on the site, it is unknown if rare, threatened, or endangered plants or habitats occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
b. Rare plants have historically been identified on the project site, but adequate information for impact assessment is lacking.

3. Botanical consultants should possess the following qualifications:

a. Experience conducting floristic field surveys;
b. Knowledge of plant taxonomy and plant community ecology;
c. Familiarity with the plants of the area, including rare, threatened, and endangered species;
d. Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
e. Experience with analyzing impacts of development on native plant species and communities.

4. Field surveys should be conducted in a manner that will locate any rare, threatened, or endangered species that may be present. Specifically, rare, threatened, or endangered plant surveys should be:

a. Conducted in the field at the proper time of year when rare, threatened, or endangered species are both evident and identifiable. Usually, this is when the plants are flowering.

When rare, threatened, or endangered plants are known to occur in the type(s) of habitat prese area, nearby accessible occurrences of the plants (reference sites) should be observed to deter

are identifiable at the time of the survey.

b. Floristic in nature. A floristic survey requires that every plant observed be identified to the extent necessary to determine its rarity and listing status. In addition, a sufficient number of visits spaced throughout the growing season are necessary to accurately determine what plants exist on the site. In order to properly characterize the site and document the completeness of the survey, a complete list of plants observed on the site should be included in every botanical survey report.

c. Conducted in a manner that is consistent with conservation ethics. Collections (voucher specimens) of rare, threatened, or endangered species, or suspected rare, threatened, or endangered species should be made only when such actions would not jeopardize the continued existence of the population and in accordance with applicable state and federal permit requirements. A collecting permit from the Habitat Conservation Planning Branch of DFG is required for collection of state-listed plant species. Voucher specimens should be deposited at recognized public herbaria for future reference. Photography should be used to document plant identification and habitat whenever possible, but especially when the population cannot withstand collection of voucher specimens.

d. Conducted using systematic field techniques in all habitats of the site to ensure a thorough coverage of potential impact areas.

e. Well documented. When a rare, threatened, or endangered plant (or rare plant community) is located, a California Native Species (or Community) Field Survey Form or equivalent written form, accompanied by a copy of the appropriate portion of a 7.5 minute topographic map with the occurrence mapped, should be completed and submitted to the Natural Diversity Database. Locations may be best documented using global positioning systems (GPS) and presented in map and digital forms as these tools become more accessible.

5. Reports of botanical field surveys should be included in or with environmental assessments, negative declarations and mitigated negative declarations, Timber Harvesting Plans (THPs), EIR's, and EIS's, and should contain the following information:

a. Project description, including a detailed map of the project location and study area.
b. A written description of biological setting referencing the community nomenclature used and a vegetation map.
c. Detailed description of survey methodology.
d. Dates of field surveys and total person-hours spent on field surveys.
e. Results of field survey including detailed maps and specific location data for each plant population found. Investigators are encouraged to provide GPS data and maps documenting population boundaries.
f. An assessment of potential impacts. This should include a map showing the distribution of plants in relation to proposed activities.
g. Discussion of the significance of rare, threatened, or endangered plant populations in the project area considering nearby populations and total species distribution.
h. Recommended measures to avoid impacts.
i. A list of all plants observed on the project area. Plants should be identified to the taxonomic level necessary to determine whether or not they are rare, threatened or endangered.
j. Description of reference site(s) visited and phenological development of rare, threatened, or endangered plant(s).
k. Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms.
l. Name of field investigator(s).
m. References cited, persons contacted, herbaria visited, and the location of voucher specimens.

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Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Game

Natural Diversity Database

Scientific Name Common Name (if any) Element Code	Listing Status	Rank	CNPS
Bryophytes			
ANOMOBRYUM FILIFORME SLENDER SILVER-MOSS NBMUS80010 Records in NDDB: *Yes*	Federal: None State: None	Global: G4 State: S1.3	List: 2 Code: 3-2-1
ATRACTYLOCARPUS FLAGELLACEUS FLAGELLA-LIKE ATRACTYLOCARPUS NBMUS84010 Records in NDDB: *Yes*	Federal: None State: None	Global: G5? State: S1.3	List: 2 Code: 3-2-1
BRUCHIA BOLANDERI BOLANDER'S BRUCHIA NBMUS13010 Records in NDDB: *Yes*	Federal: None State: None	Global: G2 State: S2.2	List: 2 Code: 2-2-2
DIDYMODON NORRISII NORRIS'S BEARD-MOSS NBMUS2C0H0 Records in NDDB: *Yes*	Federal: None State: None	Global: G2G3 State: S2.2	List: 2 Code: 2-2-2
DISCELIUM NUDUM NAKED FLAG-MOSS NBMUS2E010 Records in NDDB: *Yes*	Federal: None State: None	Global: G3G4 State: S1.2	List: 2 Code: 3-2-1
ENTOSTHODON KOCHII KOCH'S CORD-MOSS NBMUS2P050 Records in NDDB: *Yes*	Federal: None State: None	Global: G1 State: S1.3	List: 1B Code: 3-1-3
FISSIDENS APHELOTAXIFOLIUS BROOK POCKET-MOSS NBMUS2W290 Records in NDDB: *Yes*	Federal: None State: None	Global: GU State: S1.2	List: 2 Code: 3-2-1
FISSIDENS PAUPERCULUS MINUTE POCKET-MOSS NBMUS2W0U0 Records in NDDB: *Yes*	Federal: None State: None	Global: G3? State: S1.2	List: 1B Code: 2-2-3
GEOTHALLUS TUBEROSUS CAMPBELL'S LIVERWORT NBHEP1C010 Records in NDDB: *Yes*	Federal: None State: None	Global: G1 State: S1.1	List: 1B Code: 3-3-3
HELODIUM BLANDOWII BLANDOW'S BOG-MOSS NBMUS3C010 Records in NDDB: *Yes*	Federal: None State: None	Global: G5 State: S1.3	List: 2 Code: 3-1-1
MEESIA TRIQUETRA THREE-RANKED HUMP-MOSS NBMUS4L020 Records in NDDB: *Yes*	Federal: None State: None	Global: G5 State: S2.2	List: 2 Code: 2-2-1
MEESIA ULIGINOSA BROAD-NERVED HUMP-MOSS NBMUS4L030 Records in NDDB: *Yes*	Federal: None State: None	Global: G4 State: S2.2	List: 2 Code: 2-2-1
MIELICHHOFERIA ELONGATA ELONGATE COPPER-MOSS NBMUS4Q022 Records in NDDB: *Yes*	Federal: None State: None	Global: G4? State: S2.2	List: 2 Code: 2-2-1

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Scientific Name Common Name (if any) Element Code	Listing Status	Rank	CNPS
CEANOTHUS GLORIOSUS VAR EXALTATUS GLORY BRUSH PDRHA040F4 **Records in NDDB:** *No*	**Federal:** None **State:** None	**Global:** G3G4T3 **State:** S3.3	**List:** 4 **Code:** 1-1-3
CEANOTHUS GLORIOSUS VAR GLORIOSUS POINT REYES CEANOTHUS PDRHA040F2 **Records in NDDB:** *No*	**Federal:** None **State:** None	**Global:** G3G4T3 **State:** S3.3	**List:** 4 **Code:** 1-1-3
CEANOTHUS GLORIOSUS VAR PORRECTUS MT. VISION CEANOTHUS PDRHA040F7 **Records in NDDB:** *Yes*	**Federal:** None **State:** None	**Global:** G3G4T2 **State:** S2.2	**List:** 1B **Code:** 3-1-3
CEANOTHUS HEARSTIORUM HEARST'S CEANOTHUS PDRHA040J0 **Records in NDDB:** *Yes*	**Federal:** None **State:** Rare	**Global:** G1 **State:** S1.2	**List:** 1B **Code:** 3-2-3
CEANOTHUS MARITIMUS MARITIME CEANOTHUS PDRHA040T0 **Records in NDDB:** *Yes*	**Federal:** None **State:** Rare	**Global:** G2 **State:** S2.2	**List:** 1B **Code:** 3-2-3
CEANOTHUS MASONII MASON'S CEANOTHUS PDRHA040F6 **Records in NDDB:** *Yes*	**Federal:** None **State:** Rare	**Global:** G1 **State:** S1.3	**List:** 1B **Code:** 3-2-3
CEANOTHUS MEGACARPUS VAR INSULARIS ISLAND CEANOTHUS PDRHA040W1 **Records in NDDB:** *No*	**Federal:** None **State:** None	**Global:** G5T3 **State:** S3.3	**List:** 4 **Code:** 1-1-3
CEANOTHUS OPHIOCHILUS VAIL LAKE CEANOTHUS PDRHA041M0 **Records in NDDB:** *Yes*	**Federal:** Threatened **State:** Endangered	**Global:** G1 **State:** S1.1	**List:** 1B **Code:** 3-3-3
CEANOTHUS OTAYENSIS OTAY MOUNTAIN CEANOTHUS PDRHA041V0 **Records in NDDB:** *Yes*	**Federal:** None **State:** None	**Global:** G1 **State:** S1.2	**List:** 1B **Code:** 3-2-2
CEANOTHUS PINETORUM KERN CEANOTHUS PDRHA04130 **Records in NDDB:** *No*	**Federal:** None **State:** None	**Global:** G3 **State:** S3.3	**List:** 4 **Code:** 1-1-3
CEANOTHUS PURPUREUS HOLLY-LEAVED CEANOTHUS PDRHA04160 **Records in NDDB:** *No*	**Federal:** None **State:** None	**Global:** G2 **State:** S2.2	**List:** 1B **Code:** 2-2-3
CEANOTHUS RODERICKII PINE HILL CEANOTHUS PDRHA04190 **Records in NDDB:** *Yes*	**Federal:** Endangered **State:** Rare	**Global:** G2 **State:** S2.1	**List:** 1B **Code:** 3-2-3
CEANOTHUS SONOMENSIS SONOMA CEANOTHUS PDRHA04068 **Records in NDDB:** *Yes*	**Federal:** None **State:** None	**Global:** G2 **State:** S2.2	**List:** 1B **Code:** 3-2-3
CEANOTHUS VERRUCOSUS WART-STEMMED CEANOTHUS PDRHA041J0 **Records in NDDB:** *Yes*	**Federal:** None **State:** None	**Global:** G3 **State:** S2.2	**List:** 2 **Code:** 2-2-1
CENTROMADIA PARRYI SSP AUSTRALIS SOUTHERN TARPLANT PDAST4R0P4 **Records in NDDB:** *Yes*	**Federal:** None **State:** None	**Global:** G4?T2 **State:** S2.1	**List:** 1B **Code:** 3-3-2

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Rare Plant Protection

[Up] [CDFG] [CNDDB] [USFWS] [BLM] [USFS]

California Native Plant Society

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Conserving Plants with Laws and Programs under the Department of Fish and Game

Sandra Morey and Diane Ikeda (from CNPS *Inventory*, 6th Edition, 2001)

California's diversity of native plants is unequaled by any other state in the Nation, a reflection of its diverse and varied landscapes and climates. As steward of the State's wildlife resources, the Department of Fish and Game (DFG) has been working for more than 20 years to conserve California's native plants and natural plant communities.

The DFG's mission, "to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public," is a reflection of its broad responsibilities, much expanded from the time when DFG was known primarily for managing California's wildlife for recreational hunting and fishing. Today, amid the pressures associated with human population growth, economic expansion, and multiple and often conflicting land use strategies, the DFG works cooperatively with federal, state, and local governments, businesses, conservation organizations, and citizens to conserve all wildlife, including native plant populations and habitats.

Legal Framework

The legal framework and authority for the State's program to conserve plants is woven from four pieces of legislation: the California Endangered Species Act (CESA), the Native Plant Protection Act (NPPA), the California Environmental Quality Act (CEQA), and the Natural Community Conservation Planning Act (NCCPA).

Native Plant Protection Act

The Legislature formally recognized the plight of rare ar endangered plants in 1977 with the passage of the Nati Protection Act (NPPA). The NPPA directs the DFG to c the Legislature's intent to "preserve, protect and enhanc and endangered plants in this State." The NPPA gave t California Fish and Game Commission the power to de

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native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants.

California Endangered Species Act

In 1984 the state Legislature enacted the California Endangered Species Act (CESA) in recognition of the tremendous threats facing California's native plant and animal populations and their habitats. This legislation declares that deserving plants and animals will be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. CESA established that it is state policy to conserve, protect, restore, and enhance endangered and threatened species and their habitats.

The CESA expanded upon the original NPPA and enhanced legal protection for plants. To align with Federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered.

The following definitions are found within the two acts (Fish and Game Code Sections 1901, 2062, and 2067). A native species is endangered when "its prospects of survival and reproduction are in immediate jeopardy from one or more causes." A native species is threatened when "although not presently threatened with extinction, it is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts..." A native plant is rare when "although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens." The CESA also creates a "candidate" category. A candidate is a taxon that has been officially noticed by the Commission as being under review by the DFG for addition to the threatened or endangered species lists.

CESA also allows the Department to issue permits for scientific collecting and research activities and for the take of candidate and State-listed species that is incidental to otherwise lawful activities.

California Environmental Quality Act

California has a strong state law that provides for protection of species and natural communities during the land use planning

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process. This law is the California Environmental Quality Act (CEQA), enacted in 1970. CEQA requires government agencies to consider and disclose environmental impacts of projects and to avoid or mitigate them where possible. Under CEQA, public agencies must prepare environmental documents to disclose environmental impacts of a project and to identify mitigation measures and project alternatives. Through this process, the public can review proposed project plans and influence the process through public comment.

Natural Community Conservation Planning Act

In 1991, the Natural Community Conservation Planning Act (NCCPA) was enacted to promote long?term protection of species and habitats via cooperative, landscape-level planning (see Cooperative Conservation Planning section below). The NCCPA authorizes the development of Natural Community Conservation Plans (NCCP). An NCCP plans for the conservation of natural communities by using an ecosystem approach and encouraging cooperation between private and government interests. The plan identifies and provides for the regional or area wide protection and perpetuation of plants, animals, and their habitats, while allowing compatible land use and economic activity. An NCCP seeks to anticipate and prevent the controversies caused by species listings by focusing on the long-term stability of natural communities.

Approved NCCPs provide the basis for issuance of state authorizations for the take of species specifically identified in the plan, whether or not a species is listed as threatened or endangered, and may provide the basis for issuance of federal endangered species permits. It is important to note that the NCCP process must ensure consistency with the federal and state Endangered Species Acts.

Programs

Headquarters Programs to Conserve Plants

At the DFG's statewide headquarters in Sacramento, programs that focus on plant conservation are primarily within the Habitat Conservation Division. The Natural Diversity Database (CNDDB) is one of the Department of Fish and Game's most visible and successful programs. The CNDDB tracks location and status information on rare plants, animals, and natural plant communities (see The California Natural Diversity Database in this volume).

The Species Conservation and Recovery Program provides

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information and guidance on plant and animal conservation from a statewide perspective to other Department programs and to the public. This program coordinates statewide funding for conservation of rare, threatened, and endangered plants, participates in recovery planning, reviews listing petitions and legislation, and provides biological input into landscape-level conservation planning efforts such as Natural Communities Conservation Plans and Habitat Conservation Plans (HCPs) (see Cooperative Conservation Planning section below).

Regional Programs to Conserve Plants

Biologists and botanists in the DFG's six regions carry out diverse plant conservation activities, focusing on "on-the-ground" activities. They carry out research, management, and monitoring programs for rare, threatened, and endangered plants, and guide habitat restoration for native plants on Department lands. They work with local governments and other partners to see that plants are adequately protected in landscape-level planning efforts such as NCCPs and HCPs, advise the public on projects that may impact or benefit native plant populations, review environmental documents, participate in recovery planning programs, and develop educational programs. Some of these activities are described below.

Plant Conservation Activities

A variety of funding sources is available to the DFG to promote recovery of endangered plant populations and to restore degraded habitats. Funding sources include the California Endangered Species Tax Check-Off Fund, U.S. Fish and Wildlife Service support under the Federal Endangered Species Act Section 6 provisions for cooperation with the states, the Tobacco Tax and Health Initiative (Proposition 99), the Environmental License Plate Fund, mitigation funds, and funding under CALFED Bay-Delta Program and the Central Valley Project Improvement Act (CVPIA).

Habitat Protection

Conserving species in their natural settings, their own habitat, is key to ensuring their long-term survival. The Department of Fish and Game protects, maintains, and enhances plant and animal populations and natural communities through direct acquisition of habitat, conservation easements on private lands, and management agreements with public and private agencies and organizations. The Department works with conservation partners including CNPS, The Nature Conservancy, local land trusts, U.S. Forest Service, U.S. Bureau of Land Management, U.S. Fish and

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Wildlife Service, U.S. Bureau of Reclamation, California Department of Parks and Recreation, and other public agencies, organizations, and private landowners to promote conservation of all wildlife resources. The DFG acquires, leases, and manages suitable lands, which are approved by the Wildlife Conservation Board.

Currently, the Department administers over 866,000 acres in California, much of which has been designated by the Fish and Game Commission as Wildlife Areas or Ecological Reserves. Over 11,000 acres have been acquired in fee title specifically for the protection of endangered plant populations and their habitats. Examples of DFG reserves that protect rare plants include Table Bluff in Humboldt County, North Table Mountain in Butte County, Pine Hill and Salmon Falls in El Dorado County, Bonny Doon in Santa Cruz County, Stone Corral Ecological Reserve in Tulare County, the Carrizo Plain in San Luis Obispo and Kern counties, Baldwin Lake in San Bernardino County, and Sycuan Peak in San Diego County. Many Department lands acquired for other wildlife species also contain populations of rare plants or special natural communities. Funding for acquisitions comes from a variety of sources, including bond acts such as 1988's Proposition 70 and the recently passed Safe Neighborhood Parks, Clean Water, Clean Air and Coastal Protection Bond Act of 2000, NCCP funding for acquisitions, CVPIA funding, and grant programs such as the Environmental Enhancement and Mitigation (EEM) Program and Transportation Enhancement Activities (TEA).

Management and Monitoring

Once habitat is legally protected, management of the habitat is usually essential. Habitat management might entail removing invasive nonnative plants or herbivores from rare plant habitat, restoring drainage patterns to an area, rerouting trails, changing the timing of livestock grazing, conducting prescribed burns, or carrying out other actions that benefit native plant populations. Monitoring rare plant populations over time to assess the effects of management actions and to detect potential threats is a critical component of any management program. Efforts that promote collaboration and integrate land conservation actions with scientifically based stewardship and public outreach programs are often the most successful.

The Department is carrying out active management and monitoring programs throughout the State. Examples include a project to assess methods of controlling invading plants in western lily (*Lilium occidentale*) habitat in Humboldt County, implementing management prescriptions to restore vernal pool

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habitat for rare plants on Department lands on the Santa Rosa Plain in Sonoma County, and working with BLM and CNPS to monitor populations of rare plants at Algodones Dunes in Imperial County.

Research

For many species and habitats, scientific information needed for sound management is lacking. Throughout California, academic researchers at universities, museums, botanical gardens, and private foundations work with the Department under Memoranda of Understanding to answer questions which may be important to the conservation of listed plant populations. Research may focus on population genetics, reproductive strategies of plants, long? term population trends, habitat characterization, or other topics which may help guide conservation and management decisions.

Examples of research include analyzing the effects of grazing on Tehama County vernal pools; experimentally manipulating grassland habitat for Santa Cruz tarplant (*Holocarpha macradenia*) to control weedy grasses; restoring dune habitat for Menzies's wallflower (*Erysimum menziesii*), Howell's spineflower (*Chorizanthe howellii*), and western snowy plover (*Charadrius alexandrinus nivosus*); and characterizing habitat and initiating recovery actions for Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*).

Recovery

Although the DFG has not written formal recovery plans for listed plants, it participates with USFWS in the federal recovery planning process. In addition, DFG holds recovery workshops for listed plants involving academic researchers, local landowners and experts, government agencies, conservation groups, and others to identify actions that will be needed to bring a species to recovery. An example of an ongoing recovery program involves two plant species that occur on the central coast, marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Most of the freshwater wetland habitat for these species has been lost, and groundwater pumping, wetland filling, and encroachment of nonnative plants continue to pose threats. As a result of recovery planning involving DFG, USFWS, academic experts, landowners, CNPS, and others, previously unknown populations of these species have been located. In addition, researchers are investigating the life history, habitat characteristics, and genetics of these species. Future work will concentrate on finding suitable habitat in California to establish additional populations.

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Cooperative Conservation Planning

Cooperative conservation planning for species and habitats via a landscape level approach is viewed by many as the most biologically sound and effective approach. The goal of these planning efforts is to protect areas large enough to include the diversity of habitats and species and the ecological processes they need to survive. Because many rare plants have very narrow distributions, these conservation efforts must be carefully planned to include their habitat in the preserve areas.

Using sound science, landscape level conservation planning helps to recover endangered species and preclude more common species from declining to the point of endangerment. This collaborative approach also provides local agencies with a powerful tool for land use planning in the face of California's continuing population growth. Many cooperative conservation plans are undertaken in coordination with the federal government through Habitat Conservation Plans (HCPs) or under the state's Natural Community Conservation Planning (NCCP) Program (described above). These planning efforts bring together government agencies, conservation organizations, businesses, landowners, and local interests to protect both the species and their habitats.

DFG is involved in cooperative conservation planning efforts for plants throughout California, including the western Mojave Desert, western Riverside County, the Coachella Valley, San Diego, Orange, Kern, Placer, and Sacramento counties, and many others.

Individual Project Review

DFG regional biologists and botanists work with project proponents, local governments, and other agencies to see that land use changes from individual projects consider rare plant populations and their habitats and to design appropriate mitigation for unavoidable impacts. CEQA provides protection not only for state-listed species, but also for any species that can be shown to meet the criteria for state listing (CEQA Guidelines Section 15380). A development project that has a potential to reduce the number or restrict the range of an endangered, rare, or threatened species, or that threatens to eliminate a plant community, requires the lead agency to make a mandatory finding of significance and require that an EIR be prepared (CEQA Guidelines Section 15065). The DFG recognizes that Lists 1A, 1B, and 2 of the CNPS Inventory consist of plants that may qualify for listing, and the Department recommends they be addressed in CEQA projects. However, a plant need not be in

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this Inventory to be considered a rare, threatened, or endangered species under CEQA. In addition, the DFG recommends, and local governments may require, protection of plants which are regionally significant, such as locally rare species, disjunct populations of more common plants, or plants on the CNPS Lists 3 and 4.

To guide documentation of potential impacts to plants, the DFG has adopted Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Plant Communities, adapted from those prepared by CNPS (included in this volume). These guidelines are given out to all project proponents, lead agencies and the interested public when they request DFG participation or information.

Over the years we have learned that small, piecemeal mitigation efforts, which in the past typically involved the transplantation of endangered plant populations, have a low success rate. For full mitigation of project impacts, the Department now favors the protection of intact habitat and restoration of degraded habitat, rather than relying on transplantation of plant populations.

Listing

Under State law, plant species may be formally designated rare, threatened, or endangered by the California Fish and Game Commission, a five-member board appointed by the Governor to establish the policies by which the DFG operates. State listing is a way of formally recognizing the plight of a species and the need to protect its habitat. Once a species is officially listed, it may have a greater chance of benefiting from funding, and listed plants are generally given greater attention during the land use planning process by local governments, public agencies, and landowners than are plants that have not been listed. State? listed threatened and endangered species and designated candidates are protected from removal except by permit or agreement from the DFG.

The CESA establishes a process by which individuals, organizations, or the DFG can submit petitions to the Fish and Game Commission requesting that a species, subspecies, or variety of plant or animal be added to, deleted from, or changed in status on the State lists of rare, threatened, or endangered species. The factors that contribute to determining the need to list a species include the present or threatened modification or destruction of habitat, competition, predation, disease, overexploitation by collectors, or other natural occurrences or human?related activities. Currently California has designated 216 plant species as rare, threatened, or endangered, and

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additional species continue to be proposed for State listing. The list of rare, threatened, and endangered plants can be found on the DFG's web site at www.dfg.ca.gov. It should be noted that the process to list species often takes in excess of a year to complete. The Department encourages interested parties to engage in cooperative efforts to protect plants where possible during this time rather than waiting for a listing to take effect before taking necessary action.

Public Support

Fundamental to California's success in conserving native plants and their habitats is the support and involvement of its citizens and organizations such as the California Native Plant Society. Citizen involvement is key to the strength of the laws protecting native plants, the ability of government agencies to implement and enforce the laws, and most importantly, the participation essential to carry out needed conservation actions and find solutions to complex problems.

The DFG works to increase public awareness and support for native plant conservation in a variety of ways. Public outreach activities include developing interpretive materials at Wildlife Areas and Ecological Reserves, publishing the monthly magazine Outdoor California, coordinating Project Wild (a program to train public school teachers), and leading the Endangered Species Campaign to encourage contributions to the Endangered Species Tax Check-Off Fund.

In 1997, the DFG, in collaboration with CNPS and the California Academy of Sciences, produced California's Wild Gardens, A Living Legacy. This 236 page book, with more than 500 color photographs, showcases the diversity of California's native plants in their natural settings, and highlights some of the best and most floristically important sites in the state. More than 100 of California's botanists and ecologists from many different professional arenas contributed to this book. California's Wild Gardens views California as a series of ecological regions, each housing a specialized flora. Within these regions smaller localized areas, or "hot spots" are featured. This book is available through CNPS and at bookstores.

Sandra Morey is Coordinator of the Species Conservation and Recovery Program, California Department of Fish and Game, 1416 Ninth St., Sacramento, CA 95814. Diane Ikeda is Plant Ecologist in the Species Conservation and Recovery Program, California Department of Fish and Game, 1416 Ninth St., Sacramento, CA 95814

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Additional Information

Plants Listed or Candidates under State Law

Department of Fish and Game - web site

Wildlife and Habitat Data Analysis Branch

[CNPS Home] [Site Contents] [Search CNPS] [Discussion Boards]

Dedicated to the preservation of California native flora

California Native Plant Society
1722 J Street, Suite 17 • Sacramento, CA 95814
(916) 447-2677 • fax (916) 447-2727 • cnps@cnps.org

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Canyon) for the dune beetle, and Coal Oil Point for the tiger beetle.[14] The tidewater goby (Eucyclogobius newberryi) is a small fish that occurs in coastal fresh to brackish water estuaries and coastal lagoons. These habitat types do not occur on the project site. Nearby records for this species include Dos Pueblos Canyon, Bell Canyon, and Devereux Slough.[15]

The five candidate bird species include ferruginous hawk, western snowy plover, long-billed curlew, elegant tern, and tricolored blackbird. None of these birds are expected to occur on the project site due to lack of suitable habitat, although all could occur on migration as casual visitors to the area.

5.5.3 Protected, Special Interest, and Sensitive Species and Habitats

a. Legislative Setting

In addition to the official listing of a species by the U.S. Fish and Wildlife Service (FWS) or the California Department of Fish and Game (CDFG) as rare, threatened or endangered, several other classification systems are used to indicate the relative sensitivity of a plant or animal. A brief description of some of these is provided below.

Environmentally Sensitive Habitats. Under the California Coastal Act and Santa Barbara County's adopted Local Coastal Plan (LCP), areas are defined as environmentally sensitive habitats (ESHs) include "... any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments."[16] The ESHs that occur in the vicinity of the project site include: rare and endangered species habitat; wetlands; streams; native plant communities; and harbor seal hauling out grounds.[17] Additional significant habitat resources that are specifically listed in the LCP include native plants, native grasslands, vernal pool, black-shouldered (white-tailed) kite habitat, and monarch butterfly roosts.

Protected. This federal classification indicates a special level of protection for certain species that are not otherwise listed. Some of the species included in this broad classification are all marine mammals and migratory birds (including all raptors). Protected status indicates control over the incidental or intentional "taking" of protected

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14 California Department of Fish and Game (April, 1991), Natural Diversity Data Base Report for the Dos Pueblos Quadrangle. Non-game Heritage Division.

15 Ibid.

16 California Coastal Act, Section 30107.5

17 Section 3.9.2., Santa Barbara County Coastal Plan, 1982.

EXHIBIT NO. 37
APPLICATION NO.
A-4-STB-93-154-CC-R2
excerpt from
Applicant's Submittal
to CUP-1991

* 2 pages from Section IX "Biological Resources Analysis" Dos Pueblos Golf Links Project" prepared by Interface Planning & Counseling Corp., June 28, 1991 (Revised Oct. 15, 1991) - Submitted in support of Arco's application to Santa Barbara County, October 29, 1991.

one page only
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Pacific Southwest Biological Services, Inc.

Post Office Box 985, National City, California 91951-0985 • (619) 477-5333 • FAX (619) 477-5380

Mr. R. Whitt Hollis, Jr.
Makar Properties, LLC
P. O. Box 2521
Santa Barbara, CA 93120-2521

23 April 2002

PSBS #U60

Dear Mr. Hollis:

Re: Dos Pueblos Golf Links White-tailed Kite Nesting Survey

Pacific Southwest Biological Services, Inc., (Pacific Southwest) conducted a White-tailed Kite (*Elanus leucurus*) (Kite) nesting survey on the proposed Dos Pueblos Golf Links site in an unincorporated area of Santa Barbara County west of the town of Goleta (Figure 1). The Kite is regarded by the U. S. Fish and Wildlife Service (Service) as a Migratory Nongame Bird of Management Concern. Such species are considered to be of concern in the United States because of (1) documented or apparent population declines, (2) small or restricted populations, or (3) dependence on restricted or vulnerable habitats. It is regarded by the California Department of Fish and Game (CDFG) as a Fully Protected species. Such species may not be taken or possessed without a permit from the Fish and Game Commission and/or CDFG. Suitable nesting habitat for the Kite is present on the site.

METHODS

Prior to conducting the field survey, a report of a recent raptor survey of the site was reviewed (Dudek & Associates, Inc. 2001. Raptor Survey for Dos Pueblos Golf Links. November 26, 2001. 8 pp. w/attach.). The field survey was performed by biologist Cornelius W. Bouscaren as follows:

Date	Time	Conditions
10 April	1410-1705	Temperature 72-66°F, 60% high clouds, winds south, 3 mph becoming east 3 mph
11 April	0630-1410	Temperature 46-75°F, skies initially clear with fog arriving 0730, generally persisting to light haze, winds calm becoming south, 3 mph

Methods consisted of driving and walking slowly over the site while watching and listening for wildlife, and searching for raptor nests. Binoculars (8.5x44) were used to assist in the detection and identification of wildlife. When the Kite was detected, efforts were made to keep the species in sight and record its activity.

RESULTS

Two adult Kites were observed on the site. Since male and female appear identical in the field, it was not possible to determine if this was a male/female pair. No Kite nest was observed. No nesting activity such as transporting of nesting material was observed. No attempts at copulation were observed. No pair-formation activity, such as a "wings-up" display, transfer of prey during flight, or high-soaring, was observed. Each Kite apparently greatly favored its own perch, both of which are south of the rail tracks. One preferred a Monterey Cypress east of Drainage 4, while the other preferred a Eucalyptus 800 feet to the west (Figure 2). The favored position was at or near the top of the tree. Occasionally, one or the other Kite would move to a tree closer to the coastline, but invariably return to its habitual perch. On only three occasions, the birds were observed perched within 10 feet of each other. This was only at the top of the tree preferred by the easterly bird, for a duration of less than three minutes on each occasion. Each bird was occasionally observed foraging, apparently independently rather than together, although the great majority of the time was spent at the respective perches.

On four occasions, the easterly Kite was observed chasing intruders from the immediate area of its perch. The intruders were a Red-tailed Hawk (*Buteo jamaicensis*), a Turkey Vulture (*Cathartes aura*), a single American Crow (*Corvus brachyrhynchos*), and two American Crows. The observation regarding the Turkey Vulture is at variance with the statement in a highly regarded reference that "...authors agree that they do not molest the Turkey Vulture..." (Palmer, R. S., ed. 1988. Handbook of North American Birds. Volume 4: Family Cathartidae, New World Condors and Vultures; Family Accipitridae (first part), Osprey, Kites, Bald Eagle and allies, Accipiters, Harrier, Buteo allies. Yale University Press, New Haven, Connecticut. 433 pp.). Such activity by the easterly bird only is not sufficient to draw a firm conclusion that the birds constitute a pair.

DISCUSSION

Based on the observations during the two-day visit to the site, there is no way of absolutely determining if the two Kites observed were a mated pair, siblings, or unrelated birds. If the two birds observed constitute a pair, their lack of obvious pair-bonding behavior or nesting activity may be due to the very sparse seasonal rainfall locally and the possible resulting paucity of the local population of its primary food source, the California Vole (*Microtus californicus*), and other small rodents.

Based on the field inspection of suitable nesting areas on the site and observation of the Kites using the site over parts of two days, the Kites were clearly not nesting anywhere at the time of the field visits. In southern California, the Kite can lay eggs into June (Gallagher, S. R. 1997.Atlas of Breeding Birds, Orange County, California. Sea and Sage Audubon Press, Irvine, California. 264 pp.). Historic egg collection data (M. Evans, pers comm.) from southern California show that Kite full egg clutches have been collected between 8 March and 30 May. Egg collectors generally tried to collect eggs as soon after a full clutch was produced, in order to have the most highly cherished eggs. Since eggs are typically laid on successive or alternate

days, egg laying would begin earlier in March but probably not extend much further than the end of May. Typically, pair-forming behavior in raptorial birds begins some time prior to egg laying. Additionally, nests have to be built from scratch or refurbished from earlier seasons. Thus, this survey was performed at the generally appropriate time of the year to observe nesting behavior in Kites. To absolutely verify nesting or non-nesting of Kites on the site may require a second survey of the site sometime in mid-May.

Should you have any questions, regarding this report, do not hesitate to contact us at 619-477-5333.

Sincerely,

R. Mitchel Beauchamp, M. Sc.
President

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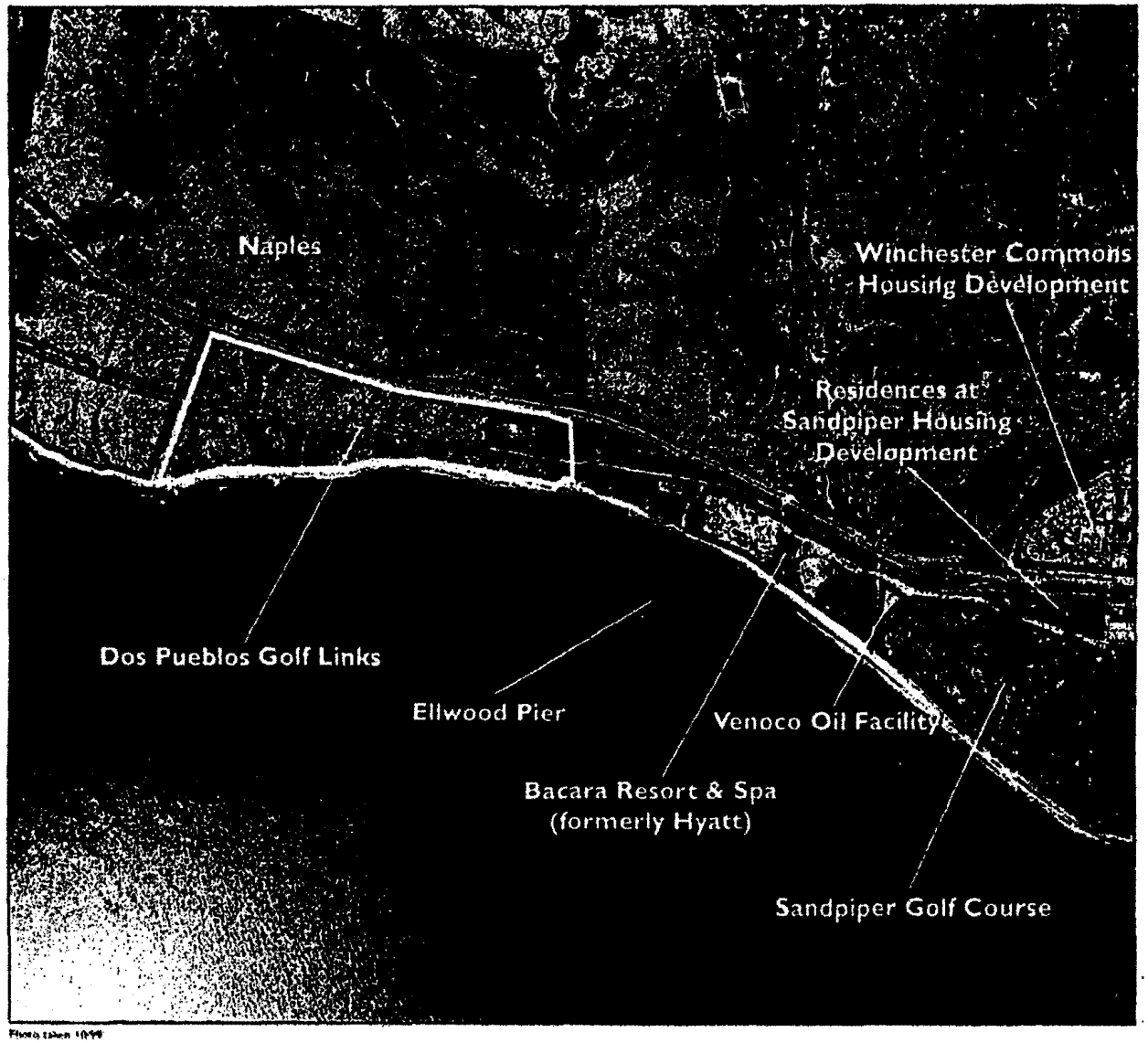
Aerial Site Vicinity Photo

Figure 1.



The Dos Pueblos Golf Links is situated between the coastline and Highway 101 just west of the Bacara Resort & Spa (formerly Hyatt) now under construction. The site is bisected by the Union-Pacific railroad tracks.

Map Source: Makar Properties, LLC

PSBS #U060

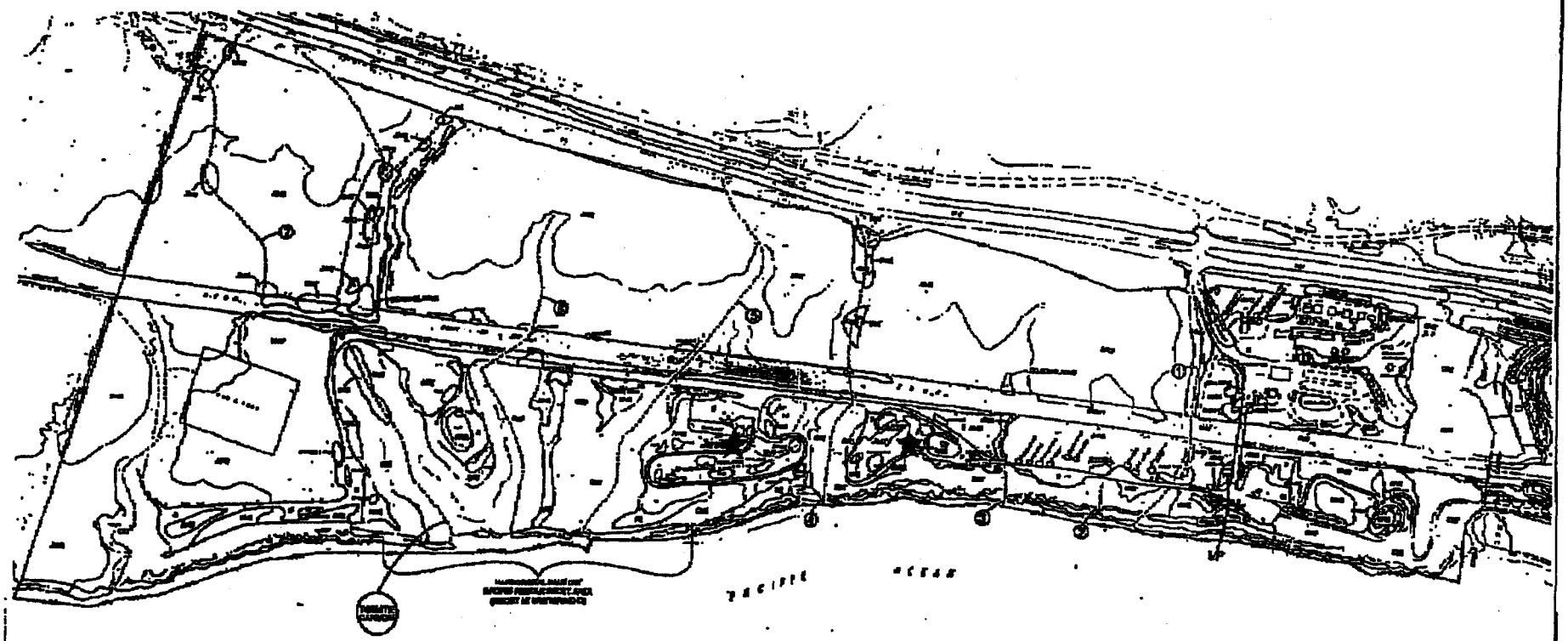


Figure 2. White-tailed Kite Primary Perches - ★

SOURCE: Aera Oil and Gas Company
Cases & Cavaliere, Incorporated
Hallgren Planning Design
Interface Planning and Counseling Cooperative
Lee & Solomon Associates, AIA
R.E.P. Consulting
Lang Hodgson Design Group
PSO Technologies

LEGEND

CSS	COASTAL SAGE SCRUB	BM	BRACKISH MARSH
D	DEVELOPED	VP	VERNAL POOL
NNG	NON-NATIVE GRASSLAND	------	DRAINAGE USED AS MOVEMENT CORRIDOR BY WILDLIFE (① - ②)
SWS	SOUTHERN WILLOW SCRUB		

NORTH
0 480
FEET

PROJECT SITE VEGETATION

Map Source: FEIR for Golf Links Cup (92-ER-16 March, 1993

Pacific Southwest Biological Services, Inc.

SX 98 of 136

Rec 5/3/02
Rec'd

DUDEK
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May 2, 2002

1767-08

EXHIBIT NO. 39
APPLICATION NO.
A-4-STB-93-154-CC-A2
Dudek (consultant) work under takes not noticing on site

Mr. R. Whitt Hollis, Jr.
Makar Properties, LLC
P.O. Box 2521
Santa Barbara
California 93120

Re: White-tailed Kite Surveys, Dos Pueblos Golf Links, Santa Barbara County

Dear Mr. Hollis:

This letter is prepared to address two issues: the review of a letter report prepared by Pacific Southwest Biological Services, Inc. (PSBS; April 16, 2002) which provided the results of a breeding season survey conducted for white-tailed kites (*Elanus leucurus*) on the proposed Dos Pueblos Golf Links site and perceived discrepancies between my field notes taken during raptor surveys performed on the same site (September 20 & 21, 2001) and the contents of a letter report which provided the results of these surveys (November 26, 2001).

I reviewed the information contained in the PSBS letter report and find that it is generally consistent with my observations from September 2001. During my surveys, white-tailed kites were observed as two groups of two adult birds each. One group was observed east of Drainage 4, south of the railroad. The other group was observed along Tomate Canyon, north of the railroad. Both groups were observed perching in a variety of trees (Monterey cypress, pines, willows, *Eucalyptus*) in the western half of the site. The two groups that I observed ranged widely over the western half of the property, with each group spending most of its time on its respective side of the railroad tracks. A single kite was observed "kiting" over the southbound lanes of Highway 101 in the early afternoon of September 21; it is unknown if this bird was part of the previously observed groups.

I conducted my surveys outside of the breeding season; therefore, it was not possible to determine if the two groups of birds constituted pairs or if nesting was occurring onsite. In September 2001, to err on the conservative side, I made note of the potential for raptor nest sites where I observed loose accumulations of leaves, sticks, and debris overhead in the tree canopy. No specific raptor perching activities were observed at these locations. Neil Bouscaren's (PSBS) surveys were conducted in the middle of the egg-laying season. One of the two white-tailed kites observed by Mr. Bouscaren was perching in a Monterey cypress

east of Drainage 4; the other kite was seen perching in a *Eucalyptus* approximately 800 feet to the east of this area. While the two individual birds were seen in close proximity to each other on several occasions, no overt pair-bonding behavior was observed. No white-tailed kite nests were detected by Mr. Bouscaren at these locations or elsewhere onsite during his surveys in April 2002. Given the results of his survey, it appears that white-tailed kites are not nesting within development areas on the proposed golf course site and the sites mapped as potential raptor nest sites are not nest sites.

Regarding the perceived discrepancies between the use of the words "roosting" and "perching" in my field notes and the letter report, I considered both to be synonymous in their usage. Roosting, the way it was recorded in my field notes, served merely to indicate that the birds were resting in particular trees and using them as platforms from which to survey forage areas. The type of roosting regulated by the County of Santa Barbara in their Coastal Plan (January 1982 as updated most recently June 1995) I understood to mean those groups of trees or areas used by communal groups of kites during the non-breeding season rather than an area where one or two birds "hang out." Beneath most of these trees where the kites were observed, I did not observe the amount of whitewash, scat, or pellets that is typically indicative of a communal roost or nest site. And although not reflective of a deliberate change, the use of the word "perching" in my letter report represents a more accurate description of kite behavior observed during my field surveys in light of this distinction.

If you still require clarification on any of these issues, please do not hesitate to contact me at DUDEK's Encinitas office at (760) 942-5147.

Very Truly Yours,

DUDEK AND ASSOCIATES, INC.

Julie Vanderwier

Julie M. Vanderwier

cc: Sherri Miller, DUDEK

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STORRER
ENVIRONMENTAL
SERVICES

2565 Puesta Del Sol Road #3
Santa Barbara, CA 93105
(805) 682-2065
Fax (805) 569-9394

Kristen Getler
Santa Barbara County
Planning & Development Department
Energy Division
30 E. Figueroa Street, 2nd Floor
Santa Barbara, CA 93101

May 2, 2002

Re: Review of White-tailed Kite Survey Reports – Dos Pueblos Golf Links Project

Dear Kristen:

As you requested, I have reviewed two letter reports describing the results of surveys for white-tailed kite (*Elanus leucurus*) on the Dos Pueblos Golf Links property. Please consider the following comments on those documents. I have provided information concerning the regional status of white-tailed kites and their activity on the subject property, based on my field experience over the last five years. Also at your request, I have interjected some comments regarding other raptor species at the project site.

The two survey reports are:

Dudek & Associates. 2001. "Raptor Survey for Dos Pueblos Golf Links". Letter correspondence from J. Vanderwier to R. Hollis (Makar Properties, Inc.) dated November 26, 2001.

Pacific Southwest Biological Services, Inc. 2002. "Dos Pueblos Gold Links White-tailed Kite Nesting Survey". Letter correspondence from M. Beauchamp to R. Hollis (Makar Properties, Inc.) dated April 23, 2002.

Based on my familiarity with the property, I would agree that the physical characteristics of the site have not changed appreciably since the EIR was prepared. But the conclusions regarding the lack of any change in raptor use of the site (which are inferred, but not explicitly stated) are speculative, due to lack of information on baseline conditions.

Comments on the April 2002 Report

Methodology and timing are appropriate for detecting white-tailed kite nesting activity. But the results of a two-day survey are not conclusive as to breeding status, as noted in the report. Nesting may occur from March through June and is often preceded by prolonged periods of pair bonding and courtship. In view of the field observations, it appears that the two kites observed had not yet begun nest construction. They may, or may not, constitute a breeding pair, as the report notes. But the presence of two birds during the early spring certainly suggests that potential. Further surveys would be necessary to determine breeding status, as recommended in the report.

Summary of My Observations of White-tailed Kites on the Dos Pueblos Property

Attached is a summary of my white-tailed kite observations on or near the subject property. The information was gleaned from my field notes. The temporal inconsistency is a reflection of the irregularity with which I've visited the site. As you know, my familiarity with the site stems from my involvement with the oil and gas lease abandonment work, the majority of which occurred in 1997 and 1998. I have never conducted a formal survey of the property, but have recorded observations of bird species opportunistically when onsite for purposes of compliance monitoring. Because I have a particular interest in white-tailed kites, I also recorded observations made when passing the property on Highway 101.

It is clear that white-tailed kites have used the site for hunting for the last several years. In the early 1990's, the Goleta Valley kite population was at a historic low, a situation attributed to a prolonged period of low rainfall and (presumably) declining prey base. I have no data prior to 1996.

In March of 2000, I observed what I presumed to be two pairs of white-tailed kites on the site (see attached). One pair was engaged in nest building behavior. I did not confirm that nesting or successful breeding occurred. The approximate location of the tree where that activity occurred is shown on the attached map. I have placed the information on the figure included with the April 2002 white-tailed kite survey report prepared by Pacific Southwest Biological Services. My observation was made in the same vicinity as the "primary perches" mapped by the author of the Pacific Southwest report (see attached). This is not conclusive evidence as to long-term use however, because of the transient nature of perch sites, lack of confirmed evidence of nesting, and two-year interval between the observations. I know of no other documentation that white-tailed kites have nested on the Dos Pueblos Golf Links property.

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HAD

Other sources of information that should be consulted include "The Birds of Santa Barbara County, California, by P. Lehman (1994), a Ph.D. dissertation by L. Waian at UCSB entitled "The Behavioral Biology of the North American White-tailed Kite of the Santa Barbara Coastal Plain" (1973), and a Masters' thesis by C. Stendell at UCSB entitled "Food and Feeding Behavior of the White-tailed Kite near Santa Barbara, California" (1967). In addition, Mark Holmgren and Morgan Ball of the UCSB Museum of Systematics and Ecology are both very knowledgeable about the status of our local white-tailed kite population.

I hope that this information is useful in your current review of the project. Please contact me if you have any questions concerning my observations, comments, or recommendations.

Yours truly,

John Storrer
Biologist

attachment: summary of white-tailed kite observations at the DP Golf Links property
map showing location of kite nest building activity in March of 2000

cc: Michelle Pasini, SBCo P&D Energy Division

Ex. 40/53
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Source of Map: Pacific Southwest Biological Services, Inc. 2002. "Dos Pueblos Golf Links White-tailed Kite Nesting Survey". Letter correspondence to R. Hillis (Makar Properties). 23 Apr 2002.

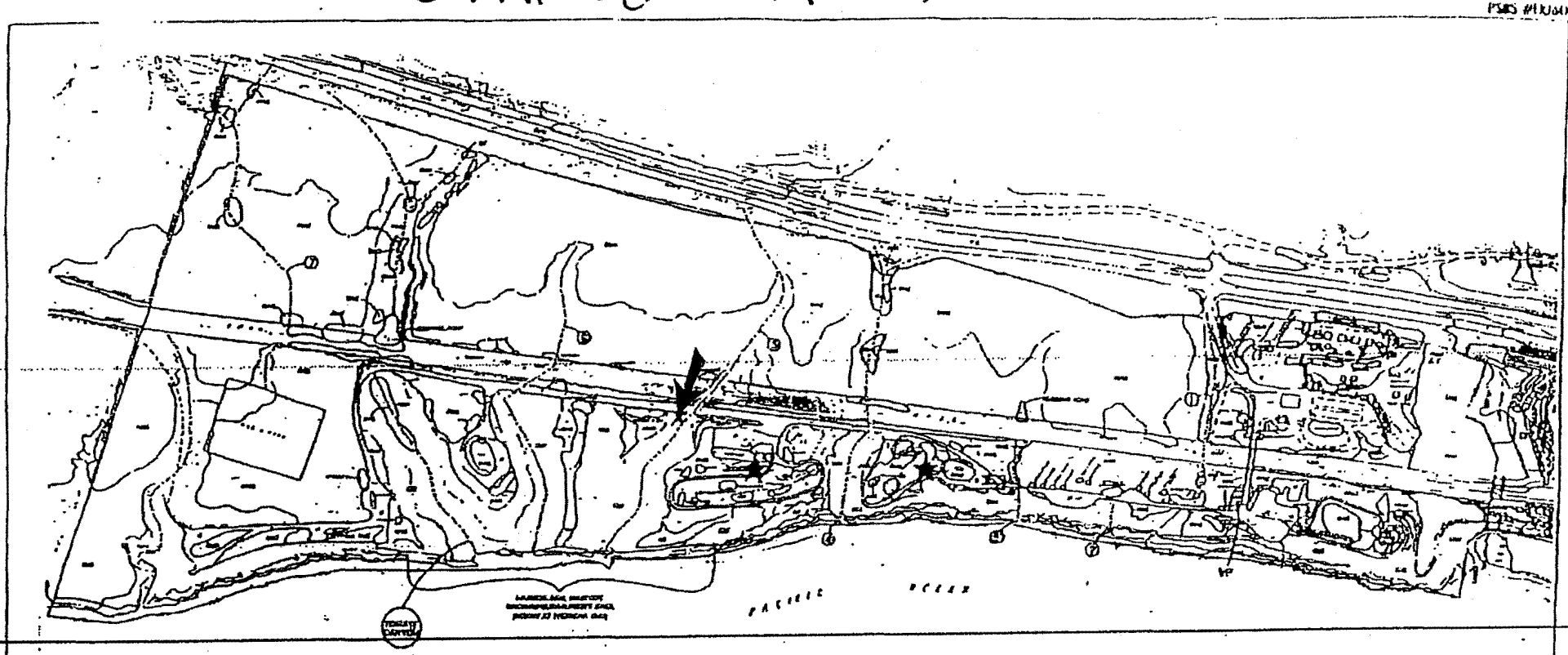

Figure 2. White-tailed Kite Primary Perches - ★

PROJECT SITE VEGETATION

Map Source: PEIR for Goleta Vista Cluster #92-EIR-16 March 1993

Pacific Southwest Biological Services, Inc.

★ Arrow indicates location of white-tailed kite nest building activity observed by J. Storrer on 10 Mar 2000.

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DATE: **6 June 2002**

TO: **Dr. John Dixon,**
California Coastal Commission, SF

Melanie Hale
California Coastal Comm., Ventura

FAX NO. 415-904-5400

805 641-1732

FROM: Mark A. Holmgren and Morgan Ball

REGARDING: ARCO Dos Pueblos Birds-of Prey Packet of Info

Number of Pages (Including Transmittal Page):

List of transmittal Items	Pp	Sent by
Responses to Questions	**11**	**E**
Distances between Kite Nests . . .	**2**	**Fax**
Brood Overlap in Goleta Valley Kites in 1998	**1**	**Fax**
Annotated Map of Birds-of-Prey observations on ADP	**3**	**Fax**
Field Notes		
10 May with map (maps go to Ventura only)	**3 + 1**	**E, snail map**
14 May with map "	**4 + 1**	**E, Fax p. 4, snail map**
16 May with map "	**4 + 1**	**E, snail map**
23 May	**1**	**E**
27 May	**1**	**Fax**
Communications		
Memo: Holmgren to Storrer re DP Kites 28 May 02.doc	**1**	**E**

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6 June 2002

Dear Dr. Dixon:

We respond to your request with the letter that follows and additional materials as detailed in a fax to follow. We hope that in spite of the haste in preparing our responses you find them useful. Please call upon us for any clarifications or questions.

Yours sincerely,

Mark A. Holmgren

Morgan L. Ball

John Dixon: To address these issues, I would very much appreciate a letter signed by one or both of you addressing the following questions (and any others you think germane).

Background

Here we submit sufficient information on White-tailed Kite biology and landscape use necessary to make our responses to your questions more clear.

Terminology

We include some definitions of terms that may not correspond to literature or CCC definitions; they are offered only to put us on common ground. Throughout this discussion "ADP" refers to the ARCO-Dos Pueblos project area.

Buffer	Area standing between a sensitive resource and a potentially deleterious action or activity. [Hopefully, buffer is different from 'setback', which is a term suggesting 'deliberate avoidance']
Communal nocturnal roost	A term specific to White-tailed Kites in this communication referring to the habit of non-breeding

	individuals (and sometimes males of a pair early in their breeding period) gathering in single trees or a cluster of trees around dusk and departing around dawn.
Corridor	A habitat linkage in an otherwise fragmented landscape between two or more open spaces in which animals may move relatively freely.
Dispersal	The forced exclusion of animals, plants, or genes from one area followed by colonization of another. Typically, young kites are evicted from their natal territory by parents in response to their need to feed a second brood (see Brood Overlap in Goleta Valley Kites in 1998) or, presumably, as food for the adults is in short supply.
Migration	The movement of individuals, and commonly whole populations, from one region to another. Although wildly mobile, kites are probably not migratory. Along the South Coast the movement of kites as a whole from the region might be termed an 'evacuation'. One such move occurred during a drought when no kites resided in the Goleta Valley between 1989 and 1991. Similarly, individual kites may abandon a foraging or nesting area due to depletion of the prey resources or in response to disturbance. These areas typically are reoccupied if and when resources rebound or disturbance subsides. Stendell (1972) calls kites 'nomadic'.
Off-site/ on-site	Off / On ADP property.
Persistent use sites	Sites used year after year even though short-term evacuation may occur for one reason or another. We speak of *persistent winter foraging sites,* which are used generally only in the non-breeding season. *Persistent nesting areas* are the most stable nest areas used in all, or nearly all, years. ADP is one of these sites.
Setback	A protective action that moves or removes a particular activity from a sensitive resource. A buffer might be created by a setback.
Sink vs. source population	*Sinks* are populations whose reproductive output is less than needed to sustain pop numbers. *Sources* are populations that produce more new individuals than are needed to sustain that pop alone. Presumably, source populations, by infusing sinks with new immigrants, lend the appearance of self-sustainability to those sink populations.
Territory	The establishment by an animal of an area from which other individuals are partially or totally excluded. Territory borders are defined as points where kites defend their foraging areas from conspecifics, even though defense is often mild and sometimes lacking. Where nests of different pairs are quite close to one another, as at ADP this year, their territorial defense occurs at the mid-point between the nests.

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White-tailed Kite Populations in the Goleta Valley

The Goleta Valley population of White-tailed Kite has been the focus of research since the mid-1960s. More insight to nesting site choice, roost sites and their corridors, and population dynamics has been acquired here than any other population we are aware of throughout the species' range. The numerous studies, including dissertations, student projects, and management presentations have provided important information with respect to the landscape ecology and behavioral ecology of the species.

In the 1980s, Holmgren assembled the early research data and initiated an informal monitoring effort intended to track communal nocturnal roost sites and persistent use areas. In late 1997, Holmgren began a comprehensive, 18-month monitoring of nest and roost locations using community volunteers. This effort detected a shift in the pattern of site use and occupancy towards the foothills and away from the traditional roost sites and kite transit corridors along the 14 km long More Ranch Fault (from Modoc Wetlands to Sandpiper Golf Course) in the Goleta Slough Watershed. This proved to be a short-term effect, but the destabilization of the traditional roost sites and transit corridors to those roosts persists today.

In 1999, Morgan Ball shifted the focus of the study to fewer sites but more intensive examination of White-tailed Kite behavior. In particular, he has examined the relative success of kites in obtaining prey in different landscape and habitat configurations. Additionally, Morgan is part of a statewide research effort funded by the US Geological Survey to look at regional variation in stable isotope signatures in kites and their prey. The purpose of this study is to determine how the recolonization of kites occurred in California following the bottleneck in the early part of the 20th Century. His principle study areas are in Goleta, Davis, and Humboldt.

This continuous effort with the Goleta population has created a long-term record that provides kite managers throughout their range with the best source of information regarding the resiliency of a kite population to both human induced and natural environmental change. The ARCO Dos Pueblos (ADP) site is 1.6 km west of the More Ranch Fault study area.

Status of the South Coast Santa Barbara Co. Kites

This estimate covers the area from western Ellwood Mesa to Hope Ranch, from coast to lower foothills. There has been no steady coverage in the upper foothills zone (where primarily communal nocturnal roosting is expected to occur) in the entire study period since the 1960s.

This year our coverage of the More Ranch Fault kite breeding territories and communal nocturnal roost sites has been incomplete. We estimate seven occupied territories south of highway 101 and perhaps six or seven territories north of highway 101. A very rough population estimate of 30-35 individuals acknowledges one or two pairs of birds that have been unable to establish a nesting territory. (Museum of Systematics and Ecology Field Notes)

The Value of the ADP Site

This is not fully understood. Because two pairs currently use the site, and we suspect that as many as three pairs of kites could establish territories on ADP, it is perhaps the most important site between Goleta and Gaviota. It may be as important as Ellwood Mesa and More Mesa as measured by the number of breeding pairs. We know nothing about it's

use by kites in transit to and from communal nocturnal roost sites, as a communal nocturnal roost itself, or as a winter foraging area. We do not know if there is significant communication between ADP and the More Ranch Fault populations (i.e., if birds foraging at ADP roost with the birds in the Goleta Valley).

Biology

Generally, more White-tailed Kites are present along the South Coast in winter than in summer. In some years this effect is most exaggerated. For example, in the fall and winter of 1975, approximately 110 kites roosted overnight at More Mesa (Lehman 1994, although in his account he mistaken cites this as occurring in 1978). Many fewer individuals nested in Goleta the following spring.

We recognize different types of use by kites within the study area. These include:

Persistent use areas. Waian (1973) termed these *habitual use areas* as defined by two years of use. We define these as areas used for five or more years and often used year-round. Examples include More Mesa, Ellwood Mesa, and upper Cieneguitas Creek.

Persistent nest sites. Territories used nearly every year within which nesting occurs. Approx. eight of these occur south of highway 101; eight occur north of highway 101. Examples include territories within More Mesa, Ellwood Mesa, and Goleta Slough.

Occasional nest sites. Sites at which kites attempt to nest only once or occasionally (e.g., Harder Stadium at UCSB, west of Via Chaparral near highway 154)

Adolescent training areas. Year after year, some areas serve as post-fledging training grounds where more than one family group joins and together practice their hunting (and social?) skills. The dunes near Coal Oil Point is one such area. The parcel on the south side of Ocean Meadows Golf Course and western Goleta Slough are others79.

Winter use areas. Foraging areas that seem to be used most frequently after breeding is completed, such as Storke Campus Wetlands east of Francisco Torres Towers and western Goleta Slough.

Transit Corridors. Areas generally along the More Ranch Fault that support wetlands and connected open spaces are used by kites for foraging as they move to and from their communal nocturnal roost sites.

Communal nocturnal roost sites. See definition above. Disruptions of the transit corridor between 1998 and 1999 along the fault line coincide with the loss of the communal roosting habit in this population, which continued through 2001.

Changes in Kites. Since 1998, there have been several landscape changes in areas used by kites. First, no new use areas have emerged in the Goleta Valley, although it is possible that birds are moving towards the foothills as these areas are opened up by habitat conversion. Second, the communal nocturnal roost habit has been replaced by several fragmented roosts involving fewer individuals per roost. Beginning in late fall 1998, roosting occurs among fragments of the local kite population (typically 3 to 6 individuals) rather than among the entire population at the traditional sites in the lemon orchard between Ward Drive and Patterson Avenue near Ekwill Drive and on More Mesa. We did not made adequate observations in early 2002 to determine the roosting pattern this year. This has made study of the population in the non-breeding season more difficult. Third, several foraging areas associated with persistent nest sites have been lost to development. Examples include the upper San Antonio Creek nest area (we have not

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checked on the current kite use of this site) and the Los Carneros Wetland, which resulted in extirpation at this site. Fourth, the transit corridor from the Ocean Meadows area to the Storke Campus Wetlands is greatly narrowed by development. Finally, at least six proposed projects may further reduce foraging or nesting sites in the Goleta Valley.

Kites are highly responsive to changes in prey abundance (Dunk 1995). This is typical of species with narrow food preferences. For this reason, population changes in this species cannot be evaluated with short-term data. Studies of five or more years are necessary to begin to evaluate patterns of change and the mechanisms by which change occurs.

Kite Territories. The scientific literature is divided on whether kites exhibit "true" site territoriality. One study of color marked bird in northern California found kites that defended a territory on a year-round basis (Dunk and Cooper 1994). We see this in the Goleta Valley population. Others contend that kites lack territoriality because they show close-nest distances (Pickwell 1930, Hawbecker 1942, Dixon et al. 1957, Stendell 1972). We see this also in Goleta. One study noted that kites often defend a discrete area surrounding a nest while freely foraging in close proximity to others kites without dispute (Stendell 1972). Kite territoriality is believed to be determined by the abundance of prey and competitors (Dunk and Cooper 1994).

Two things are important to understand about White-tailed Kite territories. First, not all foraging activity is conducted within a territory. Commonly, birds go beyond a territory border to search for food. Territories become increasingly more important as the food needs of the nestlings increase. Second, territories increase in size as food needs increase. Kite territory size was estimated in two of studies in southern California. See discussion of territory size in response to Q#4 below.

Applicable Management Practices

Here are some thoughts on how management might proceed if a preservation area is prescribed for ADP.

1. Complete the determination of the value of ADP with respect to the reproduction capabilities of the site, its use for other kite functions listed under Biology, and its relationship to the Goleta Valley population. This involves extending observation through the year.
2. Assess landscape level habitat connections north, east, and west of ADP before designing a preservation area.
3. Avoid the loss of long-term nest sites and their associated foraging areas. ADP is probably such a long-term nesting area for more than one pair
4. Limit adult mortality.
5. Manage for bottlenecks in the support system. In other words, plan to provide for the pairs on ADP with respect to the lean times that a population might endure over the period of a decade. Those tend to be drought, prey population crashes, loss of habitats, population disease, or severe predation. Planning for short-term success criteria alone may lead to failure in the end.
6. Thus, manage for successful reproduction, not short-term occupancy. In other words, all the support element should remain on the site if the site is to be converted at one level or another.
7. Use land easements with funding for management to ensure that designed conditions are sustained and functioning properly.
8. Maintain transit corridors to roost sites, if those occur on ADP.

The Role of Restoration

We suggest that ecological restoration may serve as a tool in protecting kites on ADP. We have many additional thoughts on this matter, but these are beyond the scope of this letter. It should be clear that we do not suggest importation of off-site plant materials or creation of habitat types not currently present at the site. Everything that is needed to make the system work for birds of prey is present. Changes to the vegetation palette could do more damage than benefit by, for example, introducing genotypes not indigenous to the watershed or the local area. Changes to the configuration of existing habitats may be, however, a useful tool.

Response to Questions

1. Will the construction of a golf course be bad for them or will they continue to use the area successfully for nesting and fledging young. It may well be asserted that the open space of a golf course is useable habitat and that the level of activity would not be disturbing.

A change from fallow, weedy, post grazing agriculture to golf course will not necessarily result in the extirpation of kites from a site. On the detrimental side of the equation, fairways, roughs, greens, asphalt trials, clubhouses, maintenance facilities, subsequent land conversions that golf courses may encourage may be seen as direct displacements of the system that supports kites as well as other birds of prey and bird populations. On the other side of the equation, the hydration of large surface areas, including the presence of standing bodies of water adds an element which, if combined with other design factors and in conjunction with surrounding land uses, could provide for persistent or even stabilized use of a site by kites. The critical factors in determining long-term compatibility rest with the cofactors in the equation – the design of the conversion and the preservation land, the implementation the design features, and the maintenance practices following implementation. In short, a concerted effort to incorporate nesting opportunities, small mammal refugia, foraging areas, and connections to other such areas could result in the continued use by kites of a site converted largely to a golf course. Overlooking any one of these factors will reduce the likelihood that kites will use such a site.

Use of other Goleta Valley golf courses by White-tailed Kites

Course	Do kites use it?	Kites Use of Surrounding Habitats
Ocean Meadows	Minimally; use limited to transit enroute to other foraging areas	High. Surrounding areas are open spaces with superb access to prey, and that seem to provide breeding areas and refuges from predators.
Dos Pueblos	Not known	Not known.
Sandpiper	Nearly absent on W end, some perching use adjacent to E end near Ellwood Mesa,	High year-round use on E side (Santa Barbara Shores); provides superb access to prey, marginal breeding opportunities Moderate winter foraging use on W side (restoration site betw. Bell Cyn estuary and Baccara)
Twin Pines	Minimally	Minimal
Sta Barbara Municipal	Minimally	Minimal

This comparison tells us that kite use occurs, but at a very low level on local golf courses. When it occurs it seems to be a function of surrounding land uses that support the needs of kites as opposed to any attributes of the golf course. However, the role of persistent wet lands created by golf courses may assist in support of those off-site habitats.

2. If habitat conversion and golfing activities could have negative effects, what level of protection would be adequate.

A simple answer is, a reserve is needed. The components of the reserve need to be nest trees, sufficient small mammal habitat for these animals to serve all aspects of their life cycle, and connections to natural open spaces off-site that buffer both small mammal and kite population from catastrophic events.

a) How large a buffer is necessary to avoid interference with nesting and how large an adjacent or nearby foraging area is necessary for the site to continue to be used by these birds.

It might be useful to examine each element of habitat needed and talk about buffers around each.

Nest trees. Height and foliage type are critical in defining a suitable buffer. Whereas most Eucalyptus trees do not provide good foliage cover, oaks, pines, and cypress generally do. Among these types of trees, kites choose those that offer good foliage protection for the nest so that nests are seldom visible from the ground. Generally, the taller the tree is the more likely are nesting kites to ignore human activities below. ADP provides great nest tree species and tall specimens of both pines and cypress. This should not translate to protecting only tall trees for two reasons: a range of options in a variable environment seem to be important to kites and a healthy population structure (individual trees of all ages represented) assures the persistence of nesting trees in the future.

Small mammal habitat. See the response to Q 7 below. And seek the advice of a small mammal biologist.

Connections to natural open spaces off-site. See response to Qs 1 and 2.

b) Or, if the nests are adequately protected, will they be able to forage offsite and still raise young?

Protection of nest sites without immediately available foraging habitat will probably not ensure continued nesting. The buffer around nest sites should serve also as foraging habitat, the more the better. But this idea of providing two options (one near, one far) is a good one as long as the off-site foraging areas are not high risk. In other words, do kites have to cross a highway, are they tempted to forage in a median strip, is the distance so great (or the density of kite predators nearby so high) that their nests are more vulnerable when foraging afar?

The Carpinteria Bluffs illustrate the dangers of off-site foraging. All of the Carp Bluffs, except a 100 x 50 m patch of grassland along Carpinteria Avenue, are useless to kites. This patch has become an occasional foraging spot for kites that breed on the north side of highway 101. The nearest of suitable nesting trees are on the north of highway 101 amidst lemon and avocado orchards. Breeding kites choose to travel to south of the highway to forage on the Carpinteria Bluffs. After capturing prey, kites are often weighted down and fly low back to their nest or perch. In the past two years, four kites were killed by cars along the highway. Peggy Oki, a Carp artist, salvaged three of those birds. Two of them had prey in their feet at the time of collision.

In a population of any animal, the most important individuals for the propagation of the species are those of breeding age. A loss of a single nest of kite chicks does not impact the kite population as much as the loss of a single kite of breeding age. In these instances where parent kites are hit by cars delivering prey to their young, both an adult kite is killed; the entire clutch of chicks dies of starvation; and the remaining adult is not likely to partner again the breeding season. Locations where nesting habitat is good but foraging sites are few and hazardous can act as sinks

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that slowly drain the local kite population. This point underscores the importance of 'onsite' foraging grounds.

3. Compared to other California raptors, what is the relative sensitivity of white-tailed kites to disturbance by humans?

Generally, White-tailed Kites are more tolerant to humans than are other birds-of-prey. Red-shouldered Hawks find many human activities beneficial and thus may be seen frequently in sub-urban settings. Red-tailed Hawks are somewhat less tolerant than are Red-shouldered Hawks and kites. Where they mingle with human communities, they generally do so where they have very high nest placements and adequate open spaces somewhat nearby. Cooper's Hawks nest in forests but those forests sometimes occur in sub-urban settings, for example along lush riparian zones, or in oak woodlands.

Cooper's Hawks' tolerance of humans is high but prey availability is the limiting factor. The habitat surrounding a nest must support large numbers of small songbirds. In a single breeding season, as many as 250 small birds may by consumed by a single nesting pair. The habitat on and surrounding a golf course is not likely to support this level of songbirds' use. It is likely that the breeding potential for Cooper's Hawks on the ADP property will be minimal after the conversion.

By asking this question, another concern arises. If we manage for kites, it may be at the expense of other birds-of-prey and other elements of the community. We are proposing to dissemble the ecosystem here but do it in a way that leaves parts of the support system for kites intact. Again, success in protecting a pair of kites cannot be guaranteed and it may have costs to other predators.

For kites, as with most other birds-of-prey, the critical factors are the availability of nesting sites (not a problem at ADP) and quality of foraging sites and the frequency of disturbance. Kites are relatively tolerant to human disturbance providing their basic food and space needs are met. See answer to question #5 for more on kite tolerance to human disturbance.

4. How large a buffer is required to avoid disturbance effects on nesting?

The answer to this is not clear. Again, the buffer needs to include nesting situations, foraging areas, and a healthy Microtine rodent population. The buffer size depends upon the needs of the prey population. These needs include a variety of habitats and other ecosystem elements that support California Vole, House Mouse, and Western Harvest Mouse (Stendell 1967 and 1972, Waian 1973). The buffer should be connected to other open spaces thus joining rodent populations and it needs to contain refugia that can sustain that population through bottleneck periods.

Published information on territory sizes provides another way to look at the question of buffer sizes. Dunk and Cooper (1994) suggest that territory size is regulated by prey numbers and competition for prey. Thus, the make-up of the predator community following the construction of the golf course will exert a important effect on prey available to White-tailed Kites. Territory size ranged from 19.6 to 21.5 ha in northern California (Dunk and Cooper 1994). In Santa Barbara, territory sizes at five sites ranged from 17.8-51 ha (Waian 1973). Six sites in San Diego ranged from17-88 ha (Henry 1983). (Is there a trend toward more variable territory sizes in more arid environments?)

5. Are white-tailed kites sensitive to human presence and activity when they are foraging; at what distance would they likely be disturbed?

The answer to this question lies somewhere in the balance between levels and types of disturbance and resource availability. Kites tolerate passive and moderately persistent human presence if and only if sufficient alternative foraging area and alternative perching sites exist. Local areas where kites persist in spite of passive human presence are: More Mesa, Ellwood Mesa, and University's North and South parcels south of Phelps Road. Generally, kites are displaced from their activities if approached closer than 50-100 feet by humans. Kites appear unwilling to expend extra energy avoiding humans when the territory resources are low to marginal. For this reason kites will not persist in areas where disturbance levels are high or resource levels are low.

6. Will fairways and greens provide useful foraging habitat?

No, not directly. However, if habitats lateral to the fairways are designed to take advantage of it the watering of greens and fairways may create stable sources of water for small mammals.

7. Could roughs potentially provide useful foraging habitat?

A rough consisting of dense annual grasses uniformly distributed may not be suitable habitat for kites. Alternatively, native bunch grass habitats are quite good for voles. If these were to be positioned near fairways that received water, some benefits might accrue there in support of small mammals. Additionally, there need to be native, shrubby areas mixed with grasslands that provide opportunities for House Mouse and Western Harvest Mouse as well as voles.

"Useful foraging habitat" also must have areas where kites can have access to the prey. These 'hunt-able habitats' tend to be lower and sparser grasslands, bare areas among scattered shrubs, or even bare ground near the edges of grassland or shrub lands.

8. If so, how large should they be to avoid disturbance effects?

This is not known. However, consider the information on sizes of territories. The smallest territory size cited above is 17 ha. A 100m circular buffer translates to a set-aside of 3.141 ha. A 300m circular buffer sets aside a 28.269 ha area.

9. How important is adjacent or nearby foraging habitat for nesting birds?

Nearby foraging habitat is critical to establish the kite territory. See the reply to question #3 part B for more information.

10. If 100 m buffers are established around the likely nesting trees, is it your professional judgment that the kites would continue to nest at the site or not; what are the minimal conditions necessary for continued nesting

If the 100 m buffer provides the only nesting and foraging area for kites, they will not continue to nest. The only uncertainty surrounds the site fidelity of the two pairs currently using the site. If their fidelity to the site is strong enough to remain territorial, they might do so for some months following the conversion or until the small mammal population is exhausted. Without question, a buffer of this size is insufficient to attract a dispersing individual for any more than occasional use of the site. A 100 m buffer equals 3.141 ha, which is 18% of the smallest territory known for White-tailed Kites.

Evaluate this proposal with respect to four criteria. Kites require:

1. nesting areas with suitable alternative trees to choose from,
2. foraging areas within and beyond a territory boundary, and

3. lack of direct and frequent disturbances in the nesting and foraging areas proportionate to the size of those areas (see discussion in Question 5).
4. Within or near the territory must be suitable and connected habitat and suitable habitat conditions for California Voles.

At ADP, the first criteria can be met within a 100 m buffer. The other three criteria are not met.

11. How many nesting pairs of kites are there in this region (however you wish to define it; and in larger areas if there are data); how significant to the regional population is 1-3 nesting pairs

Refer to Status of the South Coast Santa Barbara Co. Kites and The Value of the ADP Site above.

12. If appropriate habitat is destroyed at Dos Pueblos, would it likely have any effect on the number of breeding pairs in the region - or is there such abundant suitable habitat that it would likely simply result in the utilization of a different area with no effect on the total number of young fledged each year

This is difficult to answer. We cannot even state whether or not the 'they can go somewhere else argument' would apply here. We suspect that there are very few other places to go based on the frequency at which we see kites to the west of ADP. Only the Refugio Canyon seems to support kites persistently to the west. If the projects proposed in the Goleta Valley result in the loss of breeding territories, then the ADP sites become proportionately more valuable. This predicament is one that a cumulative impact assessment is designed to resolve, or shed light on. We urge that this level of review be undertaken. For the lack of this review we could find this protected resource – White-tailed Kites in the Goleta Valley -- suddenly imperiled.

References Used

Dixon, J.B., R.E. Dixon, and J.E. Dixon. 1957. Natural history of the White-tailed Kite in San Diego County, California. *Condor* 59: 156-165

Dunk, J R. 1995. White-tailed kite *(Elanus leucurus).* Birds of North America, n.178, 1995:1-16

Dunk, J.R. and R.J. Cooper. 1994. Territory size regulation in Black-shouldered Kites. *Auk* 111:588-595.

Hawbecker, A.C. 1942. A life history study of the White-tailed Kite. *Condor* 44: 267-276.

Lehman, P.E. 1994. The Birds of Santa Barbara County, California. Museum of Systematics and Ecology, UC Santa Barbara.

Pickwell, G. 1930. The White-tailed Kite. *Condor* 32: 221-239.

Stendell, R.C. 1967. Food and feeding behavior of the white-tailed kite near Santa Barbara, California. MS Thesis, University of California, Santa Barbara. 62pp

Stendell, R.C. 1972. The occurrence, food habits, and nesting strategy of white-tailed kites in relation to a fluctuating vole population. Ph.D. Dissertation, University of California, Berkeley. 224p.

Waian, L.B. 1973. The behavioral ecology of the North American white-tailed kite *(Elanus leucurus majusculus)* of the Santa Barbara coastal plain. Ph.D. Dissertation, University of California, Santa Barbara 111pp

Some Research Focused on the Goleta Valley Population of White-tailed Kites

Dissertations and Theses

Waian, L.B. 1973. The behavioral ecology of the North American white-tailed kite *(Elanus leucurus majusculus)* of the Santa Barbara coastal plain. Ph.D. Dissertation, University of California, Santa Barbara 111pp

Stendell, R.C. 1967. Food and feeding behavior of the white-tailed kite near Santa Barbara, California. MS Thesis, University of California, Santa Barbara 62pp

Stendell, R.C. 1972. The occurrence, food habits, and nesting strategy of white-tailed kites in relation to a fluctuating vole population. Ph.D. Dissertation, University of California, Berkeley. 224p.

Publications

Wood, D.T. 1943. White-tailed kites in Santa Barbara County, California. *Condor* 45:159.

Waian, L.B. and R. Stendell. 1970. The white-tailed kite in California with observations on the Santa Barbara population. California Fish and Game 56:188-198.

Stendell, R.C. and P. Myers. 1973. White-tailed kite predation on a fluctuating vole population. *Condor* 75:359-360.

Waian, L.B. 1976. A Resurgence of Kites. Natural History 85 (November).

Stendell, R.C. 1997. ABSTRACT: Some aspects of the ecology of the white-tailed kite in California. Raptor Research Foundation 1997 Annual Meeting. Savannah, GA, Oct. 30-Nov. 1, 1997.

Student Papers

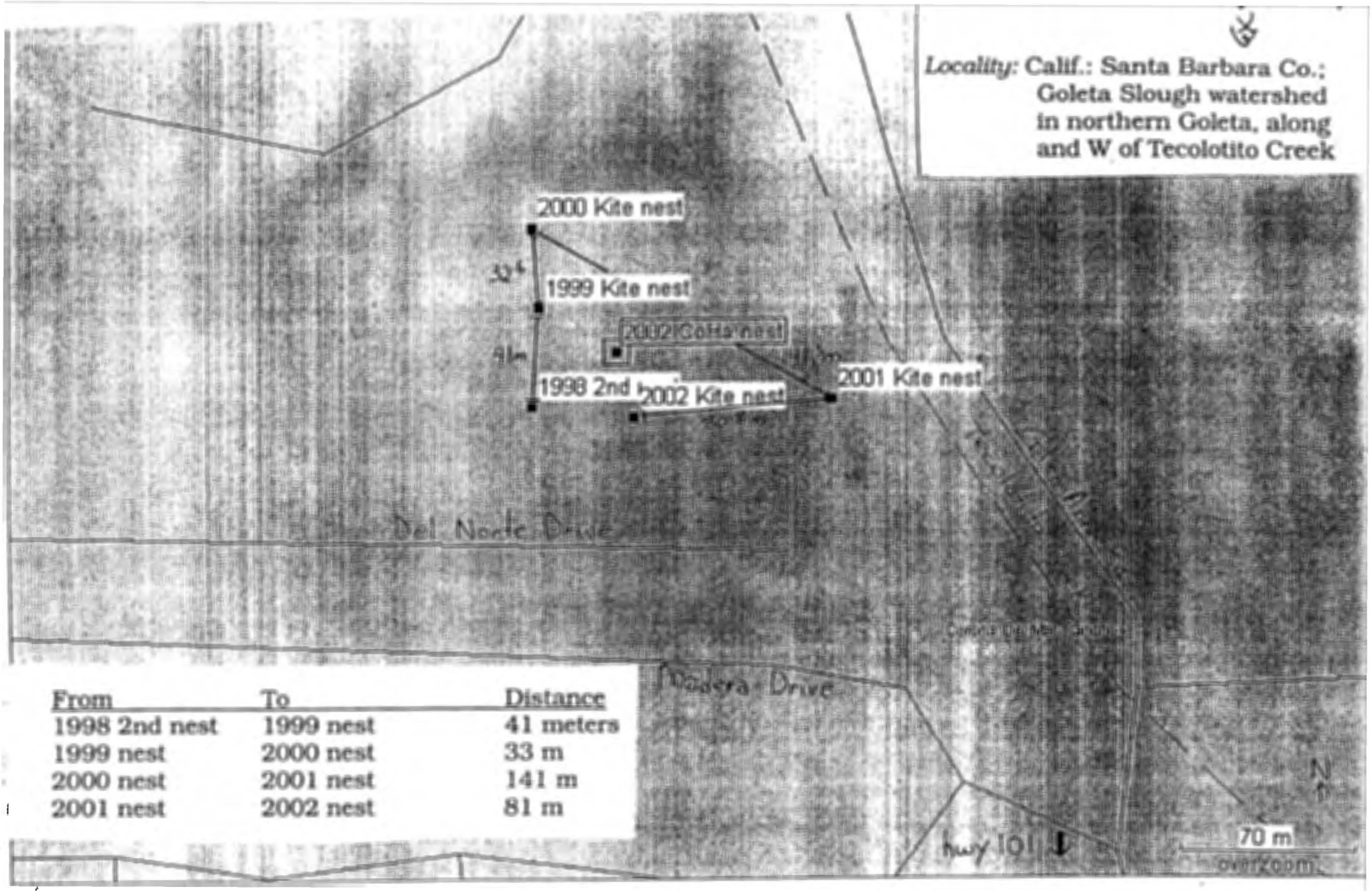
Collins, Paul W. 1973. Pellets analysis of the Food Habits of the White-tailed Kite, Great Horned Owl, and Barn Owl. UCSB Zoology 113C project.

Steggall, Curt. 1982. Feeding preferences of the White-tailed kites on *Microtus californicus*, *Reithrodontomys megalotis*, and *Mus musculus* during the nesting period. UCSB Zoology 113C project.

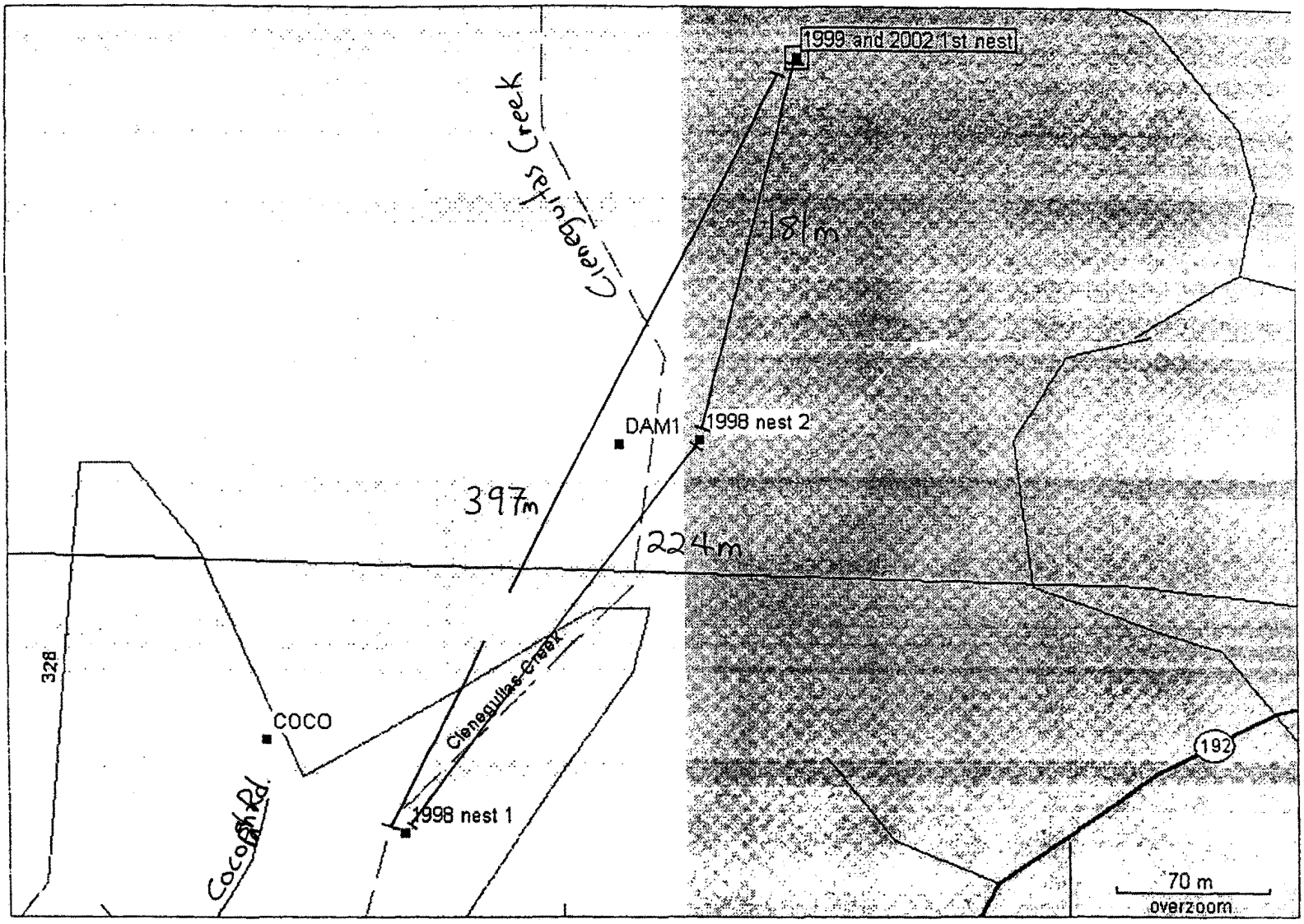
Looney, Matthew T. 1994. Population Status of *Elanus leucurus* from 1944 to 1993 in California and Texas. UCSB Environmental Studies/Biological Sciences 133 project.

ex. 41 pg 12

Distances Between Kite Nests Within and Between Seasons at a Long-term Territory



From	To	Distance
1998 2nd nest	1999 nest	41 meters
1999 nest	2000 nest	33 m
2000 nest	2001 nest	141 m
2001 nest	2002 nest	81 m



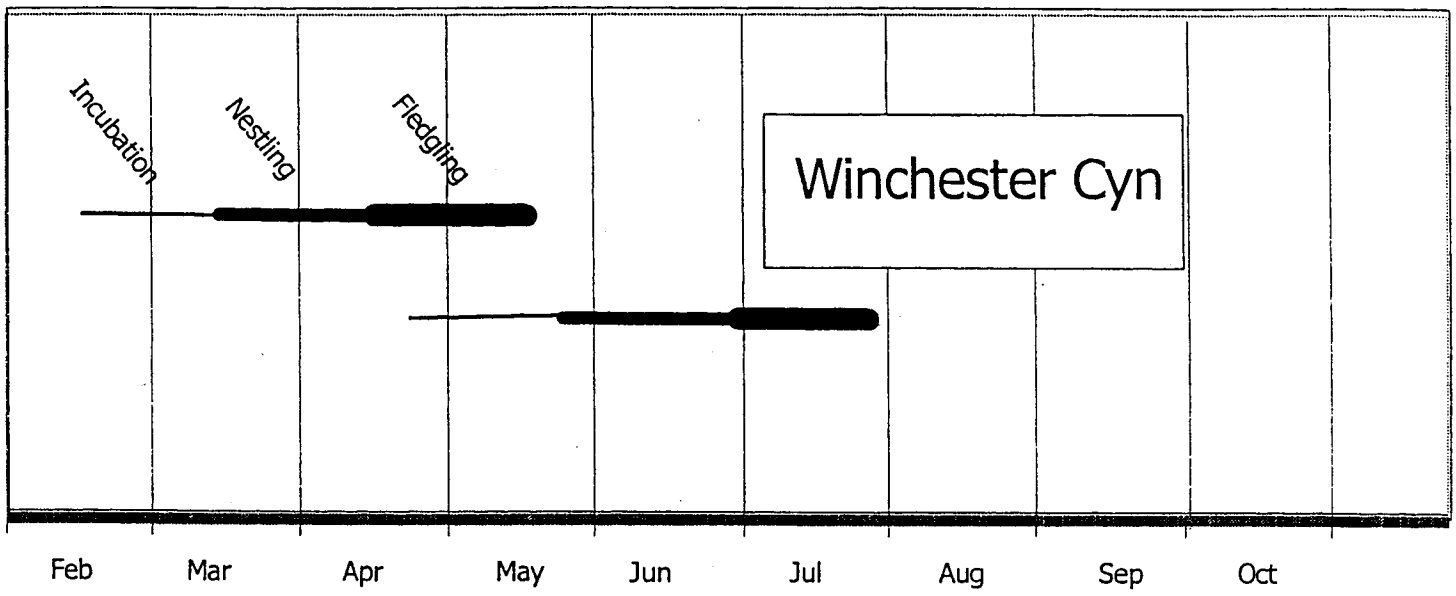
Distances Between Kite Nests Within and Between Seasons at a Long-term Territory

Locality: Calif.: Santa Barbara Co.; upper part of Goleta Slough watershed in eastern Goleta, on San Marcos Foothills property.

From	To	Distance
1998 nest #1	1998 nest #2	224 meters
1998 nest #1	1999 and 2002 first nests	397 m
1998 nest #2	1999 and 2002 first nests	181 m

Ex 41 p. 14

Brood Overlap in Goleta Valley Kites in 1998



Ex. 41 pg. 15

4of

Calif.: Santa Barbara Co.; Hwy 101 at SE corner of Santa Barbara Ranch looking S to Arco-Dos Pueblos property
14 May 2002 0705-0807 hrs

Morgan Ball
Mark A. Holmgren
Melanie Hale
1

Intent: Assisting CCC in determining the nature and intensity of birds of prey use, especially by White-tailed Kite, on the Arco-Dos Pueblos property. Show Melanie Hale, CCC staff, the White-tailed Kites on Arco-Dos Pueblos property and familiarize her with their natural history in southern Santa Barbara County.

Summary:
4 kites visible on the Arco/Dos Pueblos property forming 2 territorial pairs that both exhibited breeding behaviors. Kites were also seen capturing prey on the Arco-Dos Pueblos property.

Observed breeding evidence of East Kite Pair:
Defensive behaviors of the kites, the position and direction of focus of the sentinel bird, observed copulation, attempted prey delivery to female kite by male, and repetitive return to a perch deep in the crown of a tree by female kite (most likely a nest structure).

Observed breeding evidence of West Kite Pair:
The position and direction of focus of the sentinel bird, transfer of prey to female, female prey delivery to nest platform, repetitive return to a perch deep in the crown of a tree by female kite (most likely a nest structure).

We observed other birds of prey on the property. A **Red-shouldered Hawk** perched in a cypress east of the property access road, a second **Red-shouldered Hawk** seen flying to the west from pine cluster #2 at south end of the N-S running tamarisk on western 1/3 of property, an adult **Red-tailed Hawk** seen perched atop cypress cluster #2 at south end of the N-S running tamarisk on western 1/3 of property, an **American Kestrel** perched at south end of the N-S running tamarisk on western 1/3 of property, and a **Turkey Vulture** who utilized much of the property

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Detailed Observations:
Observation Point #1- observations made from Hwy 101 median south of the SE corner of Santa Barbara Ranch looking S onto Arco-Dos Pueblos property
0705: 1 kite perched atop Cypress Tree Cluster #1 (East kite territory). No other kites visible on property.

0706: 1 kite perched atop Cypress Tree Cluster #1 (East kite territory) begins foraging over field north of Cypress Tree Cluster #1.

0707: the kite made a beeline attack flight at a **Red-shouldered Hawk** perched in a cypress east of the property access road. The red-shouldered hawk escaped attack to the east out of view. The kite moved on to forage over the field west of the access road. Second **Red-shouldered Hawk** seen flying to the west from pine cluster #2 at south end of the N-S running tamarisk on western 1/3 of property.

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0709: 2nd kite appeared atop a cypress ~30m SW of the suspected nest tree (observed on10 May 2002). 1st kite that was foraging flew over and copulated with perched kite for 5 seconds.

0710: adult **Red-tailed Hawk** seen perched atop cypress cluster #2 at south end of the N-S running tamarisk on western 1/3 of property. This tree cluster is a few meters east of pine cluster #2.

0712: Another kite appeared. 3 kites visible on property at same time→ 1 kite perched on east side a eucalyptus just west of Pine tree cluster #1 (West kite territory), 2 kites perched atop cypress ~30m SW of Cypress Tree Cluster #1 (East kite territory).
Turkey Vulture foraging over property from east to west. Intensive circling over south end of the drainage directly west of Pine Tree Cluster #1.
American Kestrel perched at south end of the N-S running tamarisk on western 1/3 of property.

0715: 2 kites visible on property @ Cypress Tree Cluster #1. One kite perched deep in the crown of the suspected nest tree. The other kite perched atop the cypress a few meters to the east of the suspected nest tree. The two kites then dropped down from there perches to harass an unseen intruder.

0716: the kite that was perched in the crown of the suspected nest tree returned the same tree "gently" dropped down into the crown and was lost from sight. Other kite returned to his original perch.

0728: end observations at Observation Point #1.

0729: Begin at Observation Point #2- observations made from Hwy 101 median ~80 meters west of Observation Point #1

0729-0739: One kite perched in eucalyptus west of Pine tree cluster #1 forages over field north of RR track for 10 minutes. Kite failed at one prey strike and perched atop the tallest eucalyptus west of pine cluster #1.

0743: 2 kites foraging on property at same time→ 1 kite foraging on over field north of Pine tree cluster #1(West kite territory), 1 kite foraging on over field north of Cypress Tree Cluster #1(East kite territory).

0749: The kite foraging on over field north of Pine tree cluster #1 (West kite territory) captured prey item and carries it back to perch in Pine tree cluster #1. A second (female) kite appears from the crown of diagonal growing pine on the south central portion of Pine tree cluster #1. A prey transfer occurs and the female returns to the crown of the tree

from where it originated. The kite can be made out gently picking down at the food. The kite remains hunched over for an extended period. Motion within in branches of the crown were seen by both Mark and Morgan suggesting the presence of a nest platform of chicks being feed by the female kite.

0754: The kite foraging on over field north of Cypress tree cluster #1 (East kite territory) captured prey item and carried it back and hovered a few feet above the female perched in Cypress tree cluster #1. The male with food perched beside the female who showed be apparent interest in the prey item. The male on three more occasions flew for the perch to hover over her dangling the food then perched beside her.

The male kite perched in pine near the west territory nest platform began foraging on over field north of Pine tree cluster #1 (West kite territory). Within two minutes (on first prey strike attempt) the kite captured prey item and carried it back to perch on the south side of Pine tree cluster #1. Our view was obstructed at this vantage but it was clear that the female still remained in the nest hunched over with motion in the nest. The male most likely ate that prey item himself…

End observation @ 0807.

California: Santa Barbara Co.; W of Goleta, ARCO- Dos Pueblos area
14 May 2002 ~0700

Mark Holmgren
Morgan Ball
Melanie Hale
Page 1 of

Coverage: We first stopped at the W end of the frontage Rd on the N side of hwy 101 that leads to SB Ranch. This is at the mid-point of ARCO-DP, we got evicted by the hwy patrol Then we moved E 50-70m. Then Finally, our 3rd stop was near the turnoff from hwy 101 to that frontage road.

Start at Fairview Starbucks at 0645

GPS Points

Kite Story: Morgan has dictated notes, which he will transcribe. Therefor this will summarize the events. Our intent was to show Melanie some of the evidence we gathered on 10 May 2002 that included 2 territorial pairs of kites on the E 2/3 of the property, Red-shouldered and Red-tail Hawks, and a Peregrine Falcon. Today we saw Turkey Vultures, Red-shouldered Hawk and 2 pairs of White-tailed Kites on the same territories on which they were seen on 10 May. Additonally, because the "degree of connection" to the land the kites show seems to be important to the regulatory issues, we began to, or continued to, compile behavioral information that might indicate the higher functions, i.e., breeding. We observed, Melanie too, prey captures (2 at least), food transfers at possible nest sites, birds popping of of possible nest structures (both pairs), pairs together at nest structures, apparent feeding of young – the motions suggesting that, and finally 1 adult at a nest and movement of apparent young ~~you~~ also in the nest. I saw several motims in one 15 sec period; Morgan also saw the motion. This is fairly convincing information documenting nesting in the W pair. What is needed is multiple observatims that add weight of evidence. Nest is in a pine just E of 1 or more Eucalyptus. The E pair seems to be not as advanced in breeding – Morgan thought he might have seen attempts break off sticks (I gathered conflicting evidence from this observation). Long copulation was observed in 1 pr (the E, I think) but Other b.o.p. seen to

Codes Used: f = female; m = male, imm = immature; fo = individual flying over; v = visual; s = singing; c = calling; cnm = carrying nest material; cf = carrying food; pr = pair; sev = several; fam = family group; pc = under parental care.

we will check Morgan's notes to determine which this was. Melanie needs Ex. 4/ 15.19
a set of "protocol" surveys. She will tell us what is needed in the report and we

Calif.: Santa Barbara Co.; Hwy 101 at SE corner of Santa Barbara Ranch looking S onto Arco-Dos Pueblos
16 May 2002 Time: 0755-1007

Morgan Ball
Regina Butala

Intent: Assisting CCC in determining the nature and intensity of birds of prey, especially White-tailed Kite, use on the Arco-Dos Pueblos property.

Summary:
4 kite visible on the Arco/Dos Pueblos property forming 2 territorial pairs that both exhibited breeding behaviors. Based on behavior, the west kite pair appears to be further along in the breeding cycle than the east pair. It is possible that the west pair is on chicks. This claim is supported by (see time 0910) the observation of a female kite capturing preying and delivering it directly to a nest platform where if was slow consumed. In the kite nesting cycle, female kites do not tend to forage until the latter end of the chick-rearing phase. The east kite pair is clearly attempting breeding, an ~25sec copulation was observed at time 0916. With this pair it is unclear whether the kite pair is on eggs or is just in early pair bonding phase. Kites were also seen capturing prey on the Arco-Dos Pueblos property.

Observed breeding evidence of East Kite Pair:
Defensive behaviors of the kites, the position and direction of focus of the sentinel bird, observed copulation, transfer of prey to female, and returns to nest platform by the female after repelling a potential predator.

Observed breeding evidence of West Kite Pair:
Defensive behaviors of the kites, the position and direction of focus of the sentinel bird, transfer of prey to female, and female kite capturing preying and delivering it directly to a nest platform.

We observed other birds of prey on the property. A Cooper's Hawk (likely a female) seen fly from Eucalyptus Tree Cluster #1, an adult Red-tailed Hawk seen west of the west kite territory, and 6-11 Turkey Vultures utilizing much of the property.

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Weather @ Start: ~60-65 degrees F, 100% cloud cover, no wind
Observation Point: observations made from dirt mound N of Hwy 101 looking S onto the Arco-Dos Pueblos property with binoculars and 32x spotting scope. UTM 11 S 0230175 3814845

Detailed Observations:
0755: 2 White-tailed Kites visible on property. One Kite perched atop Eucalyptus tree cluster #1(West Kite territory). 2nd Kite visible atop a cypress ~30m SW of the suspected nest tree @ east Kite territory. One **Turkey Vulture** perched atop a cypress tree median distance between both Kites.

0803: East White-tailed Kite territory, Kite attacks crow perched low in suspected nest tree. Kite chased crow 20m to NE and returned to perch atop a cypress ~30m SW of the suspected nest tree.

0805: 3 White-tailed Kites visible on property. New Kite visible in a brooding position atop the suspected nest platform in Pine cluster #1 (West Kite territory). 2nd Kite perched atop Eucalyptus tree cluster #1(West Kite territory). 3rd Kite visible atop a cypress ~30m SW of the suspected nest tree @ east Kite territory.

0809: 4 White-tailed Kites visible on property. Kite (presumed female) visible still in a brooding position atop the suspected nest platform in Pine cluster #1 (West Kite territory). 2nd Kite still perched atop Eucalyptus tree cluster #1(West Kite territory). 3rd Kite visible atop a cypress ~30m SW of the suspected nest tree @ east Kite territory flow to grassland section west of the A/D property

Calif.: Santa Barbara Co.; Hwy 101 at SE corner of Santa Barbara Ranch looking S onto Arco-Dos Pueblos
16 May 2002 Time: 0755-1007

Morgan Ball
Regina Butala

access road and captured a prey item. The Kite returned and perched in cypress cluster #1 next to its mate who just appear. No prey exchange occurred, rather the Kite that captured the food repetitively flow back and forth with the prey item from its perch to a cypress ~30m SW of the suspected nest tree.

0815: West territory, presumed female perched in nest platform flew and perched atop Eucalyptus tree cluster #1.

0817: West territory, presumed male still foraging over field N of Pine cluster #1. East pair, prey exchange fallowed by female returned to suspected nest platform. Kite lost from sight in crown of tree. Most likely eating prey in nest. East male chases off crow then returns to perch atop cypress a few meters to the east of suspected nest in cypress cluster #1

0818: East territory, presumed male begins performing leg-drop displays from cypress cluster #1 to cypress ~30m to the SW. West male Kite still foraging.

0820: Both presumed male Kites foraging. West Kite foraging west of N-S running tamarisk tree row. East Kite flew N of hwy 101 and is seen foraging over open field just east of Eagle Creek.

0833: Crow perched in east Kite territory atop cypress a few meters east of suspected nest tree in cypress cluster #1. Presumed female not moving to harass crow.

0833: East Kite seen foraging over open field just east of Eagle Creek returned without prey item and perched atop cypress ~30m SW of the suspected nest tree.

0834: Two Kites visible on property and one Kite at east territory unseen but still on nest platform. East presumed male Kite perched atop cypress ~30m SW of the suspected nest tree. At west territory, Kite of unknown sex perched atop eucalyptus cluster #1.

0838: Weather ~65 degrees F, no wind, clouds beginning to burn off ~90% cloud cover.

0840: East territory presumed male White-tailed Kite flew and perched atop cypress a few meters east of suspected nest tree in cypress cluster #1.

0848: A train passed by and scared the west territory Kite from its perch atop eucalyptus cluster #1. A large **Cooper's Hawk** (likely a female) is then seen flying out of same eucalyptus cluster. The Kite instantly began chasing the **Cooper's Hawk** to the SE along the ocean bluff edge out of sight. After an ~100m chase the Kite returned to west territory a perched back atop eucalyptus cluster #1. No change at east Kite territory.

~0850: West White-tailed Kite perched atop eucalyptus cluster#1 chased adult **Red-tailed Hawk** to the west beyond the N-S running tamarisk row than returned to original perch.

0852: Presumed male White-tailed Kite from east territory flew in direction of west Kite territory. The Kite of unknown sex (now presumed as the male based on display) from the west territory began performing leg drop and flitter flight displays over pine cluster #1 and returned to perch atop eucalyptus cluster #1. Looked little a low aggression territorial dispute/defense.

Calif.: Santa Barbara Co.; Hwy 101 at SE corner of Santa Barbara Ranch looking S onto Arco-Dos Pueblos
16 May 2002 Time: 0755-1007

Morgan Ball
Regina Butala

0900: 4 **Turkey Vultures** perched in a cypress tree SE of the A/D Bridge.

0901: Again, west Kite perched atop eucalyptus cluster#1 chased most likely the same adult **Red-tailed Hawk** to the west beyond the N-S running tamarisk row than returned to original perch.

0904: 1st year **Blue Grosbeak** perched on wire along access road to Santa Barbara Ranch N of hwy 101. Bird's head was blue but body was creamy orange. Bird was banded with silver band.

0908: At west territory, second White-tailed Kite presumed female appeared from suspected nest platform and perched atop lone cypress just NW of suspected nest platform. Presumed male still perched atop eucalyptus cluster #1.

0910: At west territory, the presumed female was seen drop from perch and capture prey item then deliver it directly to the suspected nest. The Kite's back and head could be seen slowly bobbing in the nest --> most likely tearing at the food. Lots of movement of pine needles around the Kite. It is unclear whether the movement was made by chicks or the adult. East presumed male seen foraging N of nest territory on A/D property.

0910: 3 White-tailed Kite visible on property. West territory, presumed female feeding in nest, presumed male perched atop eucalyptus cluster #1. East territory, presumed male returned from foraging trip with prey item and perched atop cypress a few meters east of the suspected nest platform in cypress cluster #1. Presumed female suspected to be sitting low in nest on east territory.

0912: East presumed male with prey item flow into suspected nest platform and was lost from sight in crown of tree.

0914: East territory, both White-tailed Kites flew from suspected nest platform and perched beside one another in cypress ~30m to SW. One Kite feeding on prey item in its feet but it is not clear the sex of the bird or whether a prey exchange occurred.

0915: East territory, one White-tailed Kite feeding on prey item while the other continuously flies back on forth from its original perch to the tall cypress a few meters east of the suspected nest.

0916: East territory, Kite feeding on prey item (male) flew to the Kite without food (female) at the tall cypress a few meters east of the suspected nest. No prey exchange occurred but the male mounted the female for a long ~25 second copulation bout.

0919: East territory, the male dismounted the female and flew to a nearby perch then flew to the cypress ~30m to SW. There he resumed eating the food. The female chased off an unseen bird and returned to suspected nest where it was lost from sight.

0925: 6 **Turkey Vultures** perched in cypress midway between the two White-tailed Kite territories.

0928: East territory, the male eating the prey item flew from the cypress ~30m to SW of the suspected nest tree performing a flitter flight and display dangling the prey while encircling the nest territory. After 3 complete circles the Kite returned to his perch.

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Calif.: Santa Barbara Co.; Hwy 101 at SE corner of Santa Barbara Ranch looking S onto Arco-Dos Pueblos
16 May 2002 Time: 0755-1007

Morgan Ball
Regina Butala

0935: East territory, the male eating the prey item flew and perched in a cypress halfway to the west territory. Still eating his prey item.

0938: East territory, the male eating the prey item flew to a dead cypress ~40m to W of the suspected nest.

0941: Lost Kite. No Kites visible on property.

0946: White-tailed Kite appears atop eucalyptus cluster #1 then flew N then E as far as the A/D property bridge. It then began foraging over the field N of the east Kite territory. A Kite appeared from cypress cluster #1 and chased the foraging Kite back to the west territory to eucalyptus cluster#1. The aggressor the flew and perched atop the cypress halfway between the two territories.

0946: The aggressor White-tailed Kite flew and perched atop the cypress ~30m to SW of the suspected nest tree.

0952: 2 Kites visible on property. One Kite perched atop Eucalyptus tree cluster #1(West Kite territory). 2nd Kite visible atop a cypress ~30m SW of the suspected nest tree @ east Kite territory.

0953: 3 Kites visible on property. Kite perched atop Eucalyptus tree cluster #1(West Kite territory). 2nd Kite visible atop a cypress ~30m SW of the suspected nest tree @ east Kite territory. 3rd Kite visible in a brooding position atop the suspected nest platform in Pine cluster #1 (West Kite territory).

1007: 1 Kites visible on property. Kite visible atop a cypress ~30m SW of the suspected nest tree @ east Kite territory.

End observation @ 1007

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23 May 2002

Calif.: Santa Barbara Co.; Hwy 101 at S side of hwy near center of Arco-Dos Pueblos

Observer: Morgan Ball & Mark Holmgren
Time: 1215-1225

Lone kite visible perched atop Cypress Tree Cluster #1 (East kite territory). No other kites visible on property.

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~~78~~

CA SBCo.; Frontage Rd N of hwy 101 looking at ARCO Dos Pueblos MAH joined later by Morgan Bati
27 May/2002

0827 I arrive at pt called AD8 desc. as above. I saw ~200 m E of AD7 Cleared veg. to broaden view

0841 2 "sentinel-like" kite present above + near respective suspected nest sites. Cleared more

0856 R stlh, ad? in cypress immed. W of S base of wooden bridge

0920 Both members of W pr up in Euc. Chasing perched & threat

0935 No much activity at either terr. Pair seen only on W. terr. Some foraging

0944 Prey obt. by 1 of W pr. The 2nd bird jumped off sent. perch to nest. it + both disappeared behind Euc.

1011 I moved 100m W of AD8 + here I got a clear look at W nest. 1 brancher in nest and min. 2 more babies in nest. MB arrived 5m ago I he sees 4 total babies. 2/3 grown 1°s on branches
Evidence at E nest: Only 1 bird seen but he maintains a steady perch gaze down at the nest site we j'd'd a week ago. This is consistent w/ bird on nest. No foraging suggest also consistency w/ bird on nest.

1025 R tlh. ad + Cooper Hawk on NE corner of property. Accip. flew over highway. R tlh among pines

~~1035~~

1035 3 ad kites vis on prop: 1 E 1 in Euc at W terr, 3rd in S most cypress at S end tamarisk row.

1047 Ad R tlh w/ prey flew from N½ prop. NE to Eagle Cyn Rd hwy 101 was harrassed by 1 of W pr and only bird of E pair

1101 Leave observation Area N of hwy 101

Key to Map and Annotations on Use of ARCO-Dos Pueblos Property by Birds-of-Prey

1 [dash-dot line] Approximate eastern White-tailed Kite Territory. This area corresponds to locations one or both members of the pair foraged or defended from intra- and inter-specific defensive actions. [10, 14, and 16 May 2002]

2 Suspected nest of eastern White-tailed Kite pair, in Monterey Cypress. We surmised that this pair is on eggs still on 16 May 2002. Evidence used includes: persistent site tenacity, copulation, prey transfers, directed sentinel behavior, low frequency of foraging, vigilant nest area defense, long periods of platform attendance, limited foraging by bird attending platform (presumed to be female).

3 [dotted line] Approximate western White-tailed Kite Territory. This area corresponds to locations one or both members of the pair foraged or defended from intra- and inter-specific defensive actions. [10, 14, and 16 May 2002]

4 Western White-tailed Kite pair confirmed nest, 5 nestlings seen on 14, 16, and 27 May. Early evidence used includes: persistent site tenacity, copulation, prey transfers, directed sentinel behavior, low frequency of foraging, vigilant nest area defense, long periods of platform attendance; presumed female attending platform caught prey and took it directly to the nest on 16 May.

5 2 Red-shouldered Hawk, one flying, one foraging (possible pair) on 14 May (0707 hrs)

6 American Kestrel, perched on 14 May (0712 hrs)

7 Red-tailed Hawk, perched on 14 and harassed by kite on 16 May (0710 hrs)

8 Cooper's Hawk, likely female flying, 16 May (0848 hrs)

9 Peregrine Falcon, likely imm. male, first seen here then circling ADP twice to the east, then flew out of view to the SE, 10 May (0751-0754, 0825 hrs)

10 Red-shouldered Hawk, 10 and 14 May

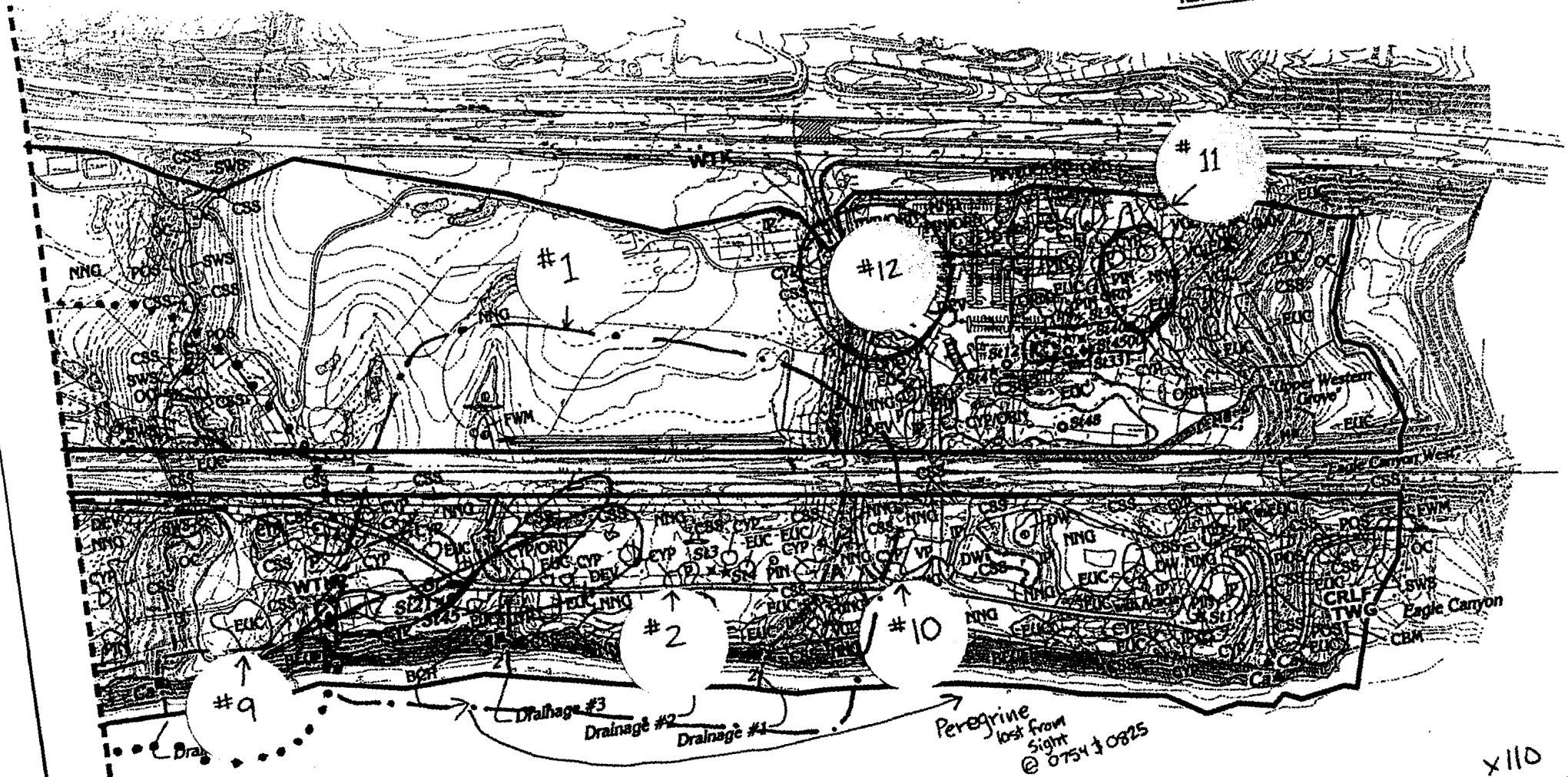
11 Red-tailed Hawk perched among pines and Cooper's Hawk flying over freeway from S to N, 27 May (1025 hrs)

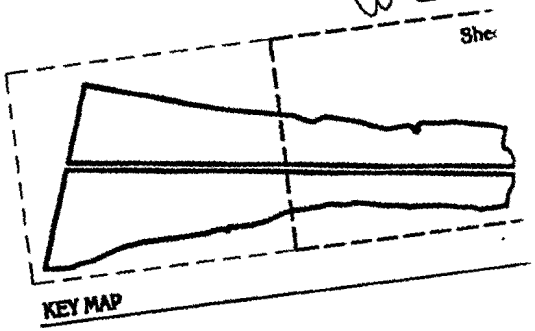
12 Red-tailed Hawk, perched, 10 May

Turkey Vulture were present on most visits to the site but not documented on this map.

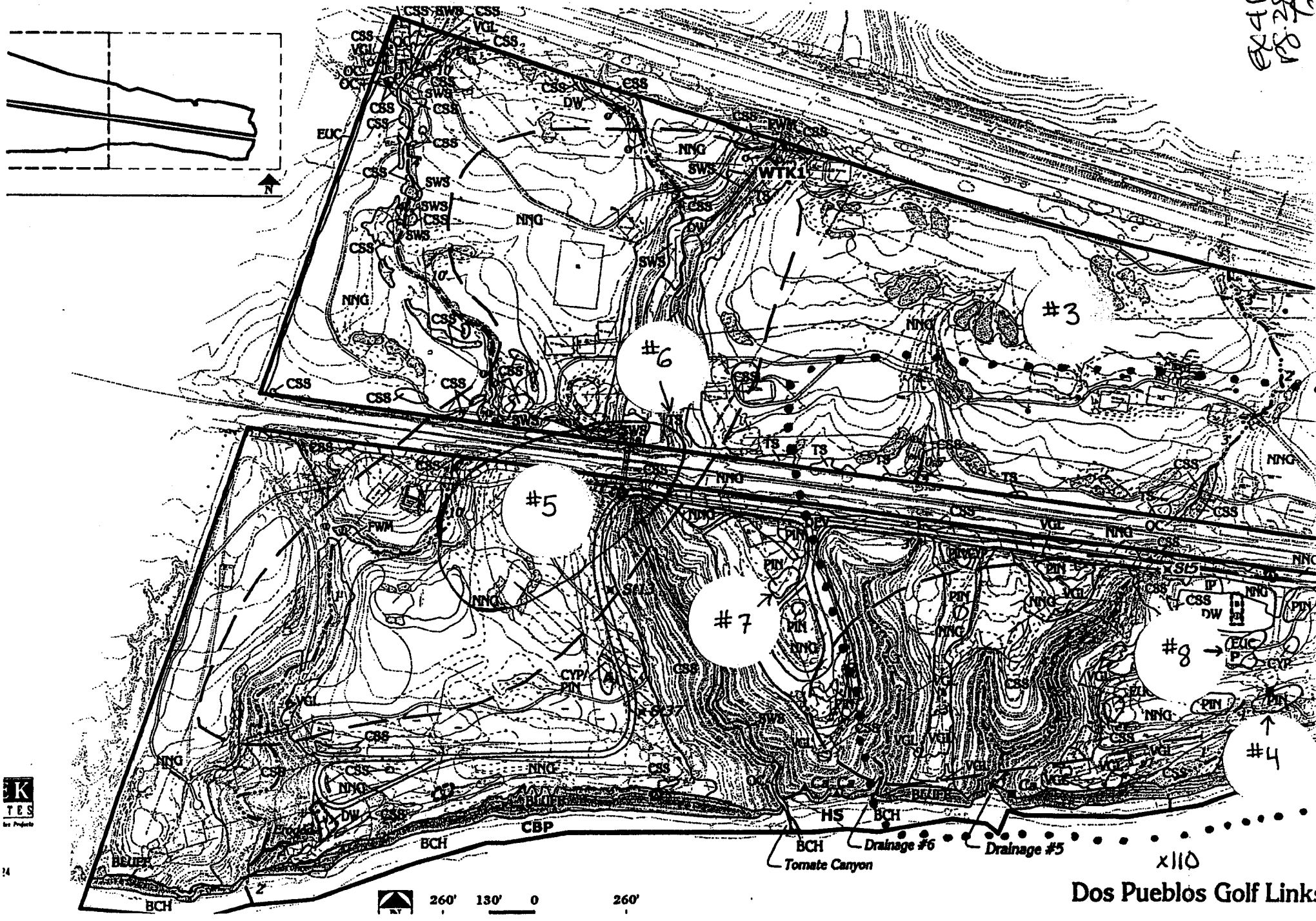
Ex. 41 pg. 26

Annotated Maps of ARCO-Dos Pueblos Birds-of-Prey (East map)





Annotated Maps of ARCO-Dos Pueblos Birds-of-Prey (West map)



Intent: Assisting CCC in determining the nature and intensity of birds of prey, especially White-tailed Kite, use on the Arco-Dos Pueblos property.

Summary of our Observations on 10 May

1. 4 White-tailed Kites **in 2 pairs on 2 territories observed. Territories are on the E and central parts of the property. We surmise the locations of possible nest sites on each territory. Leading us to these hypotheses were the defensive behaviors of the kites, the position and direction of focus of the sentinel bird, and the locations of copulation (E pair), transfer of prey to female, and returns by the female after repelling a potential predator.** Kites were also seen capturing prey on the Arco-Dos Pueblos property.
2. We observed other birds of prey on the property. A **Peregrine Falcon** (probably an immature male) may have been one of the threats to the Central pair of kites at 0743. Soon thereafter the Peregrine Falcon circled twice on the E half of the property. An adult **Red-tailed Hawk** was seen near Eagle Creek in a Eucalyptus. An adult **Red-shouldered Hawk** was near the S end of the bridge on the E portion of the property.

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Observation Points: All were from off the property because we had no authorization to enter the property.
Point #1- observations made from Hwy 101 median south of the SE corner of Santa Barbara Ranch looking S onto Arco-Dos Pueblos property. UTM 11S 229950 3814827 (WGS 84 datum)

0730: 2 Buteos seen on eucalyptus at east end of property

0737: 1 White-tailed Kite located atop a Monterey Cypress (see map- Cypress Tree Cluster #1)

0743: 2nd White-tailed Kite observed harassing something (unseen) perched on south side of eucalyptus on south-central portion of property. See map for site of Kite harassment.

0751-0754: Small, very dark Peregrine Falcon appears from the vicinity of the location of the Kite harassment (possibly the reason of the initial harassment). The peregrine was chased by two crows and one Kite for a short distance. The peregrine then flew back and forth across the south side of the property a few times and was lost from view to the southeast of the bridge/pond area.

0755: adult Red-tailed Hawk seen thermalling over NE quad of the property.

0800: Another kite appeared. 3 kites visible on property at same time→ 2 @ Pine tree cluster #1(Central kite territory), 1 @ Cypress Tree Cluster #1(East kite territory).

0802: One of the kites perched at Pine tree cluster #1 began foraging over field just north of Pine tree cluster #1. The Kite, on its first prey strike attempt, captured a small rodent (smaller than an adult vole) and returned to the Pine tree cluster #1. A prey exchange occurred with the other kite perched @ Pine tree cluster #1. After receiving the prey item, the kite flew south a few meters and was lost in the treetops on the south edge of Pine tree cluster #1.

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Begin at Observation Point #2- observations made from Hwy 101 median ~80 meters east of Observation Point #1. UTM 11S 230048 3814806

~0810: 2 Kites seen at Central territory, the Kite that had the food (sex determined female based on prey transfer) seen popping off pine a south side of Pine tree cluster #1 without prey item. This could possibly be the location of a nest platform though no nest or young could be seen from our vantage point.

0820: Watching lone Kite at east kite territory when 2nd Kite appeared from the crown of a cypress in the Cypress Tree Cluster #1 and perched ~10ft away. The structure of the tree crown from where the Kite appeared looks suitable the support a Kite nest platform. It is unclear whether the Kite was perching deep in the crown of the cypress or an actual nest exists. 3 Kites visible on property→ 1 @ Central kite territory, 2 @ East kite territory.

0825: A small, dark Peregrine Falcon appears flying south of east Kite territory. Both kites at the east territory chased the Peregrine Falcon to the southeast out of sight behind the tree line. The kites then returned and perched together at Cypress Tree Cluster #1.

0829: One Kite from east pair flew north of Hwy 101 and foraged for ~5 minutes then returned to south side of Hwy 101 where it continued foraging over the field west on the Arco-Dos Pueblos property access road.

0832: Kite captured a prey item on first prey strike attempt then flew south and perched near female kite at Cypress Tree Cluster #1. Kite (male) held the prey item for ~5 mins without attempting to eat it. Eventually a prey exchange occurred and then began feeding atop cypress near the suspected nest.

0838: 4 kites visible on property at same time→ 2 @ Central Kite territory, 2 @ East Kite territory. Total of two pairs exhibiting breeding behaviors.

0842: East Kite territory @ Cypress Tree Cluster #1, male Kite (Kite that captured and transferred food) comes off suspected nest platform and copulates with female atop nearby cypress before she had finished eating her prey item (seen with scope by MAH as vole, based on size and tail length).

0858: 3 kites visible on property at same time→ 1 @ Central Kite territory, 2 @ East kite territory. Small adult Red-shouldered Hawk seen on dead pine scrag and train track telegraph poles near bridge/pond area. Hawk seen flying south into cypress trees.

0903: 3 kites visible on property at same time→ 1 @ Central Kite territory, 2 @ East Kite territory. End observations at Observation Point #2

0910: Begin at Observation Point #3- observations made north of Hwy 101 from turnout opposite the access road to Arco-Dos Pueblos Property

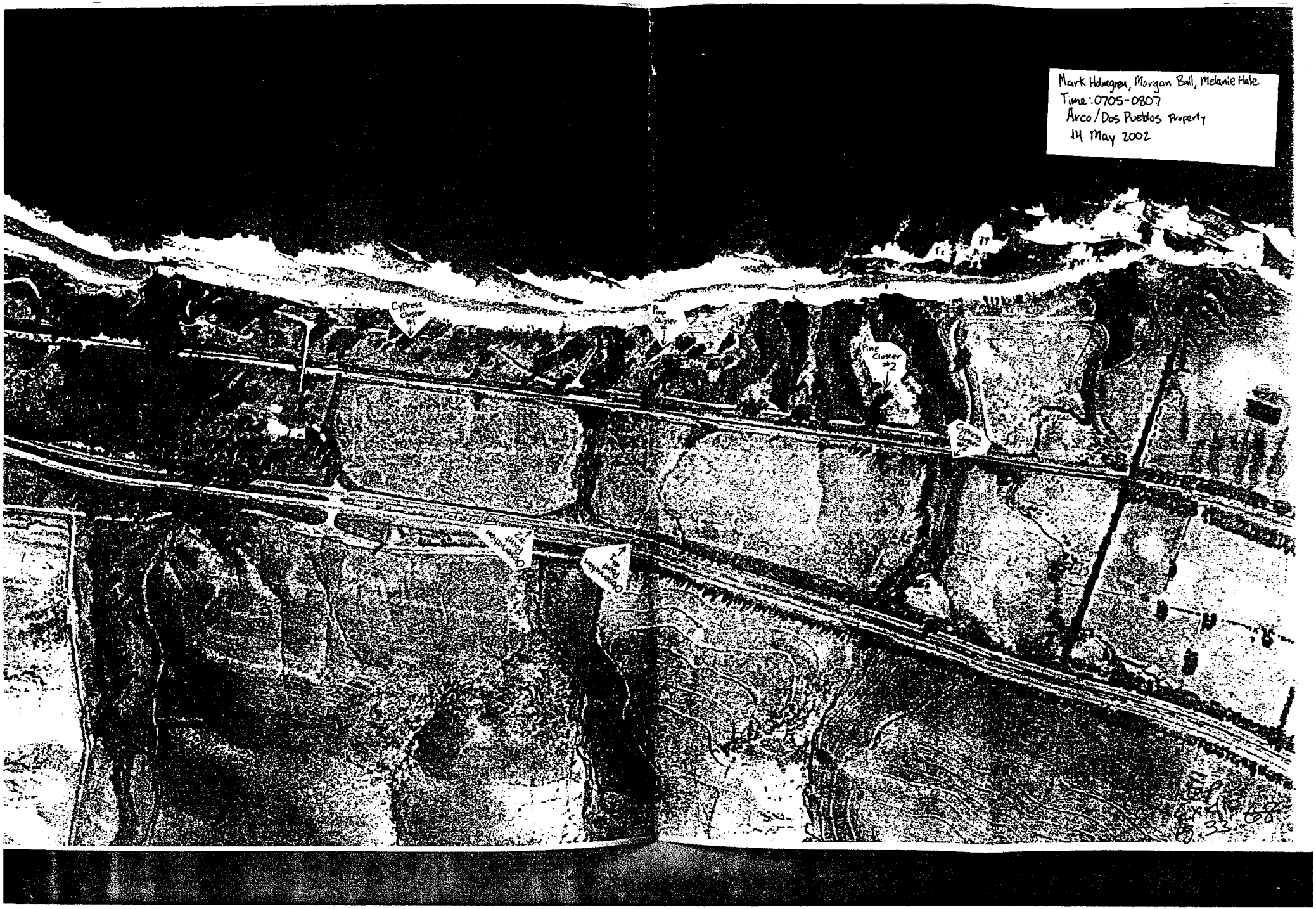
0910-0915: 1 Kite at Cypress Tree Cluster #1 seen eating prey item atop cypress, most likely the female kite from the eastern pair eating the same vole captured at 0832. No other Kites visible.

0940-0949: Begin at Observation Point #4- observations made south of Hwy 101 along CalTrans easement east of Eagle Creek.

0940-0949: No Kites seen. One adult Red-tailed Hawk perched top eucalyptus on east side of Eagle Creek

Nesting Raptor Survey

1) Surveys should be conducted by biologists with formal training in avian biology


Mark Holmgren, Morgan Ball, Melanie Hale
Time: 0705-0807
Arco/Dos Pueblos Property
14 May 2002
Cypress cluster #1
Pine cluster #1
Pine cluster #2
Cypress cluster #2
Cypress cluster #3

Observation Point
E. kite territory suspected
W. kite territory suspected

Hi John, 28 May 2002

Morgan, Melanie, and I (on the 14th) and Morgan and I (on the 27th May), saw nestling kites in the "western" nest. On the 27th, a couple of the nestlings were big enough to stand on the edge of the nest and flap their wings. We were able to see 4 nestlings. This nest is just about exactly in the middle of the property on an E-W axis. The nest is in a pine tree. So, this nesting is certain.

We assess the eastern pair in this manner. We surmise that this pair is on eggs. The combined evidence we draw from includes: persistent site tenacity (both dates), copulation (14th), prey transfers (14th), directed sentinel behaviour by the male (both dates), low frequency of foraging by the sentinel (27th), vigilant nest area defense (both dates), long periods of platform attendance (on the 14th). In our opinion, our failure to see the female at all on 27 May strengthens the assessment. As you know, we could be wrong! Your landmark to this nest (from the observation position noted below) is the E'most or 3 or so tall drooping spires atop Cypress trees. This tip droops toward the E. The nest platform is in a Monterey Cypress some few meters N and slightly W of that landmark tree.

We observed on each of our 5 visits from the frontage road on the north side of highway 101 using spotting scope rather early in the morning. We feel that the distance actually gave us better, 'more pure' observations because the birds were not on guard and therefore they responded to our presence with minimal deception. To find the nest platform and nest structure, I suggest standing immediately W of the W'most patch of Castor Bean in the ruderal area between the frontage road and highway 101. This spot is maybe 150m E of the "Santa Barbara Ranch" sign at the W end of the frontage road.

We have these sites, as well as other observations, mapped for Melanie. Other raptor observations include a Peregrine Falcon circling over the property on 10 May; Cooper's Hawk observations on 27 May; American Kestrel on several dates, Turkey Vulture, Red-shouldered Hawk, and Red-tailed Hawk on all 5 observations of the site.

Mark

From: John Storrer [mailto:jstorrer@silcom.com]
Sent: Tuesday, May 28, 2002 3:21 PM
To: Mark Holmgren
Subject: DP Kites

> Hey Mark:
> I was hoping to get a briefing on your kite observations at DP from about two weeks back. We spoke after your visit on 10 May. Subsequently, you made more observations from HWY 101 with Melanie Hale of the CCC. According to a phone message she left me, it was her impression that the westernmost pair had initiated nesting. I accompanied Mike Evans of Pacific SW Biological to the site on 16 May. We observed a the eastern pair to be on a nest, but the western pair exhibited a more loose association (i.e. no evidence of nesting yet, other than attempted copulations).
>
> Can you give me a general summary of your impressions from that date, as well as the date. If you get me in person, I'll share what I know about the current status of kites on the property. I'm scheduled for another visit to the site this Thursday.
> Thanks. John

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PS. 35

Nesting Raptor Survey

1) Surveys should be conducted by biologists with formal training in avian biology, significant field experience in raptor survey techniques, and demonstrated ability to identify accurately local species under a variety of field conditions.

2) If available, standard protocols promulgated by the U.S. Fish and Wildlife Service or the California Department of Fish and Game should be incorporated in the survey plan.

3) If standard protocols are not available from the wildlife agencies, the following elements should be included in the plan:

   - The survey should be conducted between March 1 and June 15.
   - The survey should consist of at least five visits.
   - Survey visits should be spaced at least one week apart.
   - Each visit should consist of at least two hours on site during the period between dawn and 10:00 am. If the site is very large, forested, or contains extensive riparian habitat, each visit should be longer in duration as determined by the best professional judgement of a raptor biologist.
   - If there is appropriate habitat for ground-nesting owls on site and such birds are known to occur within the region, there should be at least three additional survey visits, each conducted during the period immediately before nightfall.
   - The biologist should specifically search for nests and for foraging birds and birds using trees for perching, roosting, or nesting.

4) The survey report should provide a list of species that could reasonably be expected to use habitats on the site under other probable weather or prey conditions, and a list of species that are known to have used the site in the past.

EX 41
PS. 36
84

Wintering Raptor Survey

1) Surveys should be conducted by biologists with formal training in avian biology, significant field experience in raptor survey techniques, and demonstrated ability to identify accurately local species under a variety of field conditions.

2) If available, standard protocols promulgated by the U.S. Fish and Wildlife Service or the California Department of Fish and Game should be incorporated in the survey plan.

3) If standard protocols are not available from the wildlife agencies, the following elements should be included in the plan:

   - The survey should be conducted between December 1 and February 15.
   - The survey should consist of at least five visits.
   - Survey visits should be spaced at least one week apart.
   - Each visit should consist of at least two hours on site during the period between dawn and 10:00 am. If the site is very large, forested, or contains extensive riparian habitat, each visit should be longer in duration as determined by the best professional judgement of a raptor biologist.
   - If there is appropriate habitat for ground-nesting owls on site and such birds are known to occur within the region, there should be at least three additional survey visits, each conducted during the period immediately before nightfall.
   - The biologist should specifically search for foraging birds and birds using trees for perching, roosting, or nesting.

4) The survey report should provide a list of species that could reasonably be expected to use habitats on the site under other probable winter weather or prey conditions, and a list of wintering species that are known to have used the site in the past.

EX. 41
PG. 37

Received Ventura District office 6/7/02 7th

CULBERTSON, ADAMS & ASSOCIATES
PLANNING CONSULTANTS

Fax Transmittal

Date: June 7, 2002 Time Sent: 10:47 AM

To Melanie Hale

From: M. Andriette Culbertson

Subject: Dos Pueblos Golf Links

Project #:

Fax Number: To: (805) ~~685-1805~~ 641-1732
From: (949) 581-3698

Total Pages Faxed (including cover page): 18

Comments:

A copy of the White-Tailed Kite Nesting Survey is transmitted per our agreement that it would be received by your office on June 7, 2002

If you have any questions, please call me at (949) 581-2888.

EXHIBIT NO. 42
APPLICATION NO.
A-4-STB-93-154-CC-02
PSBS Kite Report June 7 2002

DOS PUEBLOS GOLF LINKS
GOLETA, SANTA BARBARA COUNTY, CALIFORNIA

WHITE-TAILED KITE NESTING SURVEY

Prepared For

Andi Culbertson
Culbertson, Adams & Associates
85 Argonaut, Ste 220
Aliso Viejo, California 92656
Telephone 949 581 2888
Facsimile 949 581 3599

Prepared By

Pacific Southwest Biological Services, Inc.
P. O. Box 985
National City, California 91951
Telephone 619 477 5333
Facsimile 619 477 5383
e-mail: bio@psbs.com

PSBS #U060

June 7, 2002

- ORIGINAL SIGNED -

Michael U. Evans, Director of Operations

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BIBLIOGRAPHY

Bowland, J. and T. Burgess. Table B. Tree Inventory, Dos Pueblos Golf Links; February 1993, Revised June 1998, Revision County Comments 10-15-98; Revision County Comments 11-6-98; Updated 10-16-98. Interface Planning and Counseling.

California Coastal Commission. Undated. Nesting Raptor Survey. 1 page.

Dudek & Associates. 2001. Raptor Survey for Dos Pueblos Golf Links. Letter Report Prepared for Mr. R. Whitt Hollis, Jr. 8 pages + Appendices.

Dudek & Associates. 2002. Environmental Assessment of the Dos Pueblos Habitat Conservation Plan. Unpubl. Report, Prepared for U. S. Fish and Wildlife Service, Ventura Field Office. (Excerpts).

Dunk, J. R. 1995. White-tailed Kite (*Elanus leucurus*). *In* The Birds of North America, No.178 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D. C.

Fugro-McClelland (West), Inc. 1993. Final Environmental Impact Report for the Arco Dos Pueblos Golf Links Project. 92-EIR-16; SCH: 92041056, Case #91-CP-085, Prepared for County of Santa Barbara, Resource Management Department, March 1993.

O'Reilly Rogers, Katie, Dudek & Associates, Bowland & Associates. 1998. Dos Pueblos Golf Links, Santa Barbara County, California. Biological Enhancement Landscape Plan, Revegetation Goals. 21 pages + figs. Revised November 1998.

O'Reilly Rogers, Katie. 1999. Tree Inventory Plan. Dos Pueblos Golf Links, Santa Barbara County, California, California, Sheet L.TI-1 & 2 of 2.

Pacific Southwest Biological Services, Inc. 2002. Dos Pueblos Golf Links White-tailed Kite Nesting Survey. Letter Report Prepared for Mr. R. Whitt Hollis, Jr. 3 pages + figure.

Palmer, R. S. 1988. Handbook of North American Birds. Vol. 4. Diurnal Raptors (Part 1). Yale University Press, New Haven and London, 433 p.

Santa Barbara County. 1993. Conditional Use Permit, Article II, Chapter 35, Case No 91-CP-085. Board of Supervisors, Exhibit No. 9, Application No. A-4-STB-98-332 (excerpts).

Santa Barbara County. 1993. Final Environmental Impact Report for the Arco Dos Pueblos Golf Links Project, 92-EIR-16, SCH 92041056; Case #91-CP-086, March 1993.

Waian, L. B. 1973. The behavior ecology of the North American White-tailed Kite (*Elanus leucurus majusculus*) of the Santa Barbara coastal plain. Ph.D. diss., Univ. of California, Santa Barbara.

PSBS# U060

APPENDIX 1. ANIMALS OBSERVED OR DETECTED

Common Name	Scientific Name
REPTILES	
Phrynosomatidae	
Western Fence Lizard	*Sceloporus occidentalis*
BIRDS	
Pelecanidae (Pelicans)	
Brown Pelican	*Pelecanus occidentalis*
Ardeidae (Herons)	
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Cathartidae (Vultures)	
Turkey Vulture	*Cathartes aura*
Anatidae (Ducks, geese and swans)	
Mallard	*Anas platyrhynchos*
Accipitridae (Hawks, Eagles, Harriers, Kites)	
White-tailed Kite	*Elanus leucurus*
Cooper's Hawk	*Accipiter cooperii*
Red-shouldered Hawk	*Buteo lineatus*
Red-tailed Hawk	*Buteo jamaicensis*
Falconidae (Falcons)	
American Kestrel	*Falco sparverius*
Columbidae (Pigeons and Doves)	
Rock Dove	*Columba livia*
Mourning Dove	*Zenaida macroura*
Trochilidae (Hummingbirds)	
Anna's Hummingbird	*Calypte anna*
Allen's Hummingbird	*Selasphorus sasin*
Picidae (Woodpeckers)	
Nuttall's Woodpecker	*Picoides nuttallii*
Northern Flicker	*Colaptes auratus*
Tyrannidae (Tyrant Flycatchers)	
Pacific-slope Flycatcher	*Empidonax difficilis*
Black Phoebe	*Sayornis nigricans*
Cassin's Kingbird	*Tyrannus vociferans*
Western Kingbird	*Tyrannus verticalis*
Corvidae (Jays, Crows, Ravens, Magpies)	
Western Scrub-Jay	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*

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APPENDIX 1. ANIMALS OBSERVED OR DETECTED (CONTINUED)

Hirundinidae (Swallows)	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Cliff Swallow	*Petrochelidon pyrrhonota*
Aegithalidae (Bushtits)	
Bushtit	*Psaltriparus minimus*
Troglodytidae (Wrens)	
Bewick's Wren	*Thryomanes bewickii*
Turdidae (Thrushes)	
Western Bluebird	*Sialia mexicana*
American Robin	*Turdus migratorius*
Timaliidae (Wrentits)	
Wrentit	*Chamaea fasciata*
Mimidae (Mockingbirds and Thrashers)	
Northern Mockingbird	*Mimus polyglottos*
Sturnidae (Starlings)	
European Starling	*Sturnus vulgaris*
Bombycillidae (Waxwings)	
Cedar Waxwing	*Bombycilla cedrorum*
Ptilogonatidae (Silky Flycatchers)	
Phainopepla	*Phainopepla nitens*
Parulidae (Wood Warblers)	
Orange-crowned Warbler	*Vermivora celata*
Yellow Warbler	*Dendroica petechia*
Common Yellowthroat	*Geothlypis trichas*
Yellow-breasted Chat	*Icteria virens*
Thraupidae (Tanagers)	
Western Tanager	*Piranga ludoviciana*
Emberizidae (Towhees, Sparrows)	
Spotted Towhee	*Pipilo maculatus*
California Towhee	*Pipilo crissalis*
Lark Sparrow	*Chondestes grammacus*
Song Sparrow	*Melospiza melodia*
White-crowned Sparrow	*Zonotrichia leucophrys*
Cardinalidae (Cardinals, Grosbeaks, Buntings)	
Blue Grosbeak	*Guiraca caerulea*
Icteridae (Blackbirds, Meadowlarks, Orioles)	
Red-winged Blackbird	*Agelaius phoeniceus*
Western Meadowlark	*Sturnella neglecta*
Brown-headed Cowbird	*Molothrus ater*
Hooded Oriole	*Icterus cucullatus*
Bullock s Oriole	*Icterus bullockii*

APPENDIX 1. ANIMALS OBSERVED OR DETECTED (CONTINUED)

Fringillidae (Finches)	
Purple Finch	*Carpodacus purpureus*
House Finch	*Carpodacus mexicanus*
Lesser Goldfinch	*Carduelis psaltria*
American Goldfinch	*Carduelis tristis*
MAMMALS	
Leporidae (Rabbits and Hares)	
Desert Cottontail	*Sylvilagus audubonii*
Canidae (Foxes, Wolves, and Relatives)	
Coyote	*Canis latrans*

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PSBS# U060

ATTACHMENT 1

Nesting Raptor Survey

1) Surveys should be conducted by biologists with formal training in avian biology, significant field experience in raptor survey techniques, and demonstrated ability top identify accurately local species under a variety of field conditions.

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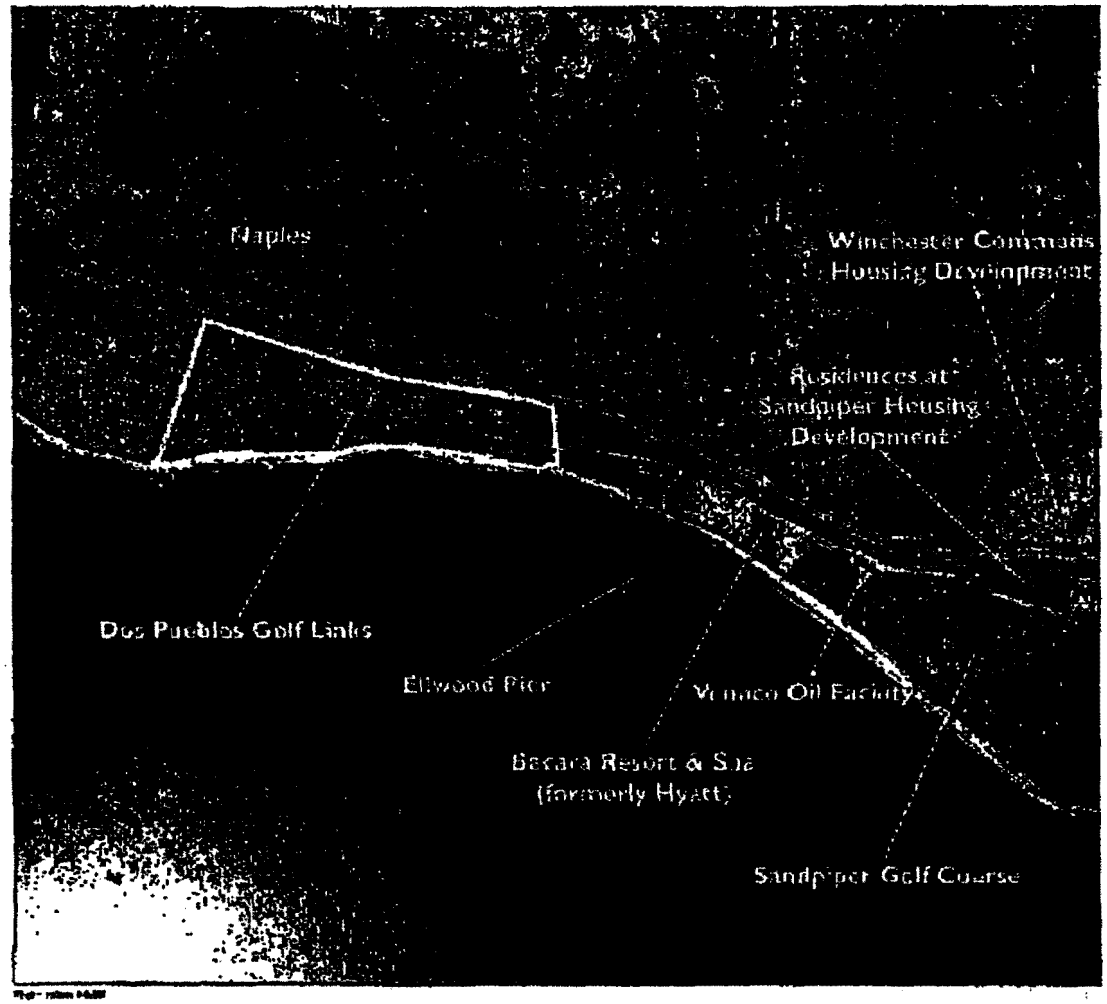
Aerial Site Vicinity Photo

Figure 1.



The Dos Pueblos Golf Links is situated between the coastline and Highway 101 just west of the Bacara Resort & Spa (formerly Hyatt) now under construction. The site is bisected by the Union-Pacific railroad tracks.

Map Source: Malibu Properties, LLC

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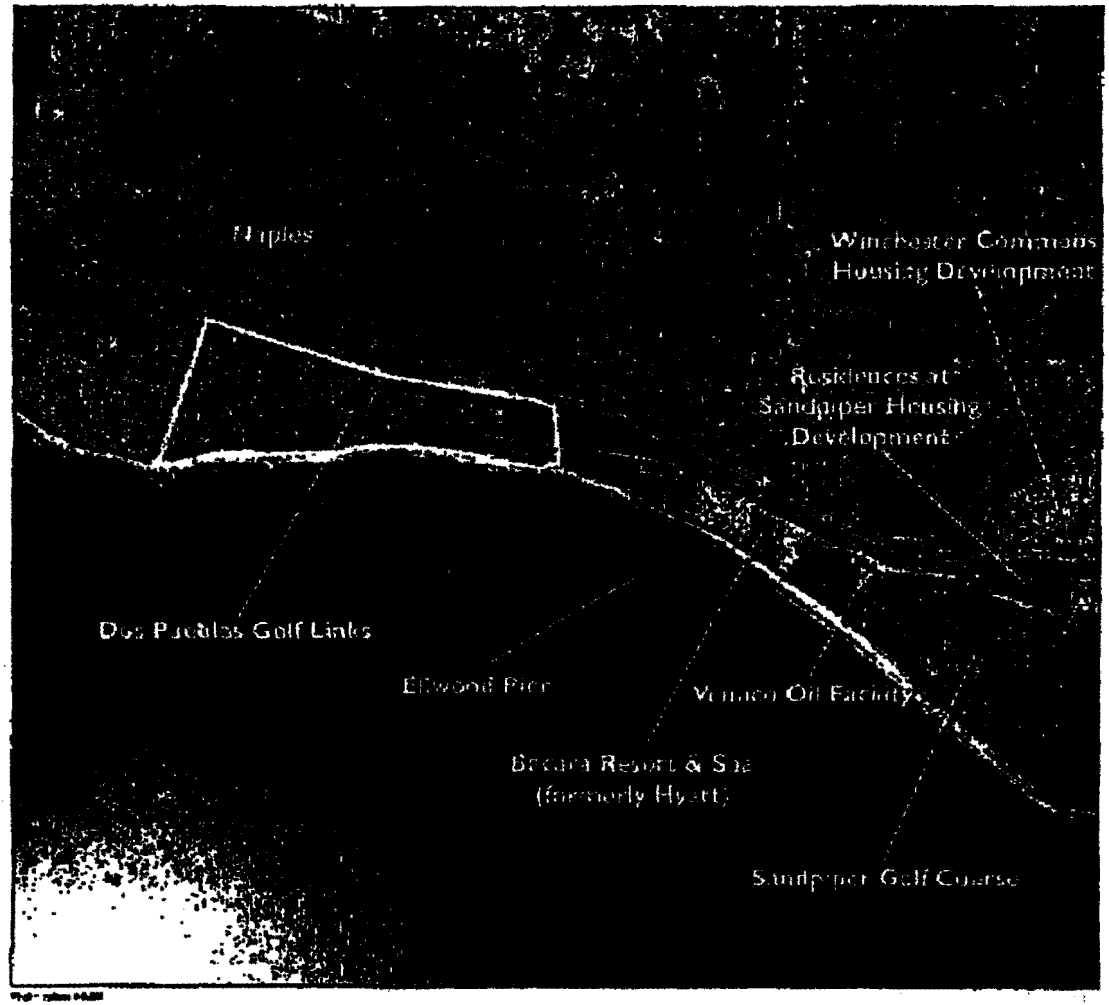
Aerial Site Vicinity Photo

Figure 1.



The Dos Pueblos Golf Links is situated between the coastline and Highway 101 just west of the Bacara Resort & Spa (formerly Hyatt) now under construction. The site is bisected by the Union-Pacific railroad tracks.

Map Source: Mallea Properties, LLC

Pacific Southwest Biological Services, Inc.

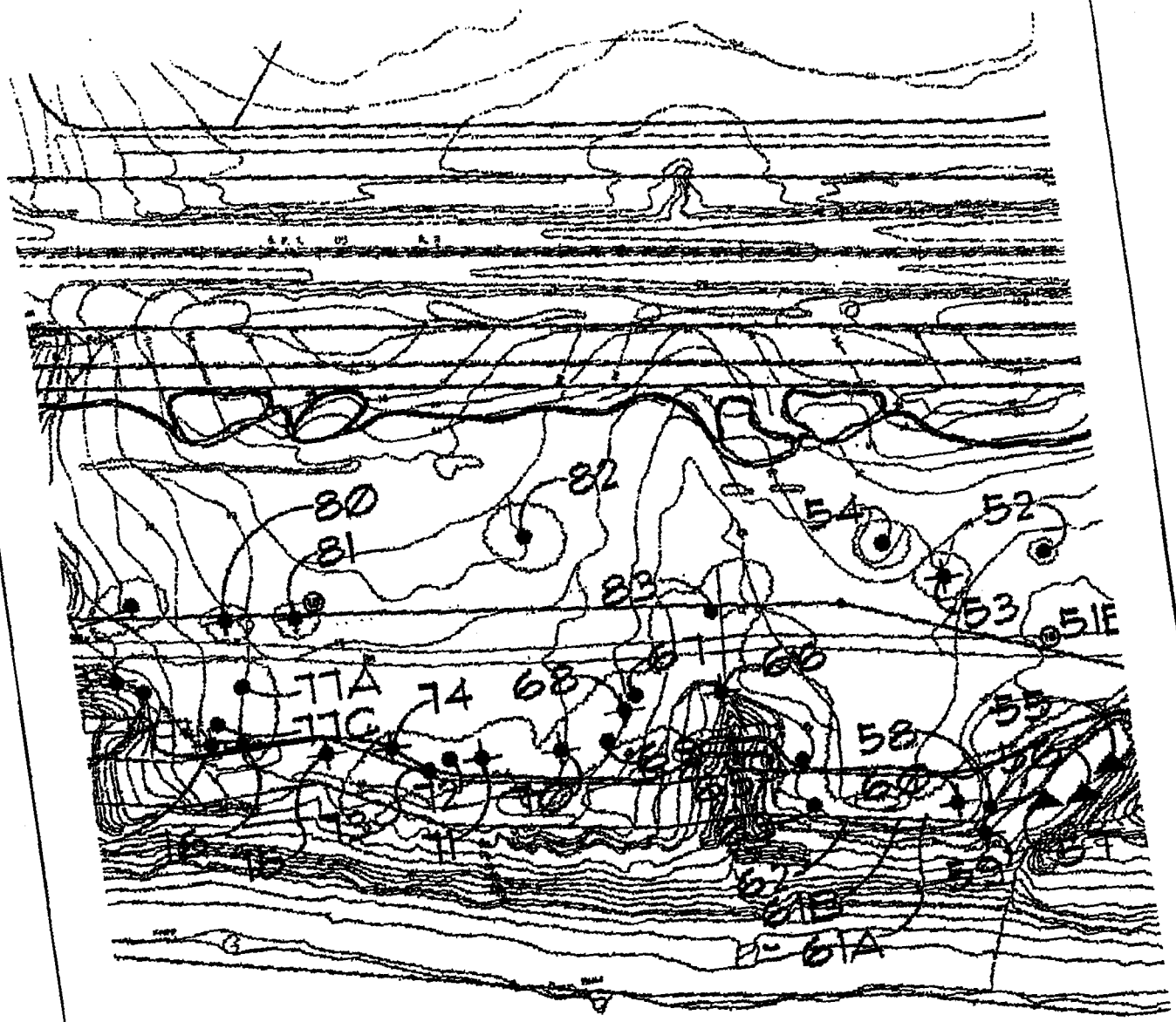


Figure 2a. Detail of Tree Inventory
Showing Eastern Pair Nest Tree # 67

N
1" = 100'

Source: Tree Inventory Dos Pueblos Golf Link (4/20/99)

Pacific Southwest Biological Services, Inc.

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PSBS #U060

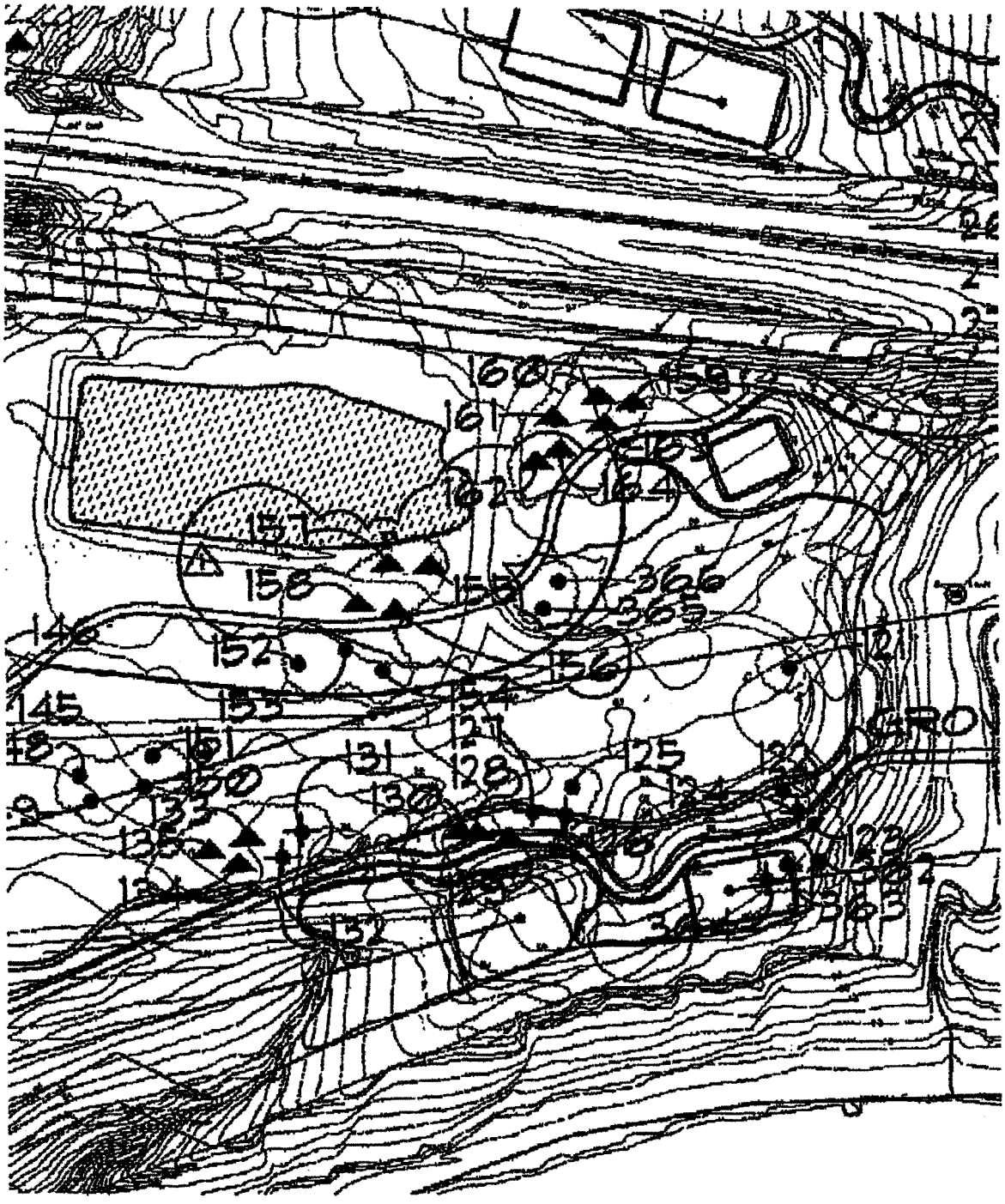

Figure 2b. Detail of Tree Inventory
Showing Western Pair Nest Tree # 127

N
1" = 100'

Source: Tree Inventory Dos Pueblos Golf Link (4/20/99) Pacific Southwest Biological Services, Inc.

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BIOLOGISTS

CORNELIUS W. BOUSCAREN

EDUCATION

1963 B.A. Yale University, New Haven, Connecticut.

PROFESSIONAL EXPERIENCE

Wildlife Biologist, Pacific Southwest Biological Services, Inc. 1992-Present. Has participated in biological inventories and assessments for both public and private entities in San Diego, Orange, Riverside, Los Angeles, Santa Clara, San Bernardino, and San Mateo counties. Mr. Bouscaren is skilled in identifying the sensitive vertebrate and invertebrate species found in the vegetation communities of southern California with particular emphasis on those associated with Coastal Sage Scrub and riparian habitats. He has conducted field surveys in accordance with U. S. Fish and Wildlife Service protocol for the Coastal California Gnatcatcher, Least Bell's Vireo, and Southwestern Willow Flycatcher on projects which include five candidate reservoir sites for the San Diego County Water Authority Emergency Water Storage project, Habitat Quality Assessment for San Diego Pipeline No. 6, and the 1,100 acre proposed El Sobrante Landfill Expansion Site in Riverside County. While working with Pacific Southwest, Mr. Bouscaren has accumulated over 750 hours conducting Gnatcatcher surveys. Mr. Bouscaren has been a participant in the Annual Breeding Bird Survey for the Service. Mr. Bouscaren has also performed extensive Desert Tortoise surveys and monitoring targeting this species. Mr. Bouscaren has several years experience monitoring revegetation of both uplands and wetlands habitats. In addition, Mr. Bouscaren has extensive experience surveying and monitoring both freshwater and saltmarsh wetlands projects. Mr. Bouscaren also is experienced in preparing and expediting permit processing for Sections 1601, 1603, 401, 404, and Nationwide permits.

SIGNIFICANT PROJECTS

Biological Assessment of Five Candidate Reservoir Sites for the San Diego County Water Authority Emergency Storage Program. 1992-1993. Prepared for San Diego County Water Authority. Participated in focused riparian bird surveys and Coastal California Gnatcatcher surveys for these five sites.

Biological Assessment of the San Diego Pipeline No. 6. 1992. Metropolitan Water District and San Diego County Water Authority. Responsible for establishing transects and conducting surveys for sensitive species in the various study areas.

Habitat Quality Assessment for San Diego Pipeline No. 6. 1992. Metropolitan Water District and San Diego County Water Authority. Responsible for establishing transects and conducting surveys for sensitive species in the various study areas.

Biological Survey of the 1,100-Acre Proposed El Sobrante Landfill Expansion Site, Riverside County, CA. 1992. Participated in extensive surveys for sensitive avifauna and herpetofauna.

Monitoring of Least Bell's Vireo and Other Sensitive Species Along Otay River Valley, San Diego County, CA. 1993-1996. Monitored sensitive avian species, including Coastal California Gnatcatcher, on three adjacent and related construction projects. Conducted liaison with construction crews to ensure mitigation and that construction methods guidelines were followed. Accumulated over 500 hours of monitoring time in the field.

Monitoring of Least Bell's Vireo and Other Sensitive Species Along Kitchen Creek, San Diego County, CA. 1994. Monitored sensitive species during construction of a replacement bridge on Old Highway 80. Accumulated over 80 hours of monitoring time in the field.

Biological Survey of Lower San Mateo Creek Basin, United States Marine Corps Base, Camp Pendleton, San Diego County, CA. 1994. Participated in focused surveys for the Coastal California Gnatcatcher, Least Bell's Vireo, and Arroyo Toad on the 1,200-acre lower San Mateo Creek Basin.

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Preconstruction Biological Assessment and Monitoring of Rose Canyon Trunk Sewer Construction, San Diego, CA. 1992-1998. City of San Diego.

Monitoring of Coastal California Gnatcatcher and other Sensitive Species during Sycamore-Rancho Carmel line restringing. San Diego Gas & Electric Company. 1995.

Biological Survey, Wetlands Restoration Monitoring, and Small Mammal/Reptile Trapping Program, East Mission Gorge Interceptor Sewer. City of San Diego. 1995-1997.

Coastal Sage Scrub Vegetation Monitoring Program, Sycamore-Creelman Line. San Diego Gas & Electric Company. 1995-1998.

Channelside Saltmarsh Restoration, Chula Vista. Gatlin Development Company. 1994-2000.

USCD East Campus Wetlands, San Diego. University of California, San Diego. 1993-1998.

Brown-headed Cowbird Trapping Program. Managed five-year Brown-headed Cowbird Trapping Program (Permit #762555), Otay Valley, San Diego County, CA, for City of Chula Vista. 1995-1999. Currently managing fourth year of Brown-headed Cowbird Trapping Program for City of San Diego, Tijuana River Valley. Program scheduled for perpetuity.

Desert Tortoise Survey, Iron Mountain-Danby Lake. Metropolitan Water District of Southern California. 1995.

Desert Tortoise Survey and Monitoring, Highway 395 Passing Lane Construction. Caltrans District 8. San Bernardino County, south of Kramer Junction. 1998.

Desert Tortoise Monitoring, InterConnect Towers Sleeping Beauty site, Interstate Highway 40, San Bernardino County. 2000.

Desert Tortoise Monitoring, InterConnect Towers Fenner Spring site, Interstate Highway 40, San Bernardino County. 2001.

Desert Tortoise Survey, Phantom West and Air Expressway Widening, Victorville, San Bernardino County. 2001.

Desert Tortoise Monitoring, Washington Group/Granite Construction Batching Plant and Ponds, Interstate Highway 40 East of Ludlow, San Bernardino County. 2001.

Desert Tortoise Survey and Monitoring, Washington Group/Granite Construction Rock Crushing Plant, Ludlow, San Bernardino County. 2001.

Coastal California Gnatcatcher Survey, Vista Verde Ranch, San Dimas, Los Angeles County. Six-visit survey, March-April 1999.

Coastal California Gnatcatcher Survey, Festival Ridge, Anaheim Hills, Orange County. Six-visit survey, April-May 2000.

Coastal California Gnatcatcher Survey, Andora Street, Chatsworth, Los Angeles County. Six-visit survey, May-June 2000.

Coastal California Gnatcatcher Survey, Sunshine Canyon Landfill, Los Angeles County. Six-visit survey, May-July 2000.

Coastal California Gnatcatcher Survey, Menifee Valley, Riverside County. Nine-visit survey, July-August 2000.

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Coastal California Gnatcatcher Survey, Redhawk Community Property, Temecula, Riverside County. Six-visit survey, March-May 2001.

Coastal California Gnatcatcher Survey, Temecula Creek Ranch, Aguanga, Riverside County. Six-visit survey, March-May 2001.

Coastal California Gnatcatcher Survey, Clinton Keith Road, Murrieta, Riverside County. Six-visit survey, March-May 2001.

Coastal California Gnatcatcher Survey, Winchester Crossing, Winchester, Riverside County. Nine-visit survey, January-April 2002.

Coastal California Gnatcatcher Survey, All American Asphalt, Irvine, Orange County. Multi-visit survey, spring 2002 (in progress).

Least Bell's Vireo Survey and Monitoring, Coral Gate development, Tijuana River Valley, San Diego County. 1996.

Least Bell's Vireo Survey, Peppertree Park, Ostrich Farm Creek, Fallbrook, San Diego County. 1998.

Least Bell's Vireo Survey, Brookside, Reidy Creek, Escondido, San Diego County. 1999.

Least Bell's Vireo and Southwestern Willow Flycatcher Survey, Brookside, Reidy Creek, Escondido, San Diego County. 2000.

Least Bell's Vireo Survey, Gilroy Energy Center, Llagas Creek, Gilroy, Santa Clara County. 2001.

Least Bell's Vireo and Southwestern Willow Flycatcher Survey, Temecula Creek Ranch, Temecula Creek, Aguanga, Riverside County. 2001.

Least Bell's Vireo and Southwestern Willow Flycatcher Survey, Sunshine Canyon, Los Angeles County. 2000, 2002 (in progress).

Least Bell's Vireo and Southwestern Willow Flycatcher Survey, Peppertree Park, Ostrich Farm Creek, Fallbrook, San Diego County. 2001, 2002 (in progress).

Least Bell's Vireo, Southwestern Willow Flycatcher, and Coastal California Gnatcatcher Survey, French Valley, Riverside County. Multi-visit survey, 2002 (in progress).

Avian Surveys, (quarterly), FPL Solar Electric Generating System evaporation ponds, Harper Lake, San Bernardino County, 2000, 2001, 2002.

CERTIFICATIONS AND PERMITS

- U. S. Fish and Wildlife Service Incidental Take Permit for the Coastal California Gnatcatcher, Least Bell's Vireo, and Southwestern Willow Flycatcher (TE-778100-2) (expires 26 July 2002, renewal in progress).
- California Department of Fish and Game Scientific Collector's Permit (#801088-03) (expires 30 May 2003).
- Certified Wetland Delineator (#367)

PROFESSIONAL WORKSHOPS AND TRAINING

- Biology and Management of Rodents in Southern California, San Bernardino County Museum, Redlands, CA 1993.
- Biology and Management of Sensitive Amphibians and Reptiles of Central and Southern California, Goleta CA 1994.

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- Fifth Annual Desert Tortoise Council Survey Techniques Workshop, Ridgecrest, CA 1994.
- The Willow Flycatcher Workshop, San Diego Natural History Museum, San Diego, CA 1995.
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- California Amphibian Workshop, San Diego, CA 1998.
- First, Second, and Third Annual Quino Checkerspot Butterfly Workshops. Carlsbad, CA 1997. Chula Vista, CA 1999. Riverside, CA 2000.

PROFESSIONAL AFFILIATIONS

- Participant, Annual Breeding Bird Survey, U.S. Fish and Wildlife Service
- Participant, Monthly Bird Censuses, San Diego County
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- Buena Vista Chapter, National Audubon Society
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- California Lichen Society
- Southern California Botanists
- San Diego Natural History Museum
- Friends of Los Peñasquitos Canyon Preserve
- The Wildlife Society
- San Diego Mycological Society
- Friends of the Santa Margarita River
- Raptor Watch, Ramona, San Diego County

MICHAEL U. EVANS

EDUCATION

1966	B.S., Biology/Zoology, San Diego State University
1973	M.S., Biology/Zoology, San Diego State University

PROFESSIONAL EXPERIENCE

BIOLOGICAL ASSESSMENT/RESEARCH. Served on research committee, initial technical editor of Birds of San Diego County by Philip Unitt, San Diego Natural History Museum. Co-authored bird census study involving 8-year study of avian use of desert riparian habitat. Extensive experience in field assessment and mapping of California Gnatcatcher and Coastal Cactus Wren in Orange, Riverside and San Diego Counties. Participant for several years on federal Breeding Bird Censuses, Point Reyes Bird Observatory, CECESE surveys in Southern California, northern Baja California (upland birds, wetland birds, California Least Tern, Light-footed Clapper Rail, Western Snowy Plover, Least Bell's Vireo); formerly held Master Banding Permit. Extensive experience in biological resource and impact assessment, ranging from small private projects to large community plan areas. Experience in pre-construction and construction monitoring. Holds federal permits for survey and/or monitoring for following species: California Least Tern, Western Snowy Plover, California Gnatcatcher, Least Bell's Vireo, and Southwestern Willow Flycatcher. Mr. Evans participated in an eight-year census of birds in the Anza-Borrego Desert and has published the results. He has also contributed substantially to recent publication on the birds of the Anza-Borrego Desert.

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- Participated in extensive field surveys for Coastal Sage Scrub in southern Orange County for Habitat Conservation Plan.
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EDUCATIONAL BACKGROUND/TRAINING

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1996	Research and Land Management Conference. Sept. 12-13, 1996. San Diego Zoological Society, San Diego, California.
1997	Symposium on the Effects of Aircraft Noise on Passerine Birds. U.S. Navy, San Diego, California.
1999	Second Annual Quino Checkerspot Butterfly Workshop. Chula Vista, California.

PROFESSIONAL EXPERIENCE

Environmental Management Specialist III, County Department of Planning and Land Use. 1997.
Natural Resources Consultant, Self-employed. 1997.
Wildlife Biologist, United States Fish and Wildlife Service, Carlsbad Field Office. 1996-1997.
Special Professional Consultant, Environmental Analysis and Habitat Planning, San Diego County Department of Planning and Land Use. 1994-1995.
Natural Resources Consultant, Self-employed. 1993-1994.
Habitat Planning Coordinator, San Diego County Department of Planning and Land Use. 1991-1993.
Special Projects and Regional Manager, Michael Brandman Associates, San Diego. 1988-1991.
Environmental Management Specialist, San Diego County Department of Planning and Land Use. 1971-1988.

PROFESSIONAL SERVICE

Board Member, *Pro esteros*, a binational non-profit organization dedicated to the study and conservation of Coastal Wetlands of the Baja California Peninsula, Mexico.
Advisory Panel Member, San Diego County Bird Atlas Project, San Diego Natural History Museum.
Past Vice-President, California Native Plant Society, State-wide Chapter; Past President and California Native Plant Society, San Diego Chapter.
Past President, San Diego Field Ornithologists, San Diego, California.
Past Secretary, Uptown Community Planning Advisory Committee, City of San Diego, California.

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Pat Flanagan, Educational Director, San Diego Natural History Museum, San Diego, California.
Dr. Collins Charles, Professor, California State University at Long Beach, California.
Elizabeth Copper, Ornithologist, Coronado, California.
Barbara W. Massey, Ornithologist, Long Beach, California.

PANELS, PRESENTATIONS

Behavior or Heermann's Gull on Isla Raza, Gulf of California. Western Field Ornithologists, Santa Barbara County Museum of Natural History. 1983.
Oak Woodlands Conservation from a Local Government Perspective, Invited Presentation: California Oak Woodlands Conservation Symposium, Sacramento, California. 1988.
Regional Habitat Planning by Local Government, Invited Presentation. Presented to U.S. Forest Service Annual Meeting, San Diego. 1991.

Survey of Coastal Wetlands Vegetation along the Pacific Coast of Baja California. AAAS, Pacific Division Meeting, U.C. Santa Barbara, June 21-25, 1992.

Habitat Conservation Planning at the County of San Diego, AEP/APA Conference on Coastal Sage Scrub Habitat Planning. 1992 Panel Member.

Border Geographic Information System Workshop. SCERF Conference on Border Area Planning, San Diego. 1992 Panel Member.

Habitat Conservation Planning Approaches in Southern California Using GIS Techniques. Wildlife Forum for the Californias, Sept. 10-12, 1993, Ensenada, Mexico.

Role of Databases as a GIS tool in Land Use Planning. SCERF Workshop on GIS Databases for Mexico/United States Border Environmental Research, November 18-19, 1993, San Diego. 1993 Focus Group Leader.

Bird Atlas for San Diego County, San Diego Museum of Natural History: a 5-year breeding and wintering bird atlas program. 1996-1997 Advisory Panel.

PUBLICATIONS

Coastal Ornithology of San Diego County, Pamphlet, San Diego County Department of Planning and Land Use. 1973.

Reproductive Ethology (behavior) of the Caspian Tern Breeding at San Diego Bay. Master of Science Thesis, San Diego State University. 1976.

Mediterranean-type Ecosystems in Vegetation Management Planning: The Challenge of Vegetation Management at the Local Level, with Thomas Oberbauer. Proc. Of Symp. On Dynamics and Management of Mediterranean-Type Ecosystems. June 22-26, 1981, San Diego. 1981.

Riparian Restoration Planning in Southern California— What's missing? Soc. Ecol. Restoration Proceedings, January, 1989, with K. MacDonald, H.A. Wier, and J.M. Vanderwier. 1990.

An Eight-year Census of the Birds of Vallecito Creek, Anza-Borrego Desert, California, with B.W. Massey, Western Birds, 25(4): 178-191. 1994.

The Birds of Anza Borrego Desert State Park. B.W. Massey (ed.). 1998.

CORNELIUS W. BOUSCAREN

EDUCATION

1963 B.A. Yale University, New Haven, Connecticut.

PROFESSIONAL EXPERIENCE

Wildlife Biologist, Pacific Southwest Biological Services, Inc. 1992-Present. Has participated in biological inventories and assessments for both public and private entities in San Diego, Orange, Riverside, Los Angeles, Santa Clara, San Bernardino, and San Mateo counties. Mr. Bouscaren is skilled in identifying the sensitive vertebrate and invertebrate species found in the vegetation communities of southern California with particular emphasis on those associated with Coastal Sage Scrub and riparian habitats. He has conducted field surveys in accordance with U. S. Fish and Wildlife Service protocol for the Coastal California Gnatcatcher, Least Bell's Vireo, and Southwestern Willow Flycatcher on projects which include five candidate reservoir sites for the San Diego County Water Authority Emergency Water Storage project, Habitat Quality Assessment for San Diego Pipeline No. 6, and the 1,100 acre proposed El Sobrante Landfill Expansion Site in Riverside County. While working with Pacific Southwest, Mr. Bouscaren has accumulated over 750 hours conducting Gnatcatcher surveys. Mr. Bouscaren has been a participant in the Annual Breeding Bird Survey for the Service. Mr. Bouscaren has also performed extensive Desert Tortoise surveys and monitoring targeting this species. Mr. Bouscaren has several years experience monitoring revegetation of both uplands and wetlands habitats. In addition, Mr. Bouscaren has extensive experience surveying and monitoring both freshwater and saltmarsh wetlands projects. Mr. Bouscaren also is experienced in preparing and expediting permit processing for Sections 1601, 1603, 401, 404, and Nationwide permits.

SIGNIFICANT PROJECTS

Biological Assessment of Five Candidate Reservoir Sites for the San Diego County Water Authority Emergency Storage Program. 1992-1993. Prepared for San Diego County Water Authority. Participated in focused riparian bird surveys and Coastal California Gnatcatcher surveys for these five sites.

Biological Assessment of the San Diego Pipeline No. 6. 1992. Metropolitan Water District and San Diego County Water Authority. Responsible for establishing transects and conducting surveys for sensitive species in the various study areas.

Habitat Quality Assessment for San Diego Pipeline No. 6. 1992. Metropolitan Water District and San Diego County Water Authority. Responsible for establishing transects and conducting surveys for sensitive species in the various study areas.

Biological Survey of the 1,100-Acre Proposed El Sobrante Landfill Expansion Site, Riverside County, CA. 1992. Participated in extensive surveys for sensitive avifauna and herpetofauna.

Monitoring of Least Bell's Vireo and Other Sensitive Species Along Otay River Valley, San Diego County, CA. 1993-1996. Monitored sensitive avian species, including Coastal California Gnatcatcher, on three adjacent and related construction projects. Conducted liaison with construction crews to ensure mitigation and that construction methods guidelines were followed. Accumulated over 500 hours of monitoring time in the field.

Monitoring of Least Bell's Vireo and Other Sensitive Species Along Kitchen Creek, San Diego County, CA. 1994. Monitored sensitive species during construction of a replacement bridge on Old Highway 80. Accumulated over 80 hours of monitoring time in the field.

Biological Survey of Lower San Mateo Creek Basin, United States Marine Corps Base, Camp Pendleton, San Diego County, CA. 1994. Participated in focused surveys for the Coastal California Gnatcatcher, Least Bell's Vireo, and Arroyo Toad on the 1,200-acre lower San Mateo Creek Basin.

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Preconstruction Biological Assessment and Monitoring of Rose Canyon Trunk Sewer Construction, San Diego, CA. 1992-1998. City of San Diego.

Monitoring of Coastal California Gnatcatcher and other Sensitive Species during Sycamore-Rancho Carmel line restringing. San Diego Gas & Electric Company. 1995.

Biological Survey, Wetlands Restoration Monitoring, and Small Mammal/Reptile Trapping Program, East Mission Gorge Interceptor Sewer. City of San Diego. 1995-1997.

Coastal Sage Scrub Vegetation Monitoring Program, Sycamore-Creelman Line. San Diego Gas & Electric Company. 1995-1998.

Channelside Saltmarsh Restoration, Chula Vista. Gatlin Development Company. 1994-2000.

USCD East Campus Wetlands, San Diego. University of California, San Diego. 1993-1998.

Brown-headed Cowbird Trapping Program. Managed five-year Brown-headed Cowbird Trapping Program (Permit #762555), Otay Valley, San Diego County, CA, for City of Chula Vista. 1995-1999. Currently managing fourth year of Brown-headed Cowbird Trapping Program for City of San Diego, Tijuana River Valley. Program scheduled for perpetuity.

Desert Tortoise Survey, Iron Mountain-Danby Lake. Metropolitan Water District of Southern California. 1995.

Desert Tortoise Survey and Monitoring, Highway 395 Passing Lane Construction. Caltrans District 8. San Bernardino County, south of Kramer Junction. 1998.

Desert Tortoise Monitoring, InterConnect Towers Sleeping Beauty site, Interstate Highway 40, San Bernardino County. 2000.

Desert Tortoise Monitoring, InterConnect Towers Fenner Spring site, Interstate Highway 40, San Bernardino County. 2001.

Desert Tortoise Survey, Phantom West and Air Expressway Widening, Victorville, San Bernardino County. 2001.

Desert Tortoise Monitoring, Washington Group/Granite Construction Batching Plant and Ponds, Interstate Highway 40 East of Ludlow, San Bernardino County. 2001.

Desert Tortoise Survey and Monitoring, Washington Group/Granite Construction Rock Crushing Plant, Ludlow, San Bernardino County. 2001.

Coastal California Gnatcatcher Survey, Vista Verde Ranch, San Dimas, Los Angeles County. Six-visit survey, March-April 1999.

Coastal California Gnatcatcher Survey, Festival Ridge, Anaheim Hills, Orange County. Six-visit survey, April-May 2000.

Coastal California Gnatcatcher Survey, Andora Street, Chatsworth, Los Angeles County. Six-visit survey, May-June 2000.

Coastal California Gnatcatcher Survey, Sunshine Canyon Landfill, Los Angeles County. Six-visit survey, May-July 2000.

Coastal California Gnatcatcher Survey, Menifee Valley, Riverside County. Nine-visit survey, July-August 2000.

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Coastal California Gnatcatcher Survey, Redhawk Community Property, Temecula, Riverside County. Six-visit survey, March-May 2001.

Coastal California Gnatcatcher Survey, Temecula Creek Ranch, Aguanga, Riverside County. Six-visit survey, March-May 2001.

Coastal California Gnatcatcher Survey, Clinton Keith Road, Murrieta, Riverside County. Six-visit survey, March-May 2001.

Coastal California Gnatcatcher Survey, Winchester Crossing, Winchester, Riverside County. Nine-visit survey, January-April 2002.

Coastal California Gnatcatcher Survey, All American Asphalt, Irvine, Orange County. Multi-visit survey, spring 2002 (in progress).

Least Bell's Vireo Survey and Monitoring, Coral Gate development, Tijuana River Valley, San Diego County. 1996.

Least Bell's Vireo Survey, Peppertree Park, Ostrich Farm Creek, Fallbrook, San Diego County. 1998.

Least Bell's Vireo Survey, Brookside, Reidy Creek, Escondido, San Diego County. 1999.

Least Bell's Vireo and Southwestern Willow Flycatcher Survey, Brookside, Reidy Creek, Escondido, San Diego County. 2000.

Least Bell's Vireo Survey, Gilroy Energy Center, Llagas Creek, Gilroy, Santa Clara County. 2001.

Least Bell's Vireo and Southwestern Willow Flycatcher Survey, Temecula Creek Ranch, Temecula Creek, Aguanga, Riverside County. 2001.

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1966	B.S., Biology/Zoology, San Diego State University
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Natural Resources Consultant, Self-employed. 1993-1994.
Habitat Planning Coordinator, San Diego County Department of Planning and Land Use. 1991-1993.
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PROFESSIONAL SERVICE

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Past President, San Diego Field Ornithologists, San Diego, California.
Past Secretary, Uptown Community Planning Advisory Committee, City of San Diego, California.

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Dr. Collins Charles, Professor, California State University at Long Beach, California.
Elizabeth Copper, Ornithologist, Coronado, California.
Barbara W. Massey, Ornithologist, Long Beach, California.

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Habitat Conservation Planning at the County of San Diego, AEP/APA Conference on Coastal Sage Scrub Habitat Planning. 1992 Panel Member.

Border Geographic Information System Workshop. SCERF Conference on Border Area Planning, San Diego. 1992 Panel Member.

Habitat Conservation Planning Approaches in Southern California Using GIS Techniques. Wildlife Forum for the Californias, Sept. 10-12, 1993, Ensenada, Mexico.

Role of Databases as a GIS tool in Land Use Planning. SCERF Workshop on GIS Databases for Mexico/United States Border Environmental Research, November 18-19, 1993, San Diego. 1993 Focus Group Leader.

Bird Atlas for San Diego County, San Diego Museum of Natural History: a 5-year breeding and wintering bird atlas program. 1996-1997 Advisory Panel.

PUBLICATIONS

Coastal Ornithology of San Diego County, Pamphlet, San Diego County Department of Planning and Land Use. 1973.

Reproductive Ethology (behavior) of the Caspian Tern Breeding at San Diego Bay. Master of Science Thesis, San Diego State University. 1976.

Mediterranean-type Ecosystems in Vegetation Management Planning: The Challenge of Vegetation Management at the Local Level, with Thomas Oberbauer. Proc. Of Symp. On Dynamics and Management of Mediterranean-Type Ecosystems. June 22-26, 1981, San Diego. 1981.

Riparian Restoration Planning in Southern California— What's missing? Soc. Ecol. Restoration Proceedings, January, 1989, with K. MacDonald, H.A. Wier, and J.M. Vanderwier. 1990.

An Eight-year Census of the Birds of Vallecito Creek, Anza-Borrego Desert, California, with B.W. Massey, Western Birds, 25(4): 178-191. 1994.

The Birds of Anza Borrego Desert State Park. B.W. Massey (ed.). 1998.

Science Applications International Corporation
An Employee-Owned Company

January 26, 1999

Ms. Samantha Kim
Dudek & Associates
621 Chapala Street
Santa Barbara, CA 93101

Subject: Dos Pueblos Golf Links Sensitive Species Survey Report

Dear Samantha:

Attached is our survey report for sensitive species at the Dos Pueblos Golf Links project site. No map was prepared since the only potential habitat for sensitive species that could be graphically shown is Eagle Canyon Creek. Tidewater gobies could be present or colonize the stream in the future, using aquatic habitats within the canyon. Red-legged frogs could use the aquatic habitats as well as the banks and adjacent uplands within the riparian woodland. Essentially the entire project site could be used by the white-tailed kite for foraging.

We appreciate this opportunity to be of service. If you have any questions regarding the report, please do not hesitate to give me or Ted a call.

Sincerely,
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Rosemary Thompson

Rosemary Thompson, Ph.D.
Senior Biologist

attachment

k:\work\Dudek\DP Golf Links\L-tr-rpt.doc

DOS PUEBLOS GOLF LINKS
SENSITIVE SPECIES SURVEY REPORT
JANUARY 11-12, 1999

INTRODUCTION

The following report summarizes the biological reconnaissance site visit and surveys for sensitive wildlife species conducted on January 11 and 12, 1999 at the proposed Dos Pueblos Golf Links project site by SAIC biologists Dr. Rosemary Thompson and Mr. Ted Mullen. This report describes the survey methods and results, and provides an evaluation of habitat suitability for sensitive species in the project area. The species covered in this report include:

Common Name	*Scientific Name*	*Federal Status*	*State Status*
tidewater goby	*Eucyclogobius newberryi*	FE	CSC
California red-legged frog	*Rana aurora draytonii*	FT	CSC
arroyo toad	*Bufo microscaphus californicus*	FE	CSC
southwestern pond turtle	*Clemmys marmorata*	FSC	CSC
California coast horned lizard	*Phrynosoma coronatum frontale*	FSC	CSC
white-tailed kite	*Elanus caeruleus*	–	FP

FE = federally listed as endangered; FT = federally listed as threatened; FSC = federal species of special concern; CSC = California species of special concern; FP = fully protected

METHODS

The surveys were conducted by walking through the different habitats on the project site, focussing on those habitats likely to support sensitive species. In addition, two day and night surveys for the California red-legged frog were conducted between the railroad culvert and the mouth of Eagle Canyon Creek, the only suitable habitat on site, using the 1997 U.S. Fish and Wildlife Service protocol. Visual searches for tidewater gobies were made in the lagoon at the mouth of Eagle Canyon Creek while slowly wading in the water. Where no sensitive species were found, the potential habitats on the site were visually assessed in terms of suitability for these species.

Areas within the project site described as wetland habitats on the wetland delineation maps (Dudek 1998) plus the drainages not designated as wetlands were assessed in terms of their suitability for supporting tidewater goby, southwestern pond turtle, and arroyo toad. Upland habitats were evaluated for California coast horned lizard suitability since the weather was cold and the probability of finding any horned lizards

without extensive searching was very low. Searches for white-tailed kites were made while walking on the site. All additional wildlife observed during the surveys were also recorded. Special attention was given to recording any habitat present on site that could support raptors, monarch butterflies, or any other species of local concern.

SURVEY RESULTS

General Wildlife Use

Most of the habitat on the project site can be characterized as disturbed non-native grassland or coastal scrub, although several locations near the bluff along the coast contained native grasses. The coastal scrub habitat is dominated by coyote brush (*Baccharis pilularis*) and California sagebrush (*Artemisia californica*) and was primarily found in drainages and along the Union Pacific railroad tracks. The larger, steeper-sloped drainages such as Drainages 4, 5 and 6 and Tomate Canyon have the densest stands of this vegetation type. All of the drainages except for Eagle Canyon and Tomate Canyon were dry during the time of the survey although some of the drainages (Drainages 3, 4, and 7) still contained some wetland vegetation such as willow (*Salix* sp.), rushes (*Juncus* sp.), and cattails (*Typha* sp.). Eagle Canyon Creek was flowing, and the area near the mouth of the creek supported patches of cattail, bulrush (*Scirpus* sp.), and numerous willow seedlings. The riparian woodland along the creek included willows and sycamores (*Platanus racemosa*) and was dominated by blue gum (*Eucalyptus globulus*) from the north slope of the railroad fill to the ocean.

The streambed in Tomate Canyon contained a few small pools of water with little or no wetland vegetation. The canyon walls are steep and the willow riparian created abundant shade. There was no flowing water in this drainage. Upstream of the railroad tracks is a patch of willow riparian woodland along the base of the fill and upstream along Tomate Canyon for a short distance. The canyon has a broad, flat bottom with another willow patch close to Highway 101.

The disturbed grassland on site showed recent human activities which includes the removal of oil field operations on site. Several areas were either recently mowed or disked and dirt roads intersected all of the property. Several stands of non-native eucalyptus trees were scattered throughout the site along with other non-native trees, such as tamarisk.

Normally, the functions and values of grassland and introduced vegetation are limited in terms of resources for wildlife species due to the level of human disturbance. However, due to the distance this site is from other human activities and the proximity to undisturbed habitat, this site will attract and support several wildlife species. Several species that are associated with human disturbance, such as California ground squirrel, pocket gopher, cottontail rabbit and black-tailed jackrabbit, can utilize the open grassy areas. Evidence of cottontail rabbit, pocket gopher, and ground squirrel was observed during the SAIC surveys. These species and other small rodents likely to be present will attract predators into the area such as coyote, bobcat (observed), long-tailed weasel, and

gray fox. Other mammal species observed or expected to use the habitat in the proposed project area include raccoon, striped skunk, mule deer, opossum, and dusky-footed woodrat.

Numerous avian species were observed during the site visit, and these and other species are expected to forage and nest on the project area including California towhee, house finch, white-crowned sparrow, and loggerhead shrike in the open grassy areas and Bewick's wren, bushtit, spotted towhee, and blue-gray gnatcatcher in the coastal scrub habitat. Other avian species that use this open area for foraging include raptors such as American kestrel, red-tailed hawk, ferruginous hawk, and northern harrier. The stands of cypress and eucalyptus trees on site provide excellent roost and nest sites for these species, crows, and owls including barn owl and great-horned owl. Stands of eucalyptus are also known to provide cover for monarch butterfly roosts. Although most of the trees on site are unlikely to support this species, the stand on Eagle Canyon near the train tracks is dense enough to support roosting and several butterflies were observed in the area during the site visit.

California Red-legged Frog

No California red-legged frogs were observed during either the day or night surveys conducted in the riparian habitat at Eagle Canyon Creek downstream of the railroad tracks. The weather, however, was colder than optimal for observing red-legged frogs. Pacific treefrogs were observed in the pooled water near the mouth of the creek which indicates that this area is not too saline for red-legged frogs. This area has all of the characteristics of suitable red-legged frog habitat: deep water (approximately 3 feet at the deepest areas), fresh water source, and abundant shade and overhangs along the water's edge for refuge. The nearest California red-legged frog population is at Tecolote Creek, less than one mile east of the project site.

Tidewater goby

The habitat in Eagle Canyon Creek downstream of the Union Pacific railroad appears suitable for this species, although the substrate in much of the pooled area was silt rather than sand. No tidewater gobies were observed during the SAIC site visits. The nearest population of this species is located in Tecolote Creek, less than one mile east of the Dos Pueblos Golf Links project site. This species has not been reported previously at this creek (Swift et al. 1989).

Sensitive Avian Species

A single white-tailed kite was observed on the project site both days of the SAIC site visit. The individual bird was seen perched in a cypress tree near Drainage 6 both times. This same individual was observed foraging and hovering over the open grassy areas on the western portion of the project site.

A single loggerhead shrike (CSC) was observed adjacent to the railroad tracks near Drainage 5. This species would be expected to nest in shrubby habitat in the area. Breeding may occur in the thicker vegetation on site such as the coastal scrub habitat near the railroad tracks and in some of the drainages.

Other sensitive avian species that were observed foraging or roosting near or on the project site included California brown pelican (FE, SE), northern harrier (CSC), and double-crested cormorant (CSC). California brown pelicans and double-crested cormorants were observed in moderate numbers flying along the coastline and roosting along the shoreline bordering the project area. These species, and potentially western snowy plovers (FT, CSC) would be expected to be present along the coastline, especially during the winter but are not known to breed in the area. The riparian habitat along Eagle Creek is likely to support yellow warblers (CSC) and possibly yellow-breasted chat (CSC) during spring and summer.

California Coast Horned Lizard

This species prefers open grassland or coastal scrub habitats with gravel or sandy substrates. No horned lizard were observed during the surveys, but habitat for this species is present throughout the project site.

Arroyo Toad

Arroyo toads prefer stream habitat that has sand or gravel substrate, overflow pools free of predatory fishes, and stable, sandy terraces adjacent to the stream with moderately well-developed vegetation cover (Jennings and Hayes 1994). Eagle Canyon Creek and the other drainages on site do not support suitable habitat for this species, and therefore, Arroyo toads are not expected in the area.

Southwestern pond turtle

Southwestern pond turtles require slow-moving water in aquatic habitats with suitable basking sites. No pond turtles were observed during the SAIC site visits. Eagle Canyon Creek is the only drainage within the project area that provides any habitat for this species. However, this habitat would be considered only marginal for this species due to its shallow nature and influence of salt water. This species is unlikely to be present on the project site.

CONCLUSIONS AND RECOMMENDATIONS

Several sensitive species or their habitat were observed during the two visits to the Dos Pueblos Golf Links project site. White-tailed kite and loggerhead shrike were both observed during the surveys, and these species and other raptors are expected to use the open areas of the project site for foraging. Nesting by these species on the project site is possible, but the surveys were not at the appropriate time of year to confirm such activity. Suitable habitat is present for the California red-legged frog and tidewater

goby in the pooled water between the railroad culvert and the mouth of Eagle Canyon Creek, although none were observed during the surveys. Suitable habitat for the California coast horned lizard is present throughout the site in the open and coastal scrub habitats. Potential monarch butterfly roosting habitat is located in the eucalyptus grove in Eagle Canyon. Other sensitive species potentially using the site include yellow warbler and yellow-breasted chat.

Since several sensitive species are or could be present on the project site, at least seasonally, the following recommendations are made.

1. Tree removal on the site should be conducted in the late summer and fall (approximately August through November) to minimize the potential for disruption of raptor nesting. Trees could be removed earlier in the year if affected trees are inspected immediately prior to removal and it is verified that raptors are not using them for nesting.

2. The absence of tidewater goby and California red-legged frog should be verified immediately prior to any work in or on the banks of the Eagle Canyon lagoon. If the species are found, the work should be scheduled to avoid the breeding season (approximately May through August for tidewater goby and January through August for red-legged frog).

3. Any pilings or other structures placed below the high water mark in Eagle Canyon Creek should be of materials not toxic to aquatic organisms (e.g., creosote piles should not be used).

REFERENCES

Dudek & Associates. 1998. Dos Pueblos Golf Links ACOE/CDFG Wetland Delineation. September 16.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Prepared for California Department of Fish and Game, Rancho Cordova.

Swift, C. C., J. L. Nelson, C. Maslow, and T. Stein. 1989. Biology and Distribution of the Tidewater Goby, *Eucyclogobius newberryi* (Pices: Gobiidae) of California. Natural History Museum of Los Angeles County, Contributions is Science. 404: 1-19.

STORRER ENVIRONMENTAL SERVICES

2565 Puesta Del Sol Road #3
Santa Barbara, CA 93105
(805) 682-2065
Fax (805) 569-9394

MEMORANDUM

To: Kristen Getler, SBCo P&D Energy Division

From: John Storrer, EQAP Onsite Environmental Coordinator

Date: June 3, 2002

Re: Summary of White-tailed Kite (*Elanus leucurus*) Observations on 30 May 2002 – Dos Pueblos Golf Course Property

The following is a summary of field observations compiled during a survey of the Dos Pueblos Golf Links Property on the morning of 30 May 2002. The survey was performed by biologists Neil Bouscaren of Pacific Southwest Biological Services (PSBS), Inc. (consultant for the property owner) and John Storrer (contractor for Santa Barbara County Planning & Development Department). The information was gathered between 0550 and 0730 on 30 May 2002.

The focus of our effort was on locating an active white-tailed kite nest that had been reported by Mark Holmgren of the UCSB Museum of Systematics and Ecology. The nest was observed in a Monterey pine on 14 and 27 May 2002 by Mr. Holmgren and Morgan Ball, near the middle of the subject property. This generally corresponds to the area where a pair of white-tailed kites (the "west pair") had been persistently active over the last several weeks, as described in my previous correspondence dated 17 May 2002. We also checked the status of the "eastern pair" that was found occupying an active nest on 16 May 2002.

We were able to confirm the location of the nest reported by the UCSB biologists in Tree No. 127, as labeled on the Tree Inventory prepared for the Dos Pueblos Golf Links Project (see attached map). The nest structure was in the crown of a Monterey pine, at a height of approximately 40 feet. It contained five fledgling kites. The young were quite active in the nest and looked to be approximately one week from taking flight. The adult kites were seen perched to the immediate west, in Tree No.157. We saw no hunting activity, nor did we see any incidents of prey being brought back to the nest by the adult birds.

An adult kite was observed on the nest in Tree No. 67, in an incubating posture. A second adult kite was perched in a nearby tree for much of the observation period. These birds were referred to as the "eastern pair" in my earlier report.

In summary, we located an active nest with (5) young white-tailed kites in Tree No. 127. This is undoubtedly the same nest reported by Mark Holmgren and Morgan Ball. It appears that the birds occupying the nest in Tree No. 67 are still in the incubation or brooding stage of the nesting process.

I also confirmed the location of my observation of a pair of white-tailed kites engaged in nest building activity on 10 March 2000. It is Tree No. 83 (see attached map). In previous correspondence (memorandum dated 17 May 2002), I incorrectly labeled this site as Tree No. 54. With the a more detailed map and tree inventory, I was able to determine in the field that the location of the suspected kite nest in March of 2000 is Tree No. 83.

A final survey is scheduled for 6 June 2002. That should provide more information on breeding chronology and nesting success for these two pairs of white-tailed kites.

Please call me if you have any questions concerning this correspondence.

attachment: maps showing location of nest and perch trees

cc: Michelle Pasini, SBCo P&D Energy Division

Ex 44 pg 2
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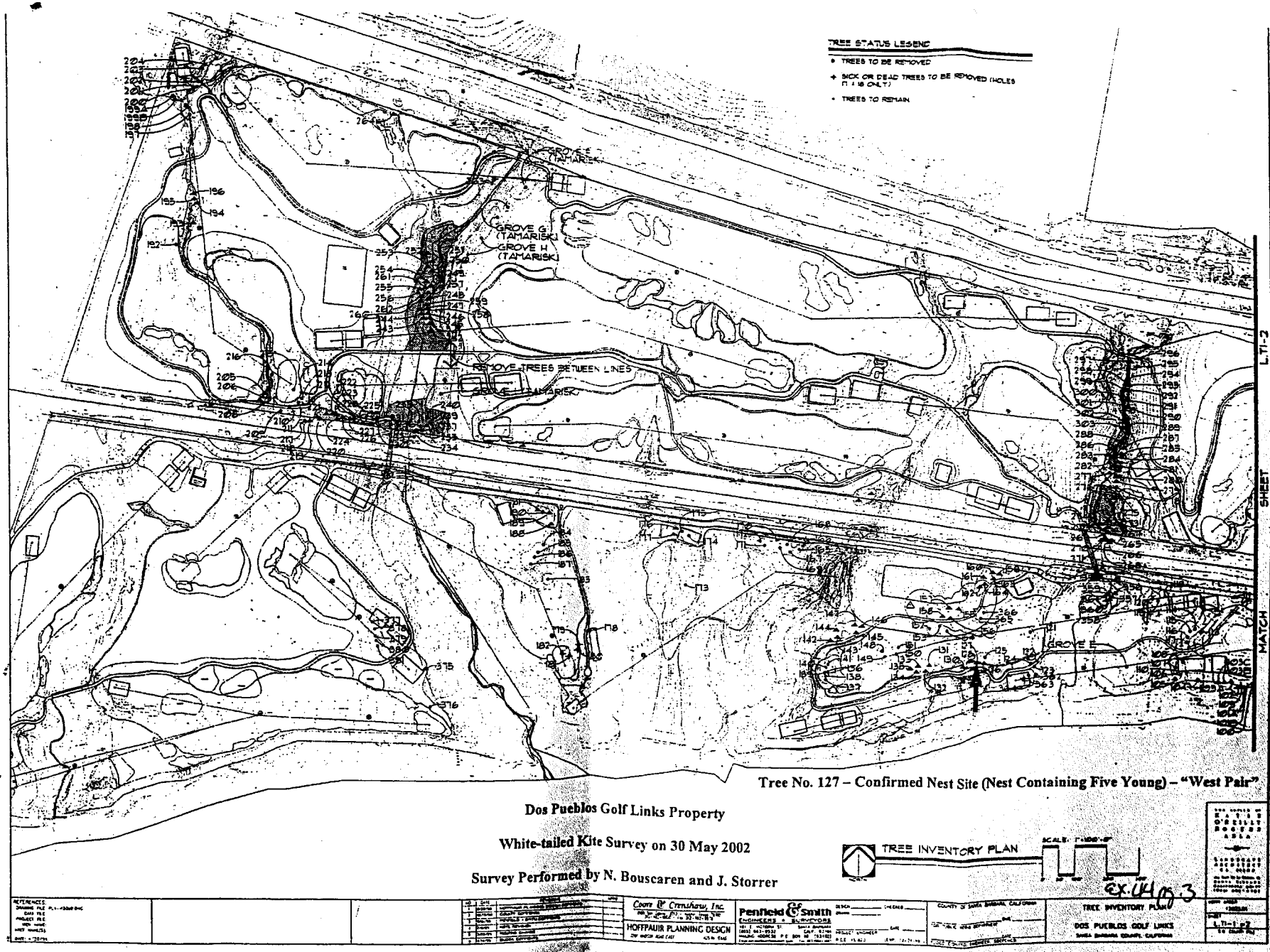

Tree No. 127 – Confirmed Nest Site (Nest Containing Five Young) – "West Pair".

Dos Pueblos Golf Links Property

White-tailed Kite Survey on 30 May 2002

Survey Performed by N. Bouscaren and J. Storrer

TREE INVENTORY PLAN

Cearn & Crenshaw, Inc.
HOFFPAUIR PLANNING DESIGN

Penfield & Smith
ENGINEERS + SURVEYORS

COUNTY OF SANTA BARBARA, CALIFORNIA

TREE INVENTORY PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

EX. 4 pg 3

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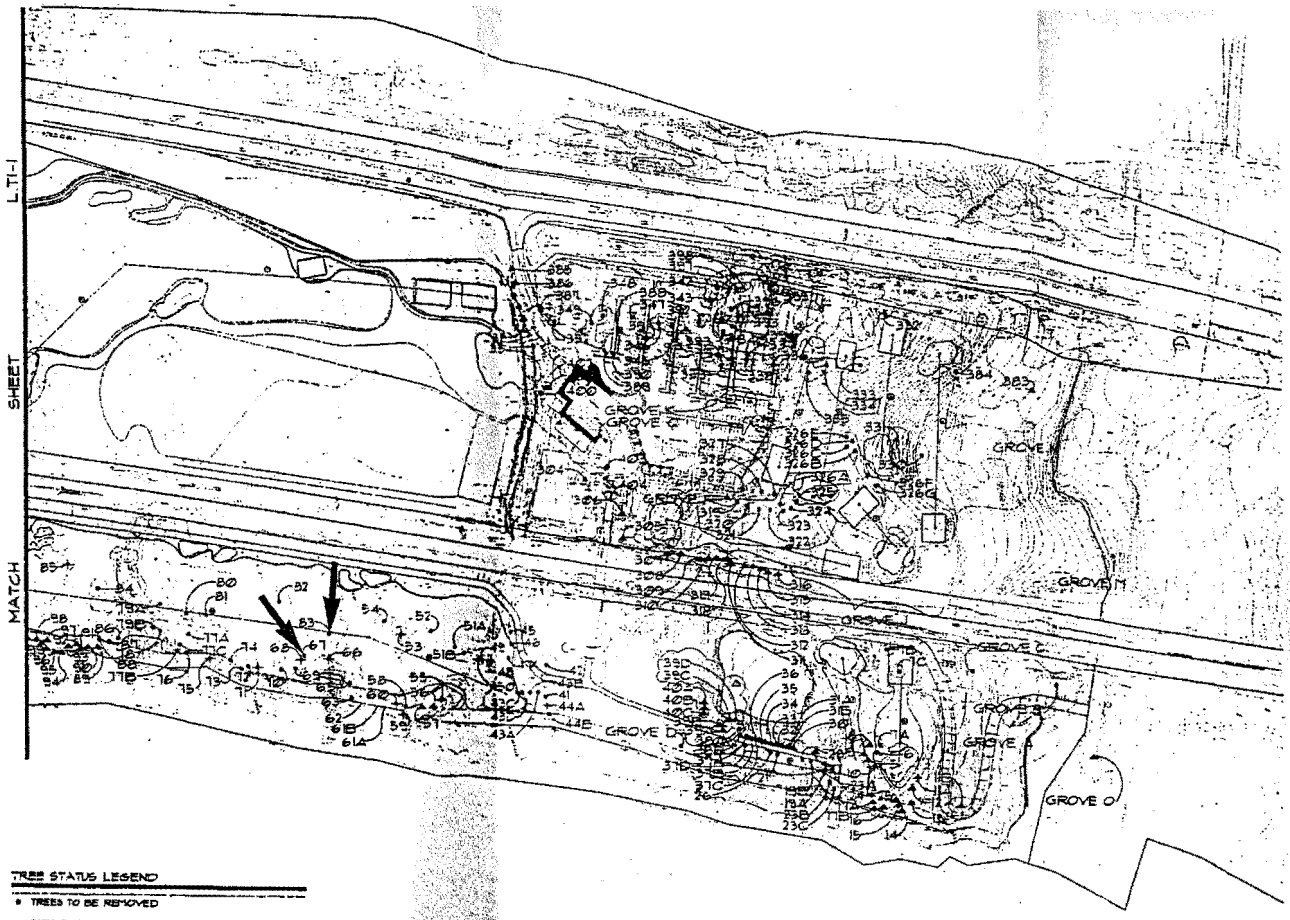


Tree No. 67 – Confirmed Nest Site (Incubation) – "East Pair"
Tree No. 83 – Suspected Nest Site on 10 March 2000

Dos Pueblos Golf Links Property

White-tailed Kite Survey on 30 May 2002

Survey Performed by N. Bouscaren and J. Storrer

Ex. 44/84

TREE INVENTORY PLAN SCALE: 1"=100'-0"

REFERENCES:

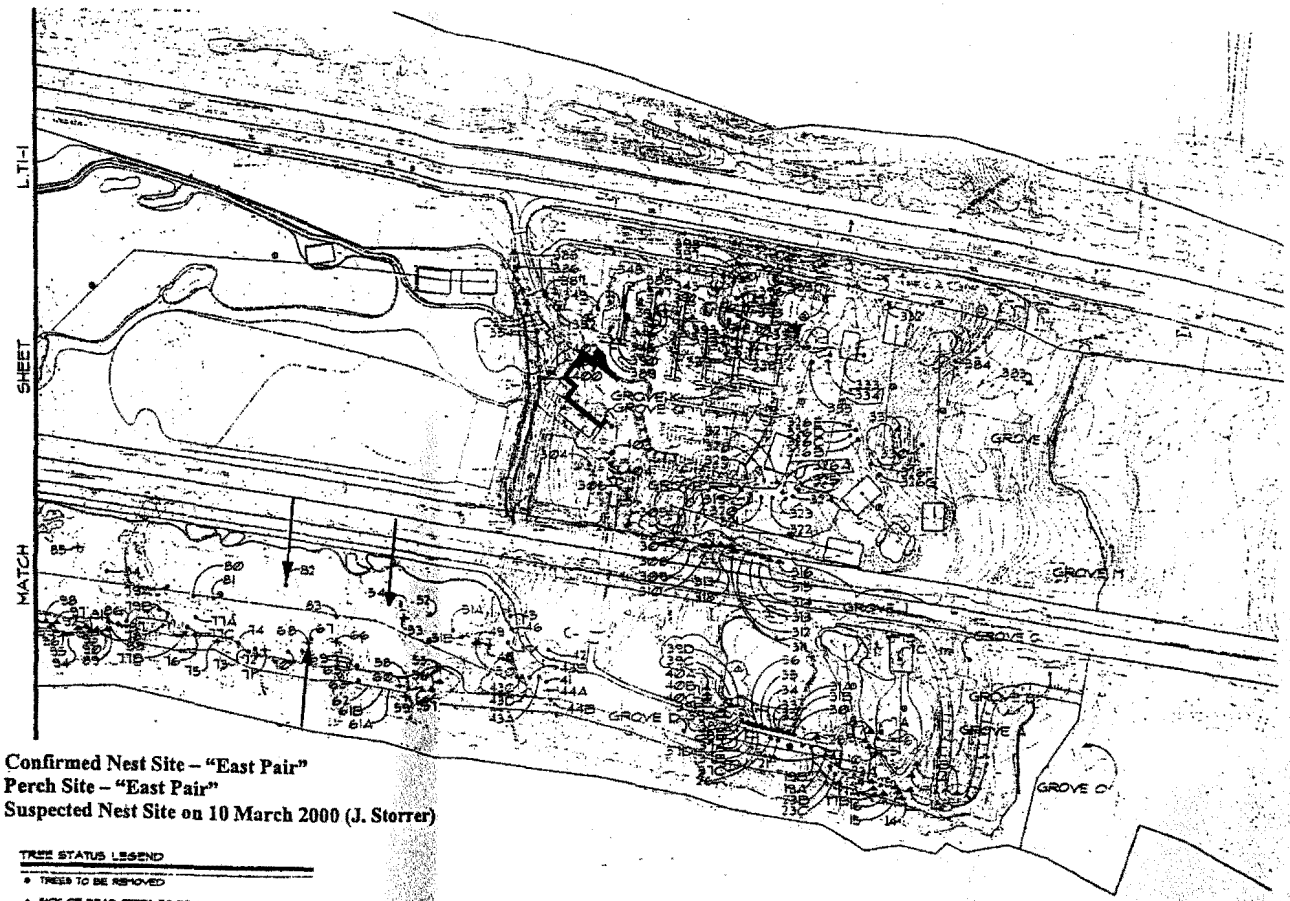
Coats & Consulting, Inc. — HOFFMAN PLANNING DESIGN

Penfield & Smith — ENGINEERS • SURVEYORS

COUNTY OF SANTA BARBARA, CALIFORNIA

TREE INVENTORY PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

L.TI-2 of 2



Tree No. 67 – Confirmed Nest Site – "East Pair"
Tree No. 83 – Perch Site – "East Pair"
Tree No. 54 – Suspected Nest Site on 10 March 2000 (J. Storrer)

TREE STATUS LEGEND

- TREES TO BE REMOVED
- SICK OR DEAD TREES TO BE REMOVED (HOLES 11 + 18 ONLY)
- TREES TO REMAIN

Dos Pueblos Golf Links Property

White-tailed Kite Survey on 16 May 2002

Survey Performed by M. Evans and J. Storrer

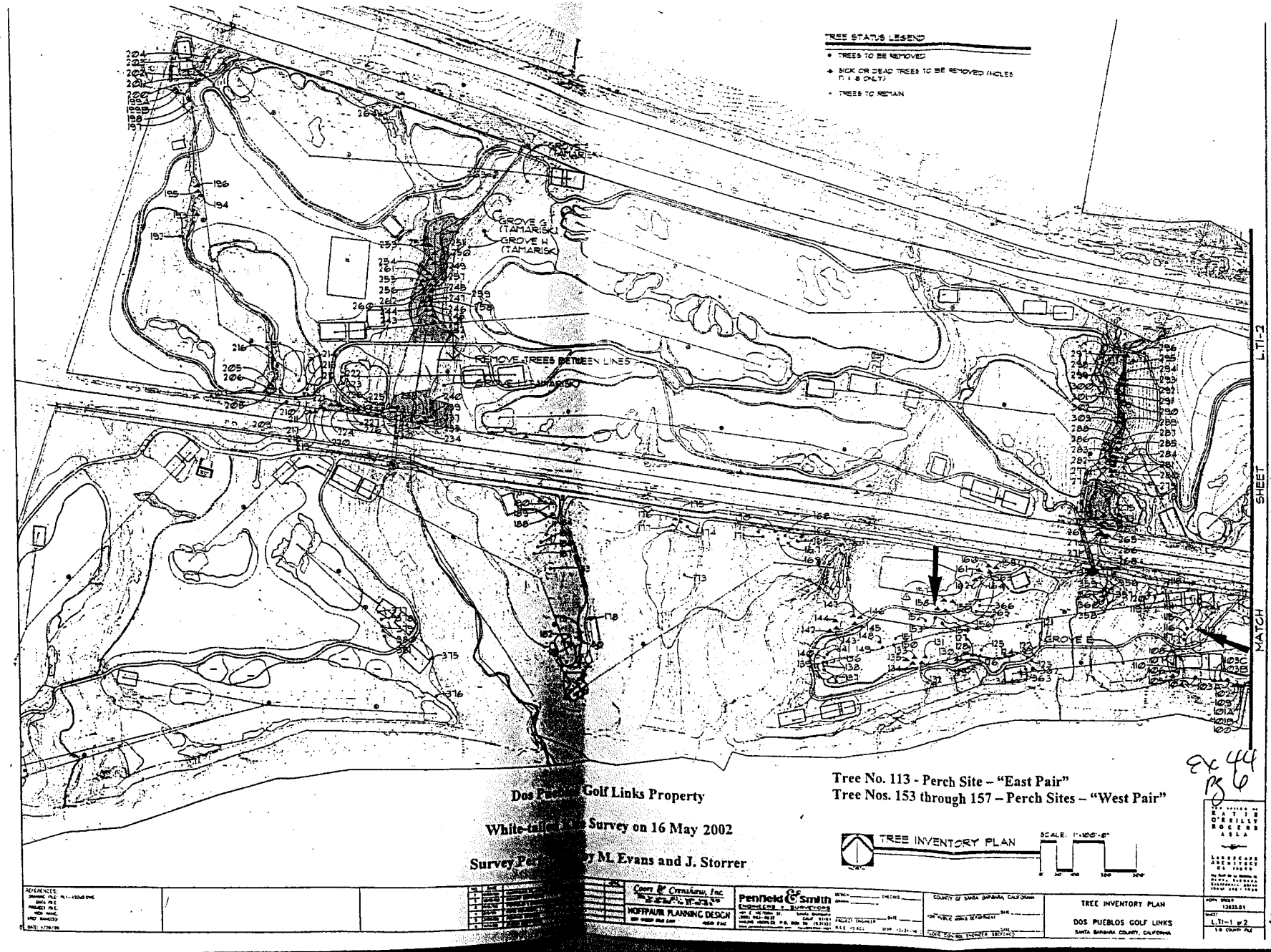
EK 44 P5-5

TREE INVENTORY PLAN

Coore & Crenshaw, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

TREE INVENTORY PLAN
DOS PUEBLOS GOLF LINKS



Dos Pueblos Golf Links Property

White-tailed Kite Survey on 16 May 2002

Survey Performed by M. Evans and J. Storrer

Tree No. 113 - Perch Site – "East Pair"
Tree Nos. 153 through 157 – Perch Sites – "West Pair"

TREE INVENTORY PLAN SCALE: 1"=100'-0"

Cearn & Cressman, Inc.
HOFFMAN PLANNING DESIGN

Penfield & Smith
ENGINEERS & SURVEYORS

COUNTY OF SANTA BARBARA, CALIFORNIA

TREE INVENTORY PLAN
DOS PUEBLOS GOLF LINKS
SANTA BARBARA COUNTY, CALIFORNIA

L.TI-1 of 2

Ex 44
PG 6

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STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, GOVERNOR

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400

MEMORANDUM

EXHIBIT NO. 45
APPLICATION NO.
A-4-STB-93154-[illegible]
CCC Staff ecologist
Dr. Dixon, 6/7/02
(Kites)

FROM: John Dixon, Ph.D.

TO: Melanie Hale

SUBJECT: White-Tailed Kites at Dos Pueblos

DATE: June 7, 2002

Information considered for this review:

Notes and abstracts from "Falconiformes of Northern California: Natural history and management" A workshop sponsored by The Wildlife Society, October 24-26, 2000.

Telephone conversations with Mark Holmgren (University of California at Santa Barbara) on May 30 and June 6, 2002, and letter report by Mark Holmgren and Morgan Ball dated June 6, 2002 with attachments (field notes and maps).

Letter from Andi Culbertson (Culbertson, Adams & Associates) to Sara Wan (CCC) dated June 4, 2002

Telephone conversations with Peter Bloom (Western Foundation of Vertebrate Zoology), on May 31 and June 7, 2002, and letter report dated June 5, 2002

Letter report from Michael Evans (Pacific Southwest Biological Services) to Andi Culbertson, dated June 5, 2002

Telephone conversation with Jeffrey Dunk (Humbolt State University) on June 6, 2002.

The four research biologists mentioned above are raptor specialists with many years of field experience with white-tailed kites in California. There have been very few formal studies of the effects of human disturbance on any raptor species, including the white-tailed kite. Jeff Dunk reported at the 2000 raptor workshop that there had been about 30 ecologically based studies of white-tailed kites in California. Most of these dealt with behavior, habitat requirements, and basic biology. The best information available for assessing the effects of disturbance is the professional judgment of raptor biologists who have spent many hours observing these birds in a variety of circumstances.

There is a consensus among the raptor biologists that for successful nesting and fledging of young, white-tailed kites require suitable trees that are isolated in some manner from human disturbance, adjacent areas of suitable foraging habitat, and adequate adjacent or nearby habitat to meet the nutritional needs of the parents and young without significant barriers between such habitat and the nesting area. Foraging areas close to the nest are particularly important when feeding young so that the adults remain close enough to the nest to defend it against predators. In general, golf courses do not meet these requirements, primarily because the close-cropped greens and fairways, and the homogeneous vegetation in many roughs do not provide suitable habitat for the voles and mice that are the food base for white-tailed kites.

Many types of trees, including those commonly found on golf courses, are suitable for nesting, but they must be protected from disturbance and must occur near foraging areas to be of any value.

The sensitivity of white-tailed kites and other raptors to human disturbance is a somewhat complicated issue because it is a function of the type, timing and intensity of disturbance, the genetics and experience of the individual birds, whether or not the birds are incubating or feeding young, whether other suitable nesting or foraging areas are present in the vicinity, the topographical and vegetative characteristics of the particular site, the relative availability of suitable prey, and probably other factors. There have been very few formal studies of the effects of human disturbance on raptors.[1] One study found that white-tailed kite nests are generally more than 100 m from the nearest roadway (masters thesis of Andrea Erickson reported by Jeffrey Dunk, personal communication). Raptor specialists estimate that similar distances are required as setbacks to avoid disturbance of nesting activities. Mr. Dunk suggested that a minimal distance would be 50 m (personal communication). In their reports, both Mr. Bloom and Mr. Holmgren estimated the minimal necessary setback at 100 m to avoid disturbance from frequent human activities on the ground (hiking, recreating, etc). Both estimated that 200 m or more could be necessary to avoid impacts on nesting birds from more severe disturbances such as construction activities (personal communications).[2] I recommend that a 100-m disturbance buffer be established to protect nesting activities and that no human activities be allowed within the buffer during the nesting season. I also recommend that no construction activities take place on the site until after fledging has occurred. This would protect nesting this year only.

In order to insure that white-tailed kites continue to nest successfully at Dos Pueblos in the future, there must be provision of adequate habitat that is suitable for the long-term viability of appropriate prey populations. Estimating the amount of foraging habitat necessary to insure the continued use of this area by nesting kites would require an analysis that takes into account the availability and accessibility of nearby grassland that support voles and mice. Based on the

---

[1] As a result of the paucity of formal studies, when this issue comes up anecdotal observations (such as those presented in Michael Evan's report) are inevitably presented, but these are of very limited value because of many technical sampling concerns (e.g., people take note of presence but not absence and there is no way to assess the generality of an anecdotal observation)[1]. Any observation not part of a formal sampling design formulated to answer a particular question is "anecdotal" in the context of that question. However, generalizations made by raptor specialists based on anecdotal observations over many years of field studies are the most credible.

[2] Although their estimates of necessary disturbance setbacks were very similar, their qualitative characterization of kites was very different. Mr. Bloom considered white-tailed kites to be "one of the most sensitive" raptors, whereas Mr. Holmgren considered them "more tolerant to humans than are other birds-of-prey." I discussed this with them. Mr. Holmgren's characterization was based on his observation that white-tailed kites in the Santa Barbara area appear more tolerant of human infrastructure than many other raptors and will rarely nest quite close to buildings if there is adjacent foraging habitat, there is no immediately adjacent human activity, and the nesting trees are situated in such a way as to keep the birds hidden while on the nest and traveling to and from the nest. Mr. Bloom's characterization is based on his observations that in relatively open areas, such as around the grasslands that provide foraging habitat, nesting white-tailed kites are very easily disturbed by the presence of individual people on the ground, and although he has observed individual kites nesting close to human activity, this was a clear exception to the normal circumstance. Neither researcher thought they were in fundamental disagreement. Mr. Holmgren also wrote that white-tailed kites would allow humans to approach to within 50 – 100 feet before leaving a perch. Upon further reflection, he decided that was based on a few unusual observations, and stated that (email personal communication), "Bloom is really quite correct here. While they do sometimes fly within 50-100 feet, they will rarely let people get as close as 50-100 feet."

Ex. 45 of 82

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information at hand, I estimate that at least 20 ha (49 acres) of suitable grasslands would have to be preserved in an area that encompasses the nest trees in order to support one nesting pair if there were no additional accessible foraging area. It could probably support 2 or 3 nesting pairs were there adequate additional foraging areas nearby. The necessary onsite area might be considerably smaller if large nearby foraging areas were accessible. It is extremely unlikely that white-tailed kites will continue to nest at Dos Pueblos if the golf course is constructed as planned. Protecting the nest trees without the provision of foraging habitat would not be of value to the white-tailed kites.

The white-tailed kite is a California fully protected species that is at risk of population declines in California due particularly to loss of habitat. Therefore, the cumulative effect of losing suitable nest sites is of great concern. The Dos Pueblos nesting area appears to be significant in the Goleta Valley region. It is not known whether the site is important for white-tailed kites during the non-nesting season.

Ex. 45 pg 3

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March 21, 2000

Exhibit 16
Bolsa Chica LCP
Peter Bloom letter Of March 23, 2000
California Coastal Commission

Dr. John D. Dixon
California Coastal Commission
Ecologist/Wetlands Coordinator
Technical Services Unit
45 Fremont, Suite 2000
San Francisco, CA 94105

Dear Dr. Dixon:

As requested, I am providing commentary on the importance of the Bolsa Chica Mesa to raptors. Since the Coastal Commission's opinion on proposed future development has been publicly reported, I provide my opinion on that subject also. I have also provided a short natural history appendix that demonstrates some of the space needs for the species involved.

By way of introduction, I am a research biologist with a strong background in the ecology, status, and conservation of birds of prey in California. My Masters topic was on habitat and home-range use of Red-shouldered Hawks. I have more than 30 years experience studying raptors in detail, mostly in southwestern California where I and my associates have banded in excess of 25,000 resident and migratory raptors. I was raised and educated in Orange County so most of my research efforts have been focused here in southwestern California. I worked on the California Condor program from 1982-1987.

From a biological and ecological perspective the estuary and grassland at Bolsa Chica must remain intact in as large a contiguous parcel as feasible. I am very impressed by published reports in the newspapers of the Coastal Commission staff's recommendation to remove all development from the lower bench of the Bolsa Chica Mesa. This would be an important step toward ensuring that at least some raptor use continues on the Mesa if development of the upper Mesa is permitted, and that numbers of birds using the marsh are not reduced any further. While the staff recommendation would still permit significant development in the upper bench, which will result in a significant decrease in the use of the Bolsa Chica Mesa by both resident and migratory raptors, preservation of the entire lower bench will allow for a large portion of the population to remain.

My opinion on the importance of the Bolsa Chica Mesa and wetlands to raptors has changed little since my 1982 report to the U.S. Fish and Wildlife Service (Bloom 1982). In the almost 20 years that have lapsed since the report, the importance of both the mesa and wetlands to raptors has increased as similar lands in southern California have decreased. At least sixteen species of raptors occur there in relatively high numbers (Bloom 1982). While considerable open space preserves exist on the coast in south Orange County, proportionately lower densities of wintering raptors exist there. Even the Newport Back Bay reserve supports lower raptor densities than Bolsa Chica, probably due to the scarcity of upland habitats that should have been preserved with it. I emphasize that much of the importance of Bolsa Chica Mesa and wetlands to raptors and the reason why so many hawks and owls occur there is due to the sizeable quantity of both

grasslands and estuary together, but also because it is one of the last natural contiguous open space areas in the vicinity.

Much of the importance of this area to raptors is due to its location and regionally significant remnants of both grassland and estuarine habitats which together attract a wide variety of raptors and their prey. Migratory raptors and other avian species tend to concentrate along sea coasts and use coastlines on their migrations. Bolsa Chica and adjacent Naval Weapons Station, Seal Beach are the only significant natural coastal open space areas remaining between the Santa Monica Mountains and Newport Back Bay and naturally attract, hold, and temporarily concentrate migrating raptors.

Bolsa Chica also maintains a resident population of raptors, many of which nest there. Peregrines do not nest at Bolsa Chica but a local resident pair uses it during much of the year. Fledglings from several nests in the region often pause at Bolsa Chica to capture avian prey. Migrating Peregrines pause regularly and many can be expected to use the wetlands and mesa as traditional foraging habitats on their north or south bound movements. Resident White-tailed Kites, Red-tailed hawks, Red-shouldered Hawks, Barn Owls and Great Horned Owls all prey mainly on the abundant small mammals in the uplands.

The home range of an animal encompasses all the habitat and space needed for self maintenance, and during the breeding season, reproduction. It differs from a territory in that it is usually larger and is not necessarily defended. Owing to the energetic demands of reproduction, raptors occupy, and in some cases defend relatively large territories and home ranges, particularly in the spring, but also in winter (Newton 1979). Many if not all raptors utilize different portions of their breeding home ranges disproportionately (Newton 1979, Bloom et. al. 1993), and the winter home range may be quite different, both in terms of size and location, from the breeding area.

Those areas that are used most frequently offer the animal increased benefits. While many raptors do maintain large home ranges much of it may receive little use and more time is spent in locations near the nest, in areas of prime foraging habitat, or in areas that afford protection. Certain areas, usually distinct habitats, are more important to the animal's survival and reproductive potential. Bolsa Chica is one of those areas that provides all three of the above necessities. In the case of the Bolsa Chica Mesa and environs, the trees are probably very significant components of the local home ranges of many of the individual raptors involved. Without a detailed understanding of the space and habitat needs of each pair or individual, removing portions of their home ranges will predictably result in the loss of those individuals.

As a result of notable improvements in the environment in the form of reduced pesticide levels, largely wetland associated raptors such as Peregrine Falcons, Merlins and Ospreys are now regular and predictable components of Bolsa Chica. Conversely, the breeding population of the Burrowing Owl, a grassland species, has been extirpated throughout all of coastal Los Angeles County and reduced to only four pairs in Orange County, all at nearby Naval Weapons Station, Seal Beach. Similarly, the White-tailed Kite, Northern Harrier, and Short-eared Owl, all largely grassland dependent species, have continued their downward spiral. The one to four pairs of White-tailed Kites (Bloom 1982) that once nested on the Bolsa Chica Mesa has now been

reduced to one pair. Species such as the Red-tailed Hawk, Red-shouldered Hawk, American Kestrel, Barn Owl and Great Horned Owl are still abundant, but due to surrounding habitat loss, are even more dependent on Bolsa Chica, particularly the migratory population of Red-tailed Hawks.

The Burrowing Owl is a predictable candidate for either State or Federal listing as a threatened or endangered species in southwestern California in the next five years. The Bolsa Chica uplands formerly supported nesting burrowing Owls and could again if the uplands were left intact and a reintroduction program initiated.

The effect of building a residential development on the Bolsa Chica Mesa would be to precipitate a significant reduction in the amount of use by all raptors, both in terms of species composition, and numbers of individuals. To varying degrees, all raptors except the Osprey use the grasslands of the Bolsa Chica Mesa for hunting and are therefore more important to a greater number of raptors than the wetlands. However, due to the statewide scarcity of estuarine wetland habitats I am not suggesting that estuarine habitat is even remotely expendable, but on the local and regional scale, the grasslands at Bolsa Chica are the principal reason for the abundance of raptors, and therefore could be considered an environmentally sensitive habitat area.

Raptors that regularly utilize grasslands or are largely dependent upon grasslands would be most severely effected by any development of the uplands. Four species, the White-tailed Kite, Rough-legged Hawk, Burrowing Owl and Short-eared Owl, are largely intolerant of habitat loss and the close proximity of people. Two other grassland and sensitive species are the Prairie Falcon and Ferruginous Hawk that occur regularly (1- 4 birds) each year at adjacent Naval Weapons Station, Seal Beach. These two species probably also occur on the Bolsa Chica Mesa but due to lack of access have not been noted. These six species would be essentially, if not completely, eliminated from both the Mesa grasslands and estuary were any significant development allowed. Northern Harriers which may occasionally nest on the Mesa (Bloom 1982) or in the ecotone with the estuary would no longer be expected as a breeding species.

The trees and foraging habitat (grassland) on the Bolsa Chica Mesa are one unit. Without grassland, the trees would have limited value to birds of prey. Without the trees, most or all of the nesting raptors would be gone. The foraging habitat out from the eucalyptus for species such as Red-tailed Hawk, Merlin, Prairie Falcon, and Peregrine Falcon, easily extends 1,000+ feet from a hunting perch and I have often observed Cooper's Hawks attempting to capture prey as much as 600 feet from their perches. American Kestrels and Great Horned Owls are often observed attempting to capture prey at 500 feet. I say this with some authority because I regularly live trap and band all of these species at distances that are beyond 100 yards. Although, I estimate that 90% of all hunting attempts occur within 100 yards for the Red-shouldered Hawk, Rough-legged Hawk, American Kestrel, Sharp-shinned Hawk, Barn Owl, Great Horned Owl, and Cooper's Hawk, the Red-tailed Hawk, Peregrine Falcon, Prairie Falcon, and Merlin regularly attempt captures at 500 to1,500 feet distant.

Raptors do not normally hunt within ribbons or corridors of habitat, particularly narrow ones. The raptors of Bolsa Chica commonly hunt from the eucalyptus rows but they are hunting in the

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adjacent grassland. If development is going to occur within the grasslands, it should be localized to as small an area as possible. Grassland open space acreage on the Mesa should be planned in as large a contiguous unit with the estuary as possible, with no independent parcels.

Most raptors are sensitive to the presence of people and will flush from their hunting perches or nests at varying distances depending upon the species of raptor, previous individual experiences of the bird with people, time of day, season, weather, and the activity of the people involved. For this reason, no public trails should be located within the eucalyptus rows or within 100 yards of the trees. Trail placement is critical to the continued use of the eucalyptus trees as hunting perches, nocturnal roosts, and nest sites. Hiking and/or equestrian trails should not be permitted or, at a bare minimum, only skirt the edge of development and roads, leaving the inner core to wildlife.

Most raptors with the exception of the American Kestrel and Red-shouldered hawk will flush if humans approach to 100 yds. and virtually all, including kestrels and Red-shouldered Hawks will flush at 100 ft. While individuals vary, the more sensitive species that occur on the Bolsa Chica Mesa are Rough-legged Hawk, Red-tailed Hawk, Prairie Falcon, and Great Horned Owl which will usually flush when the observer is at a distance of 100 yds.or greater. Likewise, Ferruginous Hawks are very sensitive to the approach of people and fly at the same distance. The bottom line is that the eucalyptus trees are essential to the preservation of significant numbers of raptors that forage on the Mesa, and the 100 m buffer previously suggested by the California Department of Fish & Game is the absolute minimum acceptable. If only 100 feet on either side of the trees were saved, it would not be enough from either the perspective of the behavioral buffer or habitat/space needs of the species involved.

Essentially all of the eucalyptus trees are valuable hunting perches as they make the rodent rich grasslands available to raptors. They also provide roosting and nesting opportunities. In my opinion, reducing the available foraging area on the Mesa to a 100 m buffer on either side of the trees will effectively eliminate a minimum of 50% of the individuals currently using the Mesa during winter and spring. I would not predict increased use of the wetlands by raptors resulting from the loss of grassland foraging habitat. I would predict reduced numbers of individuals on the total mesa with slightly higher densities in whatever grasslands remain, coupled with higher mortality, particularly for wintering birds.

Should you have any questions, I may be reached at 714-544-6147.

Sincerely,

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Appendix 1. Natural History Notes on Raptors at Bolsa Chica Mesa and Estuary.

Turkey Vulture (*Cathartes aura*) - Occurs both as a resident and migrant. Turkey Vultures often occur in flocks and roost in communal groups. Vultures have been extirpated as a breeding species in the local area. The species roosts in the eucalyptus trees and scavenges on the mesa and in the estuary. Based upon results of 30 wing-tagged individuals, southern California Turkey Vultures have a home range in excess of 15 square miles (Bloom unpub.). Resident birds probably come here to forage from the closest roost site near the 405 and 605 interchange.

Osprey (*Pandion haliaetus*) - A specialist, the osprey occurs regularly on migration and fishes in the estuary and perches on the eucalyptus trees of the Mesa. Ospreys are almost exclusively piscivorous and use the eucalyptus trees as perches, and perhaps roost sites. The distance at which most migrant ospreys flush when people approach is greater than 100 yards.

Red-tailed Hawk (*Buteo jamaicensis*) - A generalist, the Red-tailed Hawk is the most abundant raptor on the mesa. Red-tails prefer the uplands over the estuary due to higher rodent densities and snakes. Three resident Orange County radio-tagged adults occupied a home range of 1 to 1.5 sq. miles (Bloom unpub.). Occurs both as a resident and a migrant. One to two pairs breed in the vicinity, probably not on the property in question. Hunts mainly from perched positions but also when soaring or hovering. Rodents, snakes, and rabbits, but also birds are the usual prey. Most prey are taken within 100 yards of the perch but is often taken 100-300 yards distant. Some hawks regularly attempt to capture prey 0.25 miles from their hunting perch. The vast majority of hawks will flush when approached by people to 100 yards.

Red-shouldered Hawk (*B. lineatus*) - Red-shouldered Hawks are non-migratory riparian and woodland specialists that hunt grassland ecotones. Only one resident pair is on the mesa and usually nest in a eucalyptus in the vicinity of the palm trees and Great Blue Heron rookery. A small number of floaters occur regularly on the mesa. The average home range size for seven adult male Red-shouldered Hawks in southern California was 1.21 sq. km.(Bloom et. al. 1993). Red-shouldered Hawks are strictly perch hunters and rely on the eucalyptus trees to capture rodents, arthropods, and small snakes. Most prey is taken within 100 feet of the perch. A very adaptable species (Bloom and McCrary 1996), but not enough to tolerate many people on a hiking trail through a narrow band of trees. Most individuals will flush if approached to100 yards.

Rough-legged Hawk (*B. lagopus*) - Rough-legged Hawks are now rare winter migrants that utilize grasslands to capture small rodents. Grassland habitat loss is one of the principal reasons for the decline of this species in southwestern California (Bloom unpub.). They most frequently hunt from a perched position but also from hovering flight. The vast majority of hawks will flush when approached by people to 100 yards.

White-tailed Kite (*Elanus leucurus*) - A State Fully Protected Species, White-tailed Kites are non-migratory grassland specialists. At least one pair nest in the eucalyptus on the mesa. White-tailed Kites are not perch hunters and capture all of their prey from hovering positions 50-150 feet above the ground. Greater than 95% of their prey consists of house mice and western

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harvest mice. White-tailed Kites in southern California occupy a home range of 0.62 - 1.20 sq. km. (Henry 1983). The flushing distance for most White-tailed Kites is about 100 yards.

Northern Harrier (*Circus cyaneus*) - Now a very rare breeder in southwestern California, Bolsa Chica is one of the few places in Orange County where there may still be nesting. Northern Harriers are grassland and marsh specialists and occur both as resident and nomadic individuals. Northern Harriers hunt by flying low over the ground and surprising their quarry from the air. They perch on the ground, on low bushes and fence posts, but not trees. The species nests on the ground either in the ecotone between marsh and grasslands or in the surrounding uplands. Northern harriers prey on small rodents, birds, reptiles and amphibians. The median home range size of eight studies was 260 ha (Macwhirter and Bildstein1996).

American Kestrel (*Falco sparverius*) - American Kestrels tend to forage mostly in grasslands but are habitat generalists. Both resident and migratory populations occur at Bolsa Chica. Resident pairs nest in cavities in the eucalyptus and palm trees of the uplands. American Kestrels hunt from perched locations as well as from hovering flight and occupy a home range of about 12.6 km (Balgooyen 1976).

Merlin (*F. columbarius*) - Occurs only as a migrant. Hunts small flocking birds such as sandpipers in estuaries or Horned Larks in grasslands. Winter home ranges in Canada of adults and juveniles averaged 19.6 and 17.9 sq. km., respectively (Warkentin and Oliphant 1990). Many migrating Merlins pause at Bolsa Chica with only one or two staying for a portion of the winter each year. Many individuals are quite tame and can be approached to about 50 yards. Most foraging is accomplished via aerial pursuits 75-400 yards distant.

Peregrine Falcon (*F. peregrinus*) - Peregrines are bird hunters that occur year round and during migration at Bolsa Chica. In southern California, Peregrines hunt in a variety of habitats including urban environments. Observations of transmittered peregrines studied in 1997-98 revealed home ranges varying between about 2-11 square miles (Bloom et. al. unpub.). Peregrines commonly use the eucalyptus trees on the mesa to launch attacks on birds in the adjacent estuary and grasslands. Most hunting sorties are directed at birds 150-500 yards distant. The flushing distance from people is variable with most individuals flushing at about 100 yards.

Cooper's Hawk (*Accipiter cooperii*) - Occurs both as a migrant and resident. Cooper's Hawks are not known to nest on the mesa but may nest in surrounding areas and use the mesa for hunting. Home ranges vary from 400 - 1,800 ha in North America (Rosenfield and Bielefeldt 1993). Most Cooper's Hawk foraging attempts occur between 50 and 250 yards distant. The eucalyptus trees on the mesa are commonly used as night roosts and hunting screens to ambush birds in surrounding grasslands. Typical flushing distances from people for this species are about 100 yards or greater.

Sharp-shinned Hawk (*A striatus*) - Occurs only as a migrant and hunts small birds in the trees and shrubs, principally in the uplands. Sharp-shinned Hawks hunt from perched positions or in flight but often remain perched in trees awaiting small bird s to come to them. Most hunting attempts from perched positions occur between 50 and 150 yards distant. Most individuals

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depart when approached to about 75 yards.

Great Horned Owl (*Bubo virginianus*) - This species occurs only as a resident and probably nests in the eucalyptus trees on the mesa. Great horned owls feed on small mammals up to the size of sub-adult jack rabbits and occasionally on birds up to the size of large ducks. Radio-telemetry studies from Orange County (Bennett 1999) reveal that male Great Horned Owls need 425 ha. Most hunting attempts of Great Horned Owls occur within 100 yards of the perched bird but regularly hunt 300 yards distant. Most Great Horned Owls will be disturbed from their hunting perch if approached to 75 yards.

Short-eared Owl (*Asio flammeus*) - Short-eared Owls formerly nested in estuaries of southwestern California but now occur only as migrants. They are grassland and marsh specialists that hunt low over the ground from the air. Short-eared Owls seek prey within 50 yards of where they are perched or flying. They occupy diurnal roosts on the ground and also nest on the ground in secluded areas. During the daytime Short-eared Owls flush at distances from 10-30 feet and in the night flush at about 100 feet.

Burrowing Owl (*Speotyto cunicularia*) - This species occurs both as a resident and a migrant but has not been observed breeding in many years. However, since this species nests in the burrows of ground squirrels it may go undetected if focused surveys have not been completed in recent years. At least two owls were present at Bolsa Chica during the Christmas Bird Count in 1999. The last four breeding pairs in Orange County are holding on at adjacent Naval Weapons Station, Seal Beach. Loss of grassland habitat is the single most important reason for the near complete extirpation of this species in coastal Los Angeles and Orange Counties. Burrowing Owls perform most of their hunting activities from the ground and low bushes and feed mainly on small arthropods, small rodents, and birds. Burrowing owls are known to use home ranges of from 0.14 - 4.81 sq. km. (Haug and Oliphant 1990). They are not easily disturbed by people until they come to within 20 yards. The hunting distance for Burrowing Owl in hovering flight or from the ground is about 50 yards.

Barn Owl (*Tyto alba*) - Barn Owls nest at Bolsa Chica in the palms and possibly the eucalyptus trees. No migrants enter the region (Bloom 1985). Barn Owls feed mainly on small rodents, arthropods, and occasionally, small birds. The home range size of Barn Owls has not been studied in California but based upon recapture information is at least 0.5 sq. mi. (Bloom unpub.) Barn owls hunting attempts are usually within 25 yards but will respond to prey from at least 100 yards. The flushing distance for Barn Owls in the daytime is about 10 yards and at night, 100 yards.

Literature Cited:

Balgooyen, T.C. 1976. Behavior and Ecology of the American Kestrel (*Falco sparverius*) in the Sierra Nevada of California. Univ. of Calif. Publ. In Zool. 103:1-83.

Bennett, J.R. 1999. Home Range and Habitat Use by Great Horned Owls in Southern California. Master's Thesis, California State University, Long Beach. 45 pages.

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Bloom, P.H. 1985. Raptor Movements in California. Proceeding of the Hawk Migration Conference IV. Hawk Migration Association of North America. Pages 313-323.

Bloom, P.H., M.D. McCrary, and M.J. Gibson 1993. Red-shouldered Hawk Home-range and Habitat Use in Southern California. J. Wildl. Manage. 57:258-265.

Bloom, P.H. and M.D. McCrary. 1996. The Urban Buteo: Red-shouldered Hawks in Southern California. Raptors in Human Landscapes. Academic Press: Pages 31-39

Haug, E.A. and L.W. Oliphant. 1990. Movements, activity patterns, and habitat use of Burrowing Owls in Saskatchewan. J. Wildl. Manag. 54:27-35.

Henry, M.E. 1983. Home Range and Territoriality in Breeding White-tailed Kites. Master's Thesis, San Diego State University. 122 pages.

Newton, I.. 1979. Population Ecology of Raptors. Buteo Books. 399 pages.

Rosenfiield, R.N. and J. Bielefeldt. 1993. Cooper's Hawk (*Accipiter cooperii*). *In* The Birds of North America, No. 75 (A. Poole and F. Gill, Eds.) Philadelphia: The Academy of National Sciences; Washington D.C.: The American Ornithologists Union..

Warkentin, I.G. and L.W. Oliphant. 1990. Habitat Use and Foraging Behavior of Urban Merlins (*Falco columbarius*) in Winter. J. Zool., Lond. 221:539-563.

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RAPTOR HABITAT ASSESSMENT
of the
BOLSA CHICA MESA

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RAPTOR HABITAT ASSESSMENT
of the
BOLSA CHICA MESA

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RAPTOR HABITAT ASSESSMENT
of the
BOLSA CHICA MESA

Tierra Madre Consultants, Inc.

Summary

The Bolsa Chica Mesa provides habitat for a dynamic guild of raptors. Seventeen (17) species of raptors have been reported from the Bolsa Chica area. This report assesses habitat in terms of its value to birds of prey, and does not consider the other biological resources/wildlife values of the Mesa.

Raptor use of the Mesa varies by species. Some, such as Red-tailed Hawk, Red-shouldered Hawk, White-tailed Kite, and American Kestrel are resident, nest annually in the Bolsa Chica area, and forage on the Mesa. Others, such as Turkey Vulture, forage on the Mesa but do not nest at Bolsa Chica. Northern Harriers have not been confirmed to nest at Bolsa Chica, but are seen throughout the year and may indeed be found to nest in grasslands on the Mesa. The Eucalyptus grove provides perch and roost sites for migrant and wintering Turkey Vultures, as well as resident and wintering White-tailed Kites, Red-tailed Hawks and American Kestrels. Ospreys, Merlins, and Peregrine Falcons (a state-listed Endangered Species) use the tall Eucalyptus trees for perching, but forage in the wetlands. The dense mid-story of the Eucalyptus grove is potential nesting habitat for Cooper's Hawk, a California Species of Concern.

The Eucalyptus grove (including the palms) and nonnative grasslands on the Mesa provide nesting and/or foraging habitat for owls, including Barn Owl, Burrowing Owl, Great Horned Owl, Western Screech-Owl (rarely), and (possibly) Short-eared Owl. Burrowing Owls have occasionally been observed on the Mesa; the nonnative grassland with elevated perches is ideal habitat for this federal and California Species of Concern. Short-eared Owls, another California Species of Concern, were reported at Bolsa Chica during November 1999.

Raptor use of the Mesa varies seasonally. The highest species diversity of raptors is in winter, when the local populations of the resident species are augmented by migratory and dispersed birds. It is expected that foraging areas shift, expand, and contract seasonally with changes in the numbers of raptors in the area and prey availability. A larger area of open terrain will, of course, accommodate these fluctuations better than a smaller area. A comprehensive survey and delineation of habitat use would require the marking of individual birds, spot-mapping, and a multi-year analysis.

The importance of raptor habitat on the Bolsa Chica Mesa may be considered at the local, regional, and state levels. Maps, aerial photographs, and the literature of bird status and distribution in Southern California indicate that Bolsa Chica is important both locally and regionally for many species, and is of critical importance at the state level for Peregrine Falcon and Short-eared Owl (Bloom 1982). Raptor habitats in Southern California, often consisting of nonnative grasslands, are being lost at an alarming rate.

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In 1982, the California Department of Fish and Game designated 20.5 acres of the Mesa as an Environmentally Sensitive Habitat Area (ESHA). This ESHA included only a portion of the existing Eucalyptus grove; it did not include areas to the north and east along the bluff, at the toe of the slope, and along the Bolsa Chica Street extension. These areas may be particularly important to nesting White-tailed Kites and Red-shouldered Hawks. The 1982 ESHA does not include sufficient upland foraging habitat for the many resident, wintering, and migrant raptors, nor does it include nesting habitat for sensitive ground-nesting species which occur on the Mesa: Burrowing Owl and Northern Harrier. It is the opinion of TMC that the entire Bolsa Chica Mesa is raptor habitat and meets the criteria for designation as an ESHA.

Loss of Eucalyptus grove or grassland habitat will impact resident, migratory, and wintering raptors, including species considered sensitive by the state and federal resource agencies.

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APPLICATION NO. 5-4

RAPTOR HABITAT ASSESSMENT
of
BOLSA CHICA

Tierra Madre Consultants, Inc.

Introduction

Tierra Madre Consultants, Inc. (TMC) is a Riverside-based biological consulting firm specializing in focused surveys for sensitive species, habitat assessments, wetlands delineations, and general biological assessments. Ornithological studies in recent years (TMC has been in business since 1979) have included habitat assessments and focused surveys for Endangered and Threatened species on the Angeles National Forest, the collection of point-count data on four National Forests for the U.S. Forest Service, a raptor survey of the Badlands of western Riverside County for the Riverside County Parks Department, and, in conjunction with researchers from the U.S. Fish and Wildlife Service and the San Bernardino County Museum, a life history study of the California Gnatcatcher (*Polioptila californica*) in western Riverside County.

TMC was contracted by the Bolsa Chica Land Trust to assess and delineate raptor habitat on and adjacent to the Bolsa Chica Mesa. The California Department of Fish and Game (DFG) designated 20.5 acres in the area as an Environmentally Sensitive Habitat Area (ESHA) in 1982 (DFG 1982). The purpose of this assessment is to determine the current extent of raptor habitat, the sufficiency of the ESHA as it has been previously defined, and to provide updated information on the status of raptors on the Bolsa Chica Mesa.

Background

Raptors are carnivorous birds characterized by adaptations for dispatching and consuming prey, including long, curved talons and hooked bills (Weidensaul 1996).

North American raptors, or birds of prey, belong to the families Accipitridae (kites, eagles, hawks), Falconidae (caracaras and falcons), Tytonidae (barn owls), and Strigidae (typical owls). Members of the Cathartidae (American vultures) are no longer considered raptors, although in appearance (hooked bills) and behavior (i.e. soaring flight, carnivorous habits) they resemble them. For the purposes of this assessment, Turkey Vultures are included with raptors.

Habitat suitable for a specific bird of prey must provide sufficient prey, as well as perch and roost sites safe from predators and disturbance. Most raptors spend much of the time perched in exposed situations, scanning for prey, consuming prey, or resting. Nest sites must be near enough to foraging areas so that the adults can provide food for nestlings. Topographic features which promote the formation of thermals, such as cliffs and ridges, may be important to species that hunt while soaring.

Habitat suitable for a guild of raptors, such as occurs at Bolsa Chica, will necessarily contain different types of foraging habitats (i.e. wetlands, uplands) with different prey species (i.e. small mammals, ducks, shorebirds, fish, reptiles, insects). Habitat areas must be large enough to accommodate the population cycles and movements of prey species.

Methods

The assessment of raptor habitat on the Bolsa Chica Mesa consisted of a literature review, personal communications with Orange County ornithologists, and a field assessment.

Due to time constraints and private property issues, this assessment relies heavily upon previous reports and observations. Literature pertinent to the assessment included "Raptor Inventory and Habitat Assessment for the Bolsa Chica Area, Orange County, California" by Peter H. Bloom (Bloom 1982), and "The Birds of Orange County, California, Status and Distribution" (Hamilton and Willick 1996). Terry Hill, an expert Orange County birder, provided TMC with National Audubon Society Christmas Bird Count data (1992-1999) for the Bolsa Chica area. Standard references on the birds of Southern California, and raptors in general, were reviewed, and are listed in **Literature Cited and References** at the end of this report. Telephone conversations with Orange County ornithologist and author Douglas R. Willick was informative. Peter Knapp, a local birder and photographer, provided information on current raptor use of the Bolsa Chica area. The field notes of TMC ornithologist Chet McGaugh, who has led numerous Audubon Society field trips to Bolsa Chica, were reviewed. Maps and aerial photographs provided by the Bolsa Chica Land Trust were also reviewed.

McGaugh surveyed the Bolsa Chica Mesa on November 9, 15, and 27, 1999, and was assisted on November 27 by TMC biologist Nathan Moorhatch.

Posted private property lines on the Bolsa Chica Mesa were not crossed; therefore, habitat on the Mesa was examined from the edges. The Eucalyptus grove was walked from west to east on two of the survey days, and the Mesa adjacent to Los Patos Avenue and Warner Avenue was assessed from those streets. The area east of the extension of Bolsa Chica Street, which was excluded from the 1982 ESHA, was examined for raptor use.

Species, location, plumage, habitat use, and behavior was noted for all raptor species observed. Photographs (on file at TMC) were taken to document the occurrences of raptors on the Mesa.

Results

Habitat characteristics

For raptors, the structure of the habitat is more important than plant species composition. On the Bolsa Chica Mesa, nonnative *Eucalyptus globulus* dominates the skyline. Vertical snags extending up from dense canopies are ideal for many raptors. Within the Eucalyptus grove, nonnative palms provide structural diversity and, presumably, nest sites for Barn Owls, American Kestrels, White-tailed Kites, and Red-shouldered Hawks. The nonnative grasslands are inhabited by myriad prey species, including small mammals, birds, reptiles, amphibians, insects, and other invertebrates. The low, dense cover in portions of the grassland may provide roost sites, or even nest sites, for Short-eared Owls and Northern Harriers. The open grassland habitat, with California Ground Squirrel (*Spermophilus beecheyi*) burrows and elevated perches, is ideal Burrowing Owl habitat. Robert A. Hamilton observed a [illegible] Mesa on January 16, 1998. David S. Kossack observed a Burrow

June, 1992 (Kossack 1992). This observation is significant because it is in the middle of the breeding season, as defined by the Burrowing Owl Consortuium (1997).

Bloom (1982) calculated that 61% of his raptor observations occurred on the Bolsa Chica and Huntington Beach mesas, and 39% were in the lowland (mostly wetlands) habitats.

Species diversity and abundance

Bloom (1982) reported a total of 16 species of raptors (including diurnal raptors, owls, and Turkey Vulture) at Bolsa Chica and classified them as "resident," "migratory," or "dispersed." Resident birds are present throughout the year and nest at Bolsa Chica. Migratory birds, consisting of both adults and immatures, occur at Bolsa Chica in winter and during spring and fall migration periods. Dispersed birds are immatures that have arrived at Bolsa Chica after leaving natal areas in the region.

The Bolsa Chica raptor list has grown by only one species in the last seventeen years; a Western Screech-Owl was heard in the Eucalyptus grove on a recent National Audubon Society Christmas Bird Count (Douglas R. Willick, pers. comm.)

Long-eared Owl (*Asio otus*) was reported from Rabbit Island in 1982, but this record was not verified by local experts.

The numbers of some of the resident species (i.e. Red-tailed Hawk, American Kestrel) are augmented in the non-breeding season by migrants and dispersed immatures. The highest species diversity and the greatest number of raptors occurs in winter. Bloom (1982) counted 45-62 individual raptors during each of the four days of his survey in January and February 1982. McGaugh estimated 20-30 raptors on the Mesa on each of the survey days. Observers during National Audubon Society Christmas Bird Counts have tallied as many as 80 individual raptors in one day at Bolsa Chica.

DFG (1982) reported nine species of diurnal raptors and two species of owls in the Eucalyptus grove.

Bloom (1982) suspected nesting by 7 species: White-tailed Kite, Red-tailed Hawk, Red-shouldered Hawk, Northern Harrier (formerly called Marsh Hawk), American Kestrel, Barn Owl, and Burrowing Owl. The review of recent literature and observations indicate that this list of nesting birds is mostly accurate, but nesting has not been documented for Northern Harrier or Burrowing Owl.

Table 1 lists 17 species of birds of prey that have been recorded at Bolsa Chica. The status and habitat use of each species is based on the TMC field surveys and the 1982 assessment by Bloom. Data on home ranges come from a variety of sources. Much of these data are for breeding home ranges, as less research has been done on winter home ranges. Home range sizes vary with topography, habitat, season, food availability, and human disturbance. All references are listed in **Literature Cited and References** at the end of the report.

Additional information for each species follows the table.

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TABLE 1. Bolsa Chica Raptors

SPECIES	STATUS	HABITAT USE	HOME RANGE
Turkey Vulture (*Cathartes aura*)	Common throughout the year; does not nest	Roosts in Eucalyptus grove, forages for carrion over the entire Bolsa Chica area	Extensive areas, may forage 24-32 sq km (15-20 mi) from nest or roost (Zeiner *et al.* 1990)
Osprey (*Pandion haliaetus*)	Occasional – rare migrant, winter visitor, does not nest	Forages (for fish) in wetlands, perches in Eucalyptus grove (P.H. Bloom, pers. comm.)	Nesting birds may travel 8-10 km (5-6 mi) to fishing areas (Garber 1972, French and Koplin 1977)
White-tailed Kite (*Elanus leucurus*)	Resident, nests (1-4 pairs, Bloom 1982)	nests in Eucalyptus grove, forages on Mesa and wetlands	0.57 sq km / 141 acres (Henry 1983)
Northern Harrier (*Circus cyaneus*)	Common throughout the year, nesting has not been documented	Marshes and mesas for foraging, Rabbit Island and Mesa grasslands are potential nesting habitat;	260 hectares / 642 acres MacWhirter and Bildstein 1996)
Sharp-shinned Hawk (*Accipiter striatus*)	Occasional – rare migrant, winter visitor	Eucalyptus grove, brushy areas	67, and 132 hectares / 166 and 326 acres (Craighead and Craighead 1956)
Cooper's Hawk (Accipiter cooperii)	Migrant, winter visitor	Eucalyptus grove (may be suitable for nesting), brushy areas	18-531 hectares / 45-1312 acres (Craighead and Craighead 1956)
Red-shouldered Hawk (*Bureo lineatus*)	uncommon resident, 1-2 pairs nest (Bloom 1982)	Eucalyptus grove for nesting, Mesa for foraging	1.21 sq km / 299 acres (Bloom 1993)
Red-tailed Hawk (*Buteo jamaicensis*)	Uncommon in nesting season (0-1 pair, Bloom 1982), abundant in remainder of year	Forages on Mesa and in wetlands, perches in Eucalyptus grove, has nested on poles in wetlands	Highly variable; 31-390 hectares / 77 – 963 acres in one study (Petersen 1979)
Rough-legged Hawk (*Buteo lagopus*)	Rare winter visitor, not expected most years	Meadows, marshes, swamps, fields	10-16 sq km / 2,470 – 3,952 acres (Craighead and Craighead 1956)
American Kestrel (*Falco sparverius*)	Common resident and winter visitor	Nests in palms, perches in Eucalyptus grove, forages mainly in upland areas, mesas	0.75 – 2.42 sq km / 185 – 598 acres (Stys 1993)
Merlin (*Falco columbarius*)	Rare migrant and winter visitor	Wetlands and mesa	"not rigidly territorial in nonbreeding season" (Zeiner *et al.* 1990)
Peregrine Falcon (*Falco peregrinus*)	Rare winter visitor	Forages in wetlands, perches in Eucalyptus grove (P.H. Bloom, pers. comm.) and on poles	Forage up to 23 km / 14 miles from nests in Rocky Mts. (Zeiner *et al.* 1990)
Barn Owl (*Tyto alba*)	Resident, nests (1-5 pairs, Bloom 1982)	Nests in palms, Eucalyptus (?); forages on mesas and in wetlands	Little known. 1,770 acres for radio-tagged owls in New Jersey (Marti, 1992)
Western Screech-Owl (*Otus kennecottii*)	Rare resident (?)	Eucalyptus grove	1 – 5 sq km / 247 – 370 acres (Craighead and Craighead 1956) ????
Great Horned Owl *Bubo virginianus*)	Resident	Eucalyptus grove, forages throughout Bolsa Chica area	1.2 –12.1 sq km / 296 – 2988 (Craighead and Craighead 1956)

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Burrowing Owl (*Athene cunicularia*)	Rare but regular winter visitor; one summer record (Kossack 1992)	Bolsa Chica Mesa provides potential nesting habitat; wetlands,	Various studies: owls observed up to 2.4 km from nest burrow; home ranges in Saskatchewan 35 – 1188 acres (Haug, Millsap, Martell 1993)
Short-eared Owl (Asio flammeus)	Uncommon migrant and winter visitor; potentially nests	Rabbit Island for roosting and potential nesting habitat, Marshes, mesas for foraging	20 – 242 hectares / 49 – 598 acres, dependent on prey populations (Holt and Leasure 1993)

Turkey Vultures (***Cathartes aura***) perch in the Eucalyptus grove on Bolsa Chica Mesa but the grove is probably not a significant winter roost site. Bloom's high count for one day was eight (Bloom 1982); Hamilton and Willick (1996) report roosts of "up to 350" in other lowland Eucalyptus groves. Turkey Vultures search for carrion while soaring over open terrain, which, at Bolsa Chica, includes upland and wetlands habitats. There is no nesting habitat for Turkey Vultures at Bolsa Chica.

Turkey Vultures were seen on each of TMC's survey days. Three were seen perched in the Eucalyptus grove on November 9. Two of these took flight and one went as far as Warner Avenue. Eight vultures soaring over the oilfields and Huntington Beach Mesa late in the afternoon of the same day were probably different birds. As many as 28 have been observed on recent National Audubon Society Christmas Bird Counts at Bolsa Chica.

Ospreys (*Pandion haliaetus*), being picivorous, forage over open water. At Bolsa Chica, the Eucalyptus grove is used for perching (P.H. Bloom, pers. comm.) The remainder of the upland habitat of the Bolsa Chica Mesa does not satisfy foraging habitat requirements for the species, but provides an open space buffer between perch sites, fishing sites, and human activities. Ospreys do not nest at Bolsa Chica; the DFG (1982) reported that the Eucalyptus grove provides potential nesting habitat.

One or two Ospreys were observed during each of the TMC survey days. One soared over the Eucalyptus grove near Bolsa Chica Street on November 27. One or two have been seen on most of the recent National Audubon Society Christmas Bird Counts at Bolsa Chica.

White-tailed Kites (*Elanus leucurus*) require open country with sufficient prey (mostly Microtine rodents) for foraging, and trees with somewhat closed canopies for nesting (Johnsgard 1990). The species has nested in the Eucalyptus grove in recent years, and forages over the Bolsa Chica Mesa as well as over the marshes (Peter Knapp, pers. comm.) Bloom (1982) observed eight in one day, estimated one to four nesting pairs, and considered the species common throughout the year. Robert A. Hamilton observed courtship displays in the Eucalyptus grove at the southeast edge of the Mesa in January 1998 (Hamilton 1998).

One or two White-tailed Kites were observed on each of the survey days. One to ten have been observed on National Audubon Society Christmas Bird Counts at Bolsa Chica since 1992.

The species is a U.S. Fish and Wildlife Service Migratory Nongame Bird of Management Concern.

Northern Harriers (*Circus cyaneus*) forage throughout the Bolsa Chica area, in both wetlands and upland habitats. The species courses low over the ground, preying upon rodents and small birds (N. and H. Snyder 1991). In spite of the presence of seemingly suitable nesting habitat, nesting has not been documented at Bolsa Chica. Bloom (1982) considered the species common throughout the year.

Five or six Northern Harriers were observed during each of the survey days, and one or two could usually be seen over the Mesa while scanning with binoculars. Foraging birds were seen over the marsh, on the edge of the Eucalyptus grove, and over the Mesa near Warner Avenue. Five is the average number of Northern Harriers recorded on each of the last eight National Audubon Society Christmas Bird Counts at Bolsa Chica.

On November 27 a female, perched on the ground on the Mesa, persistently gave a high pitched call which is associated with breeding behavior. MacWhirter and Bildstein (1996) state that "During the breeding season, females issue Food Call, a piercing, descending scream, *eeyah eeyah*, which may be repeatcd for minutes, almost always in the presence of mate and apparently in an effort to induce food transfers, hunting by the male, or to 'solicit' copulation." A male was observed south of the Eucalyptus grove on the same morning. Bloom (1982) suspected that Northern Harriers nest at Bolsa Chica; further observations on the Mesa during the appropriate season may confirm this.

Sharp-shinned Hawks (*Accipiter striatus*) are migrants and winter visitors to the Bolsa Chica area. They prey on small passerines, so it is expected that the thickets associated with the Eucalyptus grove provide the best foraging habitat.

Sharp-shinned Hawks were not seen during the TMC assessment. Bloom (1982) considered the species occasional / rare. The species has been seen on five of the last eight National Audubon Society Christmas Bird Counts at Bolsa Chica.

Cooper's Hawk (*Accipiter cooperii*) is a California Species of Concern (nesting). Habitat within the Eucalyptus grove is at least marginally suitable for nesting by this species (DFG 1982), and the grove harbors sufficient avian prey. Bloom (1982) considered the species occasional / rare. The species is fairly common as a migrant and winter visitor to Orange County (Hamilton and Willick 1996).

Cooper's Hawk was not observed during the TMC assessment, but a seemingly knowledgeable birder reported seeing one on the eastern end of the Eucalyptus grove on one of the survey days. The species has been seen on five of the last eight National Audubon Society Christmas Bird Counts at Bolsa Chica.

Red-shouldered Hawks (*Buteo lineatus*) nest in the Eucalyptus grove, and may have done so since at least 1979. A bird banded in 1979 was recaptured in 1982 (Bloom 1982). Recent sightings indicate that the eastern end of the Eucalyptus grove may provide the best nesting habitat. It is expected that the Eucalyptus grove provides the best foraging habitat for this woodland raptor, although forays out onto the Mesa would not be unexpected.

Red-shouldered Hawks were not seen during the TMC assessment, but a birder reported hearing one at the eastern end of the Eucalyptus grove on one of the survey days. Based on the observations of Orange County ornithologists and birdwatchers, it

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Peregrine Falcons forage in wetland habitats. They occur throughout the year at Bolsa Chica, and occasionally perch in the Eucalyptus grove (P.H. Bloom, pers. comm.) Peregrine Falcons have been observed on six of the last eight National Audubon Society Christmas Bird Counts at Bolsa Chica. None were seen during the TMC surveys.

Barn Owls (*Tyto alba*) are frequently detected at Bolsa Chica and probably do most of their foraging in the upland areas adjacent to the Eucalyptus grove, where they roost. The palms provide nest sites. Man-made structures in the area may also be used for nesting.

Barn Owls were not detected during the TMC surveys; focused surveys for owls were not conducted.

Western Screech-Owl (*Otus kennicottii*) has been detected at least once in the Eucalyptus grove. This small owl is a cavity-nesting species that preys on a wide variety of small mammals, reptiles, amphibians, birds, and insects.

Western Screech-Owls were not detected during the TMC surveys; focused surveys for owls were not conducted. This is the only raptor species added to Bloom's (1982) list in the last seventeen years.

Great Horned Owls (*Bubo virginianus*) occur in many habitats, and has been detected at Bolsa Chica. Bloom (1982) considered the species rare throughout the year, and did not suspect nesting.

Great Horned Owls were not detected during the TMC surveys; focused surveys for owls were not conducted.

Burrowing Owls (*Athene cunicularia*) have been observed on the Bolsa Chica Mesa several times, most recently in January 1998 (Hamilton 1998). A breeding season sighting in June, 1992, by David S. Kossack, Ph.D. (Kossack 1992), indicates the possibility of nesting. P.H. Bloom (pers. comm.) suspects that Burrowing Owls that occur in winter at Bolsa Chica are not from the Seal Beach National Wildlife Refuge population, but are from outside the region. Burrowing Owls have been observed on three of the last eight National Aububon Society Christmas Bird Counts at Bolsa Chica.

Burrowing Owls were not observed during the TMC surveys; one was seen on Rabbit Island in November 1999. Focused surveys, following accepted protocols, would be necessary to determine the status of Burrowing Owls on the Bolsa Chica Mesa. The species is a federal and state Species of Concern.

Short-eared Owls (*Asio flammeus*), a California Species of Concern, have been observed regularly at Bolsa Chica. Bloom (1982) considered the species uncommon throughout most of the year. One or two were observed on Rabbit Island in November 1999. Rabbit Island provides the best roosting and potential nesting habitat, but the owls probably forage over both the marshes and mesas (Bloom 1982). Based on the known status of the species in Southern California, nesting at Bolsa Chica is unlikely (Garrett and Dunn 1981).

Short-eared Owls were not observed during the TMC surveys; focused surveys for owls were not conducted.

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appears that the center of activity and nest sites for Red-shouldered Hawks are east of the current ESHA.

Red-tailed Hawks (*Buteo jamaicensis*) are uncommon in the breeding season; Bloom (1982) estimated that 0-1 pair nests at Bolsa Chica. He considered the species abundant in the remainder of the year, with the resident population augmented by migratory and dispersed birds. The species forages throughout the Bolsa Chica area, but is expected to more frequently forage in the uplands, where prey species are abundant. The tall Eucalyptus snags are ideal perches.

A minimum of ten Red-tailed Hawks were seen in the area of the Mesa on each survey day. These hawks perch in the Eucalyptus grove, including the row of trees along the Bolsa Chica Street extension, as well as on the telephone poles and fences along Los Patos Avenue.

Red-tailed Hawks were the most commonly seen raptor during the TMC surveys. As many as 41 have been observed in a day at Bolsa Chica during National Audubon Society Christmas Bird Counts.

Rough-legged Hawk (*Buteo lagopus*) is a rare bird in coastal Southern California and has been recorded only twice in Orange County since 1976. A Rough-legged Hawk was observed at Bolsa Chica in December-January 1984-85 (Hamilton and Willick 1996).

American Kestrel (*Falco sparverius*)) is the most abundant and widespread nesting raptor in Orange County (Hamilton and Willick 1996). Bloom (1982) considered the species abundant throughout the year, and estimated that four to eight pairs nest at Bolsa Chica. Migratory and locally dispersed American Kestrels augment the resident population during the non-breeding seaons. During the last eight National Audubon Society Christmas Bird Counts, observers have counted 5 to 21 American Kestrels each day.

At least five American Kestrels were seen on the Mesa during the TMC surveys. A male was observed carrying a lizard from the grassland habitat on the Mesa to the top of a Eucalyptus. It is expected that the species forages more often in upland habitats at Bolsa Chica than in the wetlands. The only nesting habitat is in the Eucalyptus grove, which includes several palms.

Merlins (*Falco columbarius*) are rare but regular migrants and winter visitors to Orange County (Hamilton and Willick 1996). Bloom (1982) considered the species rare at Bolsa Chica. Both wetlands and upland habitats at Bolsa Chica are suitable foraging habitat for the species. The species has been observed at Bolsa Chica during the fall of 1999. The species has been observed on three of the last eight National Audubon Society Christmas Bird Counts at Bolsa Chica.

Peregrine Falcons (*Falco peregrinus*) were recently taken off of the federal Endangered Species list due to the successes of the recovery program. The species remains a California Endangered Species. Bloom (1982) considered Bolsa Chica of critical importance to the species at the state level.

Discussion

The upland areas at Bolsa Chica have "important wildlife values that should be protected" (DFG 1982). While this report assesses habitat on the Bolsa Chica Mesa in terms of raptors, it is important to note that the area is an ecosystem which includes Great Blue Heron nests, abundant small mammal populations, wetlands (including the Warner Avenue Pond), and areas of coastal bluff scrub. The Mesa is not a separate biological entity; impacts to the Mesa will affect the adjacent Bolsa Chica Ecological Reserve and the wetlands outside of the Reserve.

A comprehensive study of raptor use of the Bolsa Chica Mesa would require the marking of individual birds, spot-mapping of territories, nest searches, behavioral observations, and analyses of prey (species, distribution). Ideally, the study would be multi-year to show seasonal and annual variability in raptor populations and habitat use. This study was limited by seasonal constraints and private property issues

The current assessment consisted of three survey days, a review of literature, and conversations with local experts. Fortunately, raptors are large and relatively conspicuous and, over the years, many birdwatchers and biologists have encountered them at Bolsa Chica. There is no doubt that Bolsa Chica is a good place to observe a variety of raptors. Annual surveys (National Audubon Society Christmas Bird Counts) indicate that upland and wetlands habitats at Bolsa Chica sustain a diverse raptor assemblage. Analysis of aerial photographs as far back as 1952 shows that the extent of the Eucalyptus grove is essentially unchanged.

TMC's assessment concentrated on raptor use of the Bolsa Chica Mesa (which is mostly fenced and posted private property) although most raptors using the Mesa range out over the wetlands at least occasionally. Raptor observations were made from the edges of the Mesa; private property lines were not crossed. Six species of raptors were observed on the Mesa: Turkey Vulture, Osprey, White-tailed Kite, Northern Harrier, Red-tailed Hawk, and American Kestrel. Two other species, Cooper's Hawk and Red-shouldered Hawk, were detected in the Eucalyptus grove by birdwatchers during the survey days. Observations of raptors on the Mesa included perched birds in the Eucalyptus grove (Turkey Vultures, Red-tailed Hawks, American Kestrels), perched birds on the fence (American Kestrels), and raptors soaring over all parts of the Mesa (Turkey Vultures, Red-tailed Hawks, Osprey, White-tailed Kite, Northern Harriers, American Kestrels). The Northern Harriers were particularly conspicuous as they cruised low over the grasslands. It seems reasonable to assume that the Northern Harriers and Turkey Vultures require the largest expanses of open space of the species that forage in the upland habitats. Both species were seen on the Mesa adjacent to Warner Avenue.

Red-tailed Hawks were the most abundant raptor on the Mesa during the survey period, with 10+ seen on each survey day. Red-tailed Hawks were observed on poles along Warner Avenue and Los Patos Avenue and in Eucalyptus along the Bolsa Chica Street extension. Neither of these areas are included in the current raptor ESHA.

Surveys for nocturnal owls and focused surveys for Burrowing Owls were beyond the scope of this assessment, but the presence of owls on the Bolsa Chica Mesa is well documented. Burrowing Owls have been observed on several occasions, and the habitat is suitable for nesting. A Burrowing Owl has been observed on the Mesa during the nesting season (Kossack 1992).

Conclusions

TMC concludes that the entire Bolsa Chica Mesa is used by raptors and should be considered raptor habitat. Grasslands on the Mesa are foraging habitat for the raptors that perch and/or nest in the Eucalyptus grove. They also provide foraging and/or potential nesting habitat for Northern Harriers, Burrowing Owls, and Short-eared Owls. Without these grasslands both the numbers and diversity of raptors at Bolsa Chica will be diminished.

Raptor biologist Peter H. Bloom's 1982 analysis of the importance or raptor habitat at Bolsa Chica was based on his extensive experience locally and regionally. He classified the importance of Bolsa Chica to each species as either "Limited Importance," "Significant Importance," or "Critical Importance" at the local level, the Orange County level, the Southern California level, and the state level. For two species, Peregrine Falcon and Short-eared Owl, Bolsa Chica is considered of Critical Importance at the Southern California and state levels. Eight species are considered of Critical Importance at the local level, and four species at the county level. He concludes that "The mesas provide the most valuable nesting habitat and also support large populations of rodent prey species... Loss of either lowland or mesa habitat will result in lowered raptor densities in both" (Bloom 1982).

The 1976 Coastal Act defines "environmentally sensitive area" as "... any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments." It is the conclusion of TMC that, by these criteria, the Bolsa Chica Mesa is an environmentally sensitive habitat area and that it should be designated as such in its entirety. The previous ESHA designation of 20.5 acres of the Eucalyptus grove does not adequately "protect against any significant disruption of habitat values" (Section 30240[a], Public Resources Code) as both resident and migratory raptors forage over the entire Mesa and the Mesa provides foraging and/or nesting habitat for Burrowing Owls, Short-eared Owls, and Northern Harriers, species that do not use the Eucalyptus grove.

Based on both an analysis of aerial photographs from 1981 and 1983 and the current surveys, it appears that the Eucalyptus grove was then and is now larger than that delineated by DFG in 1982 as an ESHA, and extends both north and east of the designated ESHA in several areas on the Mesa, along the bluff face, and adjacent to the toe of the bluff. These "additions" total approximately three acres, so the Eucalyptus grove in its entirety (including the 20.5 acre DFG ESHA) is approximately 24 acres in size. These additional areas may be important to Red-shouldered Hawks and White-tailed Kites, and are certainly used by Red-tailed Hawks and American Kestrels. The size of the Eucalyptus grove is largely irrelevant if foraging habitat on the Mesa is lost.

Due to the potential of nesting by sensitive ground-nesting birds such as Burrowing Owl, Northern Harrier, and Short-eared Owl (low probability of nesting) and the importance of maintaining an adequate prey base for the many raptors that forage on the Mesa, TMC recommends that human use of the entire Mesa raptor habitat area be restricted, if not completely prohibited, to preclude adverse environmental impacts.

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Literature Cited and References

American Ornithologists' Union. 1998. The A.O.U. Checklist of North American Birds. Seventh edition. American Ornithologists' Union.

Bloom, P. H. 1982. Raptor Inventory and Habitat Assessment for the Bolsa Chica Area, Orange County, California.

Bloom, P. H., M. D. McCrary, and M. J. Gibson. 1993. Red-shouldered Hawk home-range and habitat use in southern California. J. Wildl. Manage. 57:258-265.

Brown, L. and D. Amadon. 1968. Eagles, Hawks, and Falcons of the World. 2 vols. Country Life Books. London

California Burrowing Owl Consortium. 1997. Burrowing Owl Survey Protocol and Mitigation Guidelines. J. Raptor Res. Report 9:171-177.

California Department of Fish and Game. 1982. Environmentally Sensitive Areas at Bolsa Chica. Report submitted to the California Coastal Commission.

Craighead, J.J. and F.C. Craighead, Jr. 1956. Hawks, Owls, and Wildlife. Stackpole Books, Harrisburg, PA. 443 pp.

Crocoll, S.T. 1994. Red-shouldered Hawk (*Buteo lineatus*). *In* The Birds of North America, No. 107. (A. Poole and F. Gill eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union.

Dunk, J.R. 1995. White-tailed Kite (*Elanus leucurus*). *In* The Birds of North America, No. 178. (A. Poole and F. Gill eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union.

Fitch, H.S., F. Swenson, and D.F. Tillotson. 1946. Behavior and food habits of the Red-tailed Hawk. Condor 48:205-237.

French, J.M. and J.R. Koplin. 1977. Distribution, abundance, and breeding status of Ospreys in northwestern California. Pages 223-240 in J.C. Ogden, ed. North American Osprey Research Conf. U.S. Natl. Park Serv. Trans. And Proc. Series 2. 258 pp.

Garber, D.P. 1972. Osprey study, Lassen and Plumas counties, California, 1970-71. Calif. Dep. Fish and Game, Sacramento. Wildl. Manage. Br. Admin. Rep. 72-1. 33pp.

Garrett, K. and J. Dunn. 1981. Birds of Southern California. Los Angeles Audubon Society.

Glinski, R.L. ed. 1998. The Raptors of Arizona. Arizona Game and Fish Dept., University of Arizona Press, Tucson.

Ex. 46 p. 14
205

Hamilton, R.A. 1998. Animal Species Observed at Bolsa Chica Mesa. Letter report prepared for the Bolsa Chica Land Trust, Huntington Beach.

Hamilton, R.A., and D. R. Willick. 1996. The Birds of Orange County California, Status and Distribution. Sea and Sage Audubon Society, Irvine.

Henry, M.E. 1983. Home range and territoriality in breeding White-tailed Kites. Master's thesis. San Diego State Univ., San Diego.

Haug, E.A., B.A. Millsap, and M.S. Martell. 1993. Burrowing Owl (*Speotyto cunicularia*). *In* The Birds of North America, No. 61 (A. Poole and F. Gill, Eds.). The Academy of Natural Sciences, Philadelphia, PA; The American Ornithologists' Union.

Holt, D.W. and S. M. Leasure. 1993. Short-eared Owl (*Asio flammeus*). *In* The Birds of North America, No. 62 (A. Poole and F. Gill, Eds.). The Academy of Natural Sciences Philadelphia, PA; The American Ornithologists' Union.

Johnsgard, P.A. 1990. Hawks, Eagles, and Falcons of North America: Biology and Natural History. Smithsonian Institution Press, Washington and London.

Kossack, D.S. 1992. Bolsa Chica Mesa Survey.

MacWhirter, R.B. and K.L. Bildstein. 1996. Northern Harrier (*Circus cyaneus*). *In* The Birds of North America, No. 210. (A. Poole and F. Gill eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union.

Marti, C.D. 1992. Barn Owl (*Tyto alba*)). *In* The Birds of North America, No. 1. (A. Poole and F. Gill eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union.

Palmer, R.S. 1988. Handbook of North American Birds, vol. 4. Yale University Press.

Palmer, R.S. 1988. Handbook of North American Birds, vol. 5. Yale University Press.

Petersen, L. 1979. Ecology of Great Horned Owls and Red-tailed Hawks in southeastern Wisconsin. Wisc. Dep. Nat. Resour. Tech. Bull. No. 111.

Preston, C. R. and R. D. Beane. 1993. Red-tailed Hawk (*Buteo jamaicensis*). *In* The Birds of North America, No. 52. (A. Poole and F. Gill eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union.

Small, Arnold. 1994. California Birds: Their Status and Distribution. Ibis Publishing Company.

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Snyder, N. and H. Snyder. 1991. Birds of Prey, Natural History and Conservation of North American Raptors. Voyageur Press, Stillwater MN.

Stys, Beth. 1983. Ecology and Habitat Protection Needs of the Southeastern American Kestrel (*Falco sparverius paulus*) on large-scale development sites in Florida. Nongame Wildlife Technical Report No. 13:13-16.

U.S. Fish and Wildlife Service. 1979. Special Report – Bolsa Chica Area. Ecological Services, Laguna Niguel.

U.S. Fish and Wildlife Service. 1982. Planning Aid Report – Sunset Harbor Navigation and Salt Marsh Restoration Study, Bolsa Chica, Orange County, California. Report prepared for U.S. Army Corps of Engineers, Los Angeles District.

Weidensaul, S. 1996. Raptors, The Birds of Prey: An Almanac of Hawks, Eagles, and Falcons of the World. Lyons and Burford, Publishers.

Zeiner, D.C., W. Laudenslayer, K. Mayer, M. White. 1990. California's Wildlife, Volume II, Birds. Calif. Dept. of Fish and Game, Sacramento.

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October 22, 2000

Susan Hansch
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Dear Ms. Hansch:

As requested, the following are my opinions and comments related to the evaluation of the three different Bolsa Chica alternative development plan proposals. My first observation is that all of the previous biological surveys and research that have dealt with birds of prey has been based upon very little field work. There has never been a focused raptor study that spans the length of the breeding and migratory seasons. Hence, as a reviewer I don't have the quality information that I might like to have to make as sound and quantitative conclusions as possible. I begin my evaluation with the following overview:

The Bolsa Chica area including uplands and wetlands provides substantial habitat to birds of prey for four principal reasons:

1. The mesa has an abundant resource of terrestrial prey that attract a suite of raptors that prey principally upon arthropods, small mammals, and small song birds. The wetlands, during migration, winter, and spring attract large numbers of marsh birds, shorebirds, and fish which attract another suite of raptors.

2. Bolsa Chica is located on the coast and includes an estuary, hence large numbers of shorebirds, and terrestrial birds are channeled up and down the shoreline through Bolsa Chica. Likewise, as a result of the natural barrier provided by the ocean, raptors follow the shoreline and some species also follow the avian migration.

3. Bolsa Chica, Ballona Marsh and uplands, and Naval Weapons Station, Seal Beach (NWSSB) provide the last large remnants of coastal natural open space after birds depart the Santa Monica Mountains to the north and Newport Bay from the south. This natural open space provides both habitat and relative seclusion from surrounding urban and commercial developments and tends to concentrate wintering birds of prey.

4. The significance of the combined wetland and adjacent upland habitats to raptors at Bolsa Chica cannot be overstated. Newport Back Bay, an important nearby ecological reserve, also in Orange County, is composed of a large estuary with minimal uplands and supports a small population of nesting and wintering raptors. In contrast NWSSB also contains a large estuary and an even larger upland component, that supports a huge, principally wintering population of raptors. The Bolsa Chica uplands sustain more use by more individuals of more species than the wetlands (Bloom 1982).

Raptor Flushing Distances

The distances at which raptors flush from people has been poorly studied. Very little has been published in peer reviewed journals. Therefore the report by Erickson (LSA 2000) done on Bolsa Chica Mesa was informative and helpful to the analysis of impacts of the proposed project on some of the raptorial species, and some of the individuals that utilize the local area. The report provides a good starting point from which to evaluate the impacts on some species of perched raptors. However, the study does suffer from small sample size, short time span, one season, and the use of only one observer since it is likely that a perched bird will respond differently to the approach of one person vs. several people, or people with one dog on a leash, or people with a dog not on a leash, people on bicycles, etc. If hiking trails are permitted, it is likely that the number of people per bird interaction will vary from 1-20+ and the behavior of birds will vary accordingly. Also, popular trails may be more or less occupied at least on weekends by hikers, joggers, bird watchers, etc. from sunrise to sunset making hunting perches unavailable. Should the number of bird and people interactions be frequent enough, traditional hunting perches (eucalyptus trees, poles, etc) and territories will predictably be abandoned even in natural open space areas.

Other variables that are important but difficult to evaluate are whether the birds are resident or migratory individuals. Based upon results at nearby NWSSB (Bloom 1982, 1985, 1996a), Bolsa Chica is utilized by more wintering and migratory raptors than breeding individuals. Since one would expect resident birds to be more accustomed to the presence of people, the results of the LSA study should be best viewed as minimal flushing distances perhaps by the most tolerant of birds. Many young migrants and adults that fledged or departed from nest territories in remote areas of North America could be expected to be far more cautious, or for some species more tame (tundra peregrines) , about the approach of a human, particularly if previous experiences with people were negative. The rigors and hazards of migration are hard on birds and in the case of predatory birds, being disturbed prematurely several times before capturing prey after hunting for several hours, can in the long term be terminal if it happens frequently enough. Migrants in particular are more prone than residents to move to another distant area with less disturbance.

Task 1. Determine whether the projected raptor use of the Eucalyptus ESHA will be higher, lower or the same for each of the development alternatives.

From the perspective of maintaining the current level of raptor use of the Eucalyptus ESHA, Plan 1 is the least desirable and Plan 2 represents only a slight improvement because they retain only a relatively small amount of foraging habitat and minimal buffer from human activity and homes. I would predict that the White-tailed Kite would cease nesting in the eucalyptus row, and that Red-tailed Hawks if they ever did nest, would also cease nesting in the eucalyptus row due to the close proximity of people, the short height of the trees, and reduced foraging opportunities. If a hiking trail were placed within 50', parallelling the eucalyptus ESHA I would predict that even the Red-shouldered Hawk, normally a very tolerant raptor (Bloom 1996b) would also stop nesting, at least im most years within the ESHA. In fact the Red-shouldered Hawk may already have ceased nesting in the ESHA due to the degredation of the low trees and more frequently used existing hiking trail. The only potential raptors that might successfully nest in the Eucalyptus ESHA in the above scenario would be the American Kestrel, Great

Horned Owl and Barn Owl.

In contrast, Plan 3 provides an acceptable buffer, and a significant quantity of quality upland foraging habitat for both nesting and wintering raptors, particularly at the west end of the eucalyptus ESHA. The palm trees at the west end of the ESHA probably support nesting American Kestrels and Barn Owls. Use by raptors of the east end of the ESHA would be much less due to the proximity of homes, people and habitat reduction.

In summary, existing raptor use would be most altered by Plan 1 and least changed by Plan 3, with a minimum 50% reduction in use between Plan 1 and 3. Plan 2 is only a slight improvement over Plan 1 by eliminating the hiking trail in the ESHA.

Task 2. Estimate the effects of the various development alternatives on the number of individuals and number of species of birds of prey that occur at Bolsa Chica in the breeding season and in the winter. **Task 3.** If Practicable, provide quantitative estimates of the effects pf development. At a minimum, provide an indication of the relative magnitude of the three development alternative effects on birds of prey. Findings should be based on existing data where feasible and appropriate and on best professional judgement where considerable uncertainty exists

Due to the effects of foraging and nesting habitat loss and closer proximity of people to the eucalyptus ESHA all three plans will reduce the number of breeding and wintering raptors at Bolsa Chica. Plans 1 and 2 are so similar in terms of foraging habitat acreage lost and proximity to the eucalyptus ESHA, that from a raptor use perspective, they can't be contrasted. They are essentially the same except that Plan 1 has a strategically bad trail system that parallels the eucalyptus ESHA. The proposed 100' buffer between the ESHA and homes is tiny relative to the needs of most raptors as previously documented (Tierra Madre Associates 1999) and will eliminate any potential for successful nesting by most Red-tailed Hawks and all White-tailed Kites.

Estimates of the effects of the three plans on breeding raptors is more easily accomplished than on the wintering raptors because the breeding population has been examined more closely and is known to be relatively small (Bloom 1982). The wintering raptor population is larger than the breeding population but unfortunately has not been assessed during the peak months of November & December when numbers of Orange County wintering raptors swell to their highest levels (Bloom 1996a). As a result I can only speak in fairly general terms of what could be expected in terms of changes in the number of migratory and nesting raptors. Plan three is most favorable to both migratory and breeding raptors because it retains the greatest amount of upland foraging habitat and includes an effective buffer between the ESHA and people.

Species of raptors that are known to breed or are suspected of having attempted to nest within the last twenty years at Bolsa Chica include Red-tailed Hawk, Red-shouldered Hawk, White-tailed Kite, Northern Harrier, Cooper's Hawk, American Kestrel, Great Horned Owl and Barn Owl. Burrowing Owls, Short-eared Owls, and Northern Harriers probably also nested historically but have been extirpated as breeding species from Bolsa Chica. While resident, Turkey Vultures probably do not nest at Bolsa Chica, but are present as scavengers on a near

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daily basis.

Migratory raptors known or suspected of occurring at Bolsa Chica include Red-tailed Hawk, Ferruginous Hawk, Rough-legged Hawk, Northern Harrier, Cooper's Hawk, Sharp-shinned Hawk, American Kestrel, Merlin, Peregrine Falcon, Prairie Falcon, Turkey Vulture, Osprey, Golden Eagle, Bald Eagle, Short-eared Owl, Long-eared Owl, and Burrowing Owl. All of the above species, both migratory and resident except the Bald Eagle and Long-eared Owls have been observed at nearby Naval Weapons Station Seal Beach in recent years. Some occur only rarely whereas others are super abundant.

Plan 1, 2 & 3: Breeding and Migratory Populations.

No focused nesting season survey of all birds of prey potentially nesting in the Bolsa Chica Uplands and Wetlands has ever been conducted and the only focused winter season survey consisted of four survey days in January and February 1982. Thus, my evaluation of the impacts on the numbers of breeding and wintering raptors is gleaned from general biological surveys and limited scope raptor surveys (Bloom 1982, Chambers 19–, LSA 2000). An important consideration in this evaluation is the quality of the data. The greatest number of raptors at NWSSB occur in November and December (Bloom 1996a). No studies of raptor use at Bolsa Chica have been completed during this period so population numbers for some species, particularly Red-tailed Hawks and White-tailed Kites are likely higher at Bolsa Chica than has been previously reported by Bloom (1982). In fact other observers conducting relatively casual observations have seen up to 41 Red-tailed Hawks and 10 White-tailed Kites (Tierra Madre Associates 1999) from outside the property boundaries suggesting very high concentrations similar to NWSSB (Bloom 1996a) in winter.

The one pair of resident Red-tailed Hawks has never been confirmed as breeding within Bolsa Chica, but the territory has only been searched for once (Bloom 1982). A second pair occasionally nests in the southeast corner in the Huntington Mesa vicinity. If the pair does not breed at the east end of the eucalyptus ESHA, it probably nests off-site at the east end of the eucalyptus ESHA. This pair regularly hunts on the Bolsa Chica uplands and would lose important upland foraging habitat that comprises a substantial part of the pair's home range. Loss of this acreage would likely preclude future nesting attempts, or at least reduce productivity. I suggest very limited potential for future nesting attempts with the addition of the proposed homes and trails proposed in Plans 1 and 2.

Migratory Red-tailed Hawks would be most severely impacted by Plans 1 and 2 due to the removal of the majority of upland hunting habitat. Of 19 Red-tailed Hawks observed on February 23, 1982 the majority (13) were observed on the Bolsa Chica mesa. Since Plans 1 and 2 call for the removal of more than 80% of the upland habitat where the Red-tailed Hawks hunt, I would suggest that the vast majority (>80%) of the wintering Red-tailed Hawks on the mesa would be gone if Plans 1 or 2 were implemented. Plan 1 also proposes a hiking trail that would preclude most of the ESHA eucalyptus trees from being used as hunting perches by many raptors.

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Plan 3 offers the greatest opportunity to retain the majority of Red-tailed Hawks on the Bolsa Chica mesa by conserving the greatest quantity of upland foraging habitat and by providing an adequate buffer for the most of the length of the eucalyptus ESHA. Instead of losing more than 80% of the wintering Red-tailed Hawks on the mesa as under Plan 1 and 2, I would project an approximately 30% loss in abundance under Plan 3.

A pair of Red-shouldered Hawks formerly nested at the west end of the eucalyptus ESHA for several years adjacent to the palm trees (Bloom 1982). Although some individuals and pairs are extremely adaptable (Bloom 1996b), the close proximity of the proposed development and active hiking trails under Plan 1 and 2 (without the trail) would likely eliminate this pair if it does still nest in the eucalyptus row. Red-shouldered Hawks are perch and wait hunters that utilize all manner of perch sites (Bloom 1989 for access to hunting habitat. At Bolsa Chica the dominant hunting area for this pair (assuming it still exists) is the eucalyptus ESHA.

Red-shouldered Hawks do not migrate in California (Bloom 1985), hence no wintering population of migrants occurs in Orange County. Adults remain on territories year-round.

Plan 3 protects the majority of hunting habitat within the eucalyptus ESHA and the known Red-shouldered Hawk nest trees. The pair would likely continue to nest under Plan 3 if no hiking trail was near the ESHA.

White-tailed Kites are more sensitive than most diurnal raptors to the presence of people and readily abandon nest attempts if approached to closely, particularly when disturbances occur on a regular basis. White-tailed Kites do not often hunt from perched positions but hunt from hovering positions over grasslands and to a lesser degree, marshes, adjacent to roost sites or perches. At Bolsa Chica, the kites utilize the eucalyptus almost exclusively as perch sites and sally out over the adjacent grasslands to obtain prey. Nest sites are presumably in the eucalyptus trees since no other suitable nest supports exist. I would predict no future successful nesting attempts with acceptance of either Plan 1 or 2 because of lost upland foraging habitat and direct disturbance of roost trees, perch (rest) sites and nest trees.

Bloom (1982) suggested that the Bolsa Chica area supported 1-4 breeding pairs of White-tailed Kites in 1982. Eight individuals were seen in 1982 (Bloom 1982) and up to 10 have been from Christmas Bird Counts (Tierra Madre Associates 2000). Kites usually form communal winter roosts, and while no roosts have been observed recently at Bolsa Chica, at least one, probably composed of local adults and floaters probably exists in the eucalyptus ESHA. While virtually nothing is known of the migratory habits of White-tailed Kites, the species predictably congregates from August through December in night roosts and forages in nearby grasslands and marshes. Fifteen (63%) of 24 individual kites observed during four days of observations in the winter of 1982 were seen on the Bolsa Chica mesa while the remainder were seen hunting in the lowlands (Bloom 1982). Plans 1 & 2 would have a significant effect on wintering White-tailed kites as a result of direct foraging habitat loss and roost disturbances resulting from increased human presence. With the majority of the Bolsa Chica grassland habitat gone under Plans 1 & 2. I would predict a minimum 25-50% (2-4) reduction in the winter kite population, assuming that eight birds are still present and no breeding pairs.

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Plan 3 offers the best opportunity to protect the greatest amount of prime foraging habitat on the Bolsa Chica mesa and protects the majority of potential nest and roost trees. Under Plan 3 it is likely that at least one pair of White-tailed Kites would continue nesting

Northern Harriers are ground nesters that utilize grasslands and marshes as foraging, nesting and roosting areas. When not nesting, the species locates prey in flight by coursing low over the grasslands and marshes and surprising vulnerable prey. Harriers generally perch on the ground, shrubs, or low fence posts and do not use the eucalyptus trees in the ESHA. No recent nesting attempts have been confirmed but no focused surveys have been conducted since 1982 (Bloom). Plans 1 and 2 have the undesirable effect of removing the greatest amount of foraging habitat and potential nest sites resulting in fewer harriers occupying Bolsa Chica throughout the year.

As many as four Northern Harriers have been observed at Bolsa Chica with the lowlands and mesas used in near equal proportions (Bloom 1982). Plans 1 and 2 would have the undesirable effect of removing more than 80% of the upland habitat and would likely eliminate 1-3 wintering harriers and force many migrants to keep moving. Plan 3 would allow many migrants to pause, fuel up, reestablish energy reserves and keep moving. Plans 1 and 2 would essentially eliminate most harrier use of the mesa.

Although a possible breeder, Cooper's Hawks probably do not nest at Bolsa Chica, hence no change in the breeding population under any of the three plans. The only potential nesting habitat would be the eucalyptus ESHA.

Cooper's Hawks are predictable migrants into Bolsa Chica, but few observations of the species have been made at Bolsa Chica, however the most predictable location to see them during the winter would be in the eucalyptus ESHA. A foot path of the type proposed in Plans 1 and 2 that would parallel the ESHA would significantly reduce its value to the species. Plan 3 eliminates the smallest amount of habitat.

Sharp-shinned Hawks occur at Bolsa Chica only during the winter and probably utilize the eucalyptus ESHA as hunting habitat. A foot path of the type proposed in Plans 1 that would parallel the ESHA would significantly reduce the value of the habitat to the species. A small amount of foraging habitat would be lost due to near complete development of the Bolsa Chica Mesa

American Kestrels are cavity nesters that utilize the palm trees and probably the eucalyptus trees as nest sites in the ESHA. In large part because kestrels nest in cavities, disturbances by people at nest sites would be minimal under Plans 1 and 2 but much greater than Plan 3. Numbers of breeding kestrels (<8 pairs, Bloom 1982) will probably be reduced by about 25% due to foraging habitat loss under Plans 1 or 2. Some pairs would still continue to nest in the eucalyptus ESHA. Plan 1 and 2 remove substantially more foraging habitat than Plan 3 and would also likely contribute to reduced fledging success of the remaining breeding pairs.

Neither one of the three plans would cause the loss of the Peregrine Falcon at Bolsa Chica. Peregrine Falcons are one of the most adaptable of North American raptors. But they don't often perch on low trees directly adjacent to a frequently used hiking trail as would happen under Plan

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1. The eucalyptus ESHA and estuary are probably the most frequently used habitats by Peregrine Falcons at Bolsa Chica. Under Plan 1 the eucalyptus ESHA would still sustain some use, particularly by local falcons, but it would be less because of the trail system, close proximity of housing, foraging habitat loss, and local prey (small bird) population reduction. While the species would still use the ESHA, it would be at a much reduced level and by fewer individual falcons. Plan 2 would be an improvement over Plan 1 because without the trail, there would be fewer human disturbances and much more use of the ESHA. Plan 3 is the best alternative for Peregrines because less foraging habitat is lost and fewer people are likely to disturb Peregrines from their hunting perches.

Merlins would be effected in a similar way to Peregrines but should be considered more sensitive to the presence of people.

Prairie Falcons occur at Bolsa Chica rarely and would be effected minimally by either of the three plans.

Turkey Vultures do not breed at Bolsa Chica or the local area, hence Plans 1 and 2 would have no effect on the breeding population. However, about 15 non-breeding resident vultures live in the area and migrants are regular visitors. Loss of more than 80% of the uplands as proposed in Plans 1 and 2 would reduce the foraging habitat for both resident and migratory vultures. Plan 1 would eliminate most use by vultures due to the close proximity of the ESHA to the trail. Plan 3 preserves the greatest amount of foraging habitat.

Presently, Ospreys do not breed at Bolsa Chica and would only be impacted by Plans 1 and 2 in the eucalyptus ESHA when disturbed from perch trees by hikers. Loss of the uplands would have limited effects on migratory ospreys under any of the three plans.

Both the Golden and Bald Eagle occur in the Bolsa Chica vicinity with about one Golden Eagle at NWSSB seen yearly. Bald Eagles are seen even less frequently. Bolsa Chica's value to these two species is mainly as a refuge for waterfowl and not direct foraging habitat for eagles, at least not anymore. Given the extremely low level of use by eagles at Bolsa Chica, I view the impacts resulting from the three alternative plans as negligible to these two species.

One pair of Great Horned Owls is known to nest at Bolsa Chica and the nest is located in the eucalyptus ESHA (LSA 2000). Under Plans 1 and 2 this pair would lose a huge portion of its foraging habitat and be subject to nest disturbance by people on the adjacent trail. While plausible that this pair could survive after implementation of Plan 1 and 2, it would likely be eliminated due to nest disturbances and loss of such a significant portion of its home range.

Great Horned Owls do not migrate into southern California and pairs are highly territorial and keep other owls out of their territory. Hence the effect of the three alternative projects on the wintering Great Horned Owl population would be the same as the breeding season. Plan 3 provides the greatest amount of foraging habitat for the pair of Great Horned Owls. The breeding pair and would probably remain under Plan 3.

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Barn Owls are cavity nesters and are known to nest in the palm trees at Bolsa Chica. at the west end of the eucalyptus ESHA. Some of the larger eucalyptus may also provide nesting opportunities. If Barn Owls presently nest in these trees, they would continue to nest in them under Plans 1 and 2 although at a much reduced level if a trail were nearby. Because a significant and important part of their foraging habitat would be lost in the upper and lower portions of the mesa, nest success would likely be much less.

Barn Owls do not migrate into California but substantial numbers of floaters can exist at a place the size of Bolsa Chica, particularly with 1-5 breeding pairs (Bloom 1982) and some of their young being present. Non-native grasslands of the type found on Bolsa Chica can support many Barn Owls during both spring and winter. A minimum of at least two birds were observed on one night in 1982 (Bloom 1982). Removal of the majority of the Bolsa Chica uplands as proposed in Plans 1 and 2 would eliminate some the most important hunting habitat for Barn Owls. Plan 3 preserves prime Barn Owl foraging habitat and would likely ensure continued nesting activities in the palm trees.

Burrowing Owls nest only a few miles away at NWSSB and almost certainly nested at Bolsa Chica historically. Surveys have been not been conducted recently so the species status is currently unknown but likely occurs at least as a regular winter visitor. It is very unlikely that the species has nested recently at Bolsa Chica so the effect of Plans 1 and 2 would be no change to the breeding population assuming that there presently are no breeding pairs. However, the best potential nesting habitat is the upland area known as the mesa. If this area was not plowed each year the probability of nesting by Burrowing Owls would be significantly enhanced, particularly if it were grazed.

Migratory Burrowing Owls occur at Bolsa Chica on a regular basis and probably use both the uplands and lowlands. I suspect that numerous individuals pause briefly and continue their migrations, some may stay for several weeks. As proposed in Plans 1 and 2, loss of important upland habitat to wintering Burrowing Owls would be significant resulting in much less use. Plan 3 provides potential nesting habitat as well as known wintering habitat.

Long-eared Owls breed in the region but no longer nest in the Bolsa Chica vicinity (Bloom 1994). The species probably does occur as an occasional visitor. As a result, the impacts of the three alternative development plans will likely have a minimal impact on the species.

Short-eared Owls no longer nest in southern California but do occur as regular migrants and winter at NWSSB (Bloom 1996). Short-eared Owls are also seen regularly at Bolsa Chica and probably also winter there (Bloom 1982). In fact that only two predictable locations where Short-eared Owls can be seen in Orange County are the above two locations. Bloom (1996) felt that the species is now so rare that it justified be classified as a State endangered species about 20 years ago.

Short-eared Owls nest, roost, and hunt in grasslands and marshes. Loss of the uplands under all three plan alternatives would be a significant negative impact to this wintering species but Plan 3 would be least invasive and would still allow considerable use of this area. Because of the significant amount of upland habitat loss, Plans 1 and 2 would contribute to the loss of this area

for wintering Short-eared Owls.

Task 4. Consider all probable negative effects of the development alternatives, including effects of disturbance on behavior and the effects of the loss of foraging habitat.

Plan 1

a) Of the three plan alternatives, negatively effects the greatest number of raptorial species and number of individuals via direct natural habitat loss of > 80% of the Bolsa Chica Mesa. In particular, Red-tailed Hawks, White-tailed Kites, Northern Harrier, Short-eared Owls and Burrowing Owls would be most severely impacted.

b) Reduces and in some cases eliminates the positive gains of preserving the Eucalyptus ESHA by placing the housing development within much of the foraging area of most raptors hunting from the trees. For numerically prominent Bolsa Chica species such as the Red-tailed Hawk, most of the foraging area in view of the ESHA hunting perches would be gone.

c) Contributes directly to breeding season failure and possible breeding territory abandonment of most raptors that might attempt to nest in the eucalyptus ESHA by human and pet disturbance from the trail system, loss of foraging habitat and disturbance due to the close proximity to the houses.

d) Nocturnal lighting, noises, pets, and people effect the behavior of birds. Due to the closeness of the housing edge, the 100' buffer would not allow sensitive species such as White-tailed Kites to nest successfully.

e) Potential increase in the number of raptor electrocutions due to new and increased number of utility poles next to a natural area.

Plan 2

a) Same negative effect as Plan 1.

b) Same negative effect as Plan 1.

c) The trail system may be abandoned, but the close proximity of the homes to the ESHA will invite people to invade the ESHA even if fenced.

d) Same negative effect as Plan 1.

E) Same negative effect as Plan 1

Plan 3 has all the negative effects of Plan 1 and 2 to varying degrees but at a significantly reduced level.

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Task 5. Consider all probable positive effects of the development alternatives, including effects of reducing disturbance within the Eucalyptus ESHA by removing trails and effects of providing an enhancement plan.

None of the three plans have any obvious direct positive effects on raptors. However, after about 20-40 years when horticultural trees mature, depending upon the species of raptor, horticultural landscaping sometimes (rarely) leads to nesting, often on the urban/natural area interface by Cooper's Hawks, Red-shouldered Hawks, Red-tailed Hawks, Barn Owls, Great Horned Owls and American Kestrels where they formerly did not nest. Peregrines do not usually nest in trees but a tall building or bridge may be utilized more quickly than the other raptors.

Removing existing and proposed trails from Plan 1 would be very positive as it relates to raptor nesting and hunting habitat. However, there is still the large issue of the tiny buffer between the ESHA and the homes, as well as the huge direct loss of essentially all of the foraging habitat and potential nesting habitat for so many sensitive and ecologically important raptor species. The eucalyptus ESHA can be significantly improved by irrigating and planting both Blue Gum (*Eucalyptus globulus*) and/or native Western Sycamores (*Platanus racemosa*) and Coast Live Oaks (*Quercus agrifolia*). Nest boxes could be placed out for kestrels and Barn Owls but this easy to obtain increase in raptor productivity might come at the expense of the endangered California Least Tern. Hunting perches could also be installed in places that don't view the tern colony.

Of the three plan alternatives, Plan 3 has the greatest potential for raptor habitat enhancement and conservation because there is considerably more natural open space to work with than Plan 1 and 2. Enhancement could include Burrowing Owl nest boxes, low or tall hunting perches, and strategically located native shrubs and trees to provide roosting and nesting habitat. Habitat enhancement might also include carefully placed nest poles and platforms out of sight of the tern colony for Red-tailed Hawks. Modification of existing electrical utility poles that have the potential to electrocute large birds, or are known problem poles, would also be a very positive conservation approach.

Thank you for the opportunity to work with you on this project. Please call should you have any questions.

Sincerely,

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Literature Cited:

Bloom, P.H. 1985. Raptor Movements in California. Pgs.99-123. In Harwood, M. ed. Proceedings of Hawk Migration Conference IV. Rochester, New York.

Bloom, P.H. 1989. Red-shouldered Hawk Home Range and Habitat Use in Southern California. M.S. Thesis, California State University, Long Beach.

Bloom, P.H. 1994. The Biology and Current Status of the Long-eared Owl in Coastal Southern California. Bulletin of the Southern California Academy of Sciences. 93:1-12.

Bloom, P.H. 1996a. Raptor Status and Management Recommendations for Naval Ordnance Center, Pacific Division, Fallbrook Detachment, and Naval Weapons Station, Seal Beach, 1993/95. 53 pgs.

Bloom, P.H. 1996b. The Urban Buteo: Red-shouldered Hawks in Southern California. In Raptors in Human Landscapes, Adaptations to Built and Cultivated Environments. Academic Press. Pgs. 31-39.

Tierra Madre Consultants. 1999. Raptor Habitat Assessment of the Bolsa Chica Mesa. 6 pgs.

LSA Associates, Inc. Analysis of Raptor and Special Interest Species Use of the Bolsa Chica Area, Including the Mesa.

INDEPENDENT REVIEW

Bolsa Chica Raptor Issues
Three Proposed Residential Development Alternatives
for the Bolsa Chica Mesa, Orange County, California

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Introduction

I have reviewed the materials (reports and maps) provided, the instructions for reviewers, visited the Bolsa Chica area, and written this review over a thirty hour period in the past ten days. For the past thirty years, twenty-five as Coordinator of the Santa Cruz Predatory Bird Research Group, I have studied raptor use of California habitat. I am familiar with all species of California raptor and their habitat and prey use. I have had a particular interest in peregrine falcon use of the coastal zone in California from the Oregon border south to the border with Mexico. Prior to. and during my years of study, there has been ongoing alteration of various types of human inhabited or altered environmer

The result of this alteration has been, particularly in coastal southern California, the formation of remnant "islands" of native habitat or open space where raptors (birds of prey) and their prey reside as breeders, migrants, or winter residents.

A common attribute of island zoogeography, is a reduction in biodiversity and in particular, a reduction in the number of species of primary predators in response to reduction in number and kinds of prey species. Ironically, the goal of biologists in these areas is often to maintain biodiversity. Continuing loss of habitat makes this goal more difficult each year, particularly when conducting efforts within one of these remnant islands. In southern California the remnant coastal islands of open space used by raptors include such areas in Los Angles and Orange County as the Bayona Wetlands, the Seal Beach Naval Weapons area, the Bolsa Chica area, and Newport Back Bay.

Raptor population changes in the southern California Coastal Region

The development of the coastal zone has not resulted in any change to the overall species-level population status of any species or subspecies of raptor that occurs in this area. It has had a major impact on the number of local territories occupied for almost all species that occur in the region. Almost all species have much less habitat to occupy, and the potential number of individuals and breeding territories in the region has been drastically reduced. Several species such as burrowing owl, loggerhead shrike, short-eared owl, and northern harrier are currently among the rarest birds breeding in the region. In addition to habitat loss, these species and many other raptors are frequently removed by programs in the coastal zone designed to protect threatened and endangered species such as the California least tern and the western snowy plover.

These areas of open space are so limited at this time, that most conservationists and raptor biologists would suggest preservation of all remaining open space in the coastal zone if maintenance of **breeding territories** for raptors is desired. Several species of raptor have been impacted to the point that they are essentially lost as breeders and only occupy the region at this time as migrants or winter visitors. Other species are isolated from other breeding areas and dispersing floating adults in the

population are now rare in coastal regions. The replacement of breeders that suffer mortality in coastal habitat is not immediate because of increasing isolation of these islands from other breeding territories and dispersing adults. This results in lack of continuous use of some areas for breeding in some species. Further loss of open space will cause continuance of these trends.

Raptor population changes in the Bolsa Chica area

Due to the small size of the remaining protected open space in the Bolsa Chica area, the regional problems described above are acute in the Bolsa Chica area. Raptor and prey abundance and diversity are reduced and isolation of the species that breed there from other breeding areas has resulted in fewer species breeding and lack of continuous occupation of breeding territories. Continued loss of inland raptor habitat causes further isolation of Bolsa Chica territories every year. Removal of the species of raptors that nest on the Bolsa Chica mesa in the raptor breeding season is occurring to protect California least terns breeding in the Bolsa Chica area. This effort is a local reducing factor in occupancy and productivity of Bolsa Chica raptor breeding territories. **Even without any development plan, the future use of the Bolsa Chica area by breeding raptors is in jeopardy.**

General Comments on Exhibits

The exhibits generally cover all the species that occur in the Bolsa Chica area as breeders, migrants, and winter residents. In this case, as in most areas under developmental pressure, the conservationists exaggerate the ecological importance of individual birds or the species level value of the habitat to the raptors in question. Had the raptors and other wildlife actually been important to the community, the alteration of over 95% of the local terrain for the economic gain of individuals or the development of community needs for human population expansion would not have been selected over the long-term survival of any of the species that occur in the region. However no Bolsa Chica inhabiting species overall population status would be affected by the loss of individual territories that remain. The area that remains will be utilized by raptors. Breeding will be limited, and winter use will vary depending on prey availability, breeding success in other regions, and other seasonal changes in California and Bolsa Chica habitat. High levels of value suggested by USFWS and CDFG reflect the reduction in regional habitat available and not the importance of individuals or

territories. The developers exaggerate the tolerance of raptors to human alteration pressures. They often rely on buffers that I find largely ineffective for reducing raptor fright/flight response. They minimize the loss of the raptor population to the ecological balance of the area or to the people that value observation of these birds. They describe unusual tolerance, habituated individuals or exceptions to normal raptor behavior rather than the more common behavior of wild birds. They often offer predictions or management options that have too many variables or are un-tested. As in almost all developments, the wildlife would be better off if no habitat is lost. However, with some development, mitigation actions or wildlife and habitat management options can be funded that can improve the quality of remaining habitat to enhance and sometimes increase raptor population size or productivity.

Raptor Potential for Bolsa Chica Area

The area of the Bolsa Chica mesa is degraded raptor habitat. The trees available for nesting are in poor condition and will not survive as nesting substrate for many more breeding seasons. The habitat quality for nesting and the habitat for prey populations is well below the potential for the area. With habitat management practices currently available, the conditions could be vastly improved to enhance occupancy and density of raptors. The proposed artificial raptor nest structures are not necessary. Any raptor management efforts that are proposed however are in direct conflict with the goals of the USFWS/CDFG managed Bolsa Chica/Huntington Beach endangered California least tern colony. For this reason, the enhancement of breeding raptors could be a major problem while any efforts to enhance wintering habitat would be positive and non-threatening. The California least terns vacate and migrate during the winter raptor season when raptors occupy the Bolsa Chica area.

TASK- Raptor use of the Eucalyptus ESHA

This degraded habitat needs enhancement or its longevity and usefulness to raptor populations is questionable. The value of the existing vegetation is questionable. The trees that are available are introduced eucalyptus and palms, not natural vegetation. If raptor use is desired, then the original plan with passive recreation is unacceptable. The modified plan with no trials but with enhancement would still be subject to much fright/flight distance

Ex. 4 7 8 4

pressure and only the final modified plan seems to offer hope of continued use of the area for breeding. Wintering raptors might use the ESHA in all plans, but the final plan would result in most winter use as well.

TASK- Number of Individuals and Species Breeding and Wintering

It is very difficult to estimate the number of individuals or territories between these three plans, as there are so many variables. I attach a table for estimates for the modified plan with no development on the lower bench. The numbers would decrease slightly with the other modified plan and more so with the original plan.

TASK- Magnitude of Effects of Plans

I have spent a considerable amount of time trying to estimate raptor use for each of the three alternatives. Raptor territory size, density, and home range are highly variable depending on habitat quality, prey availability, and individual variation among raptors. It is not possible to accurately predict the differences in raptor use between the three alternatives in terms of specific number of birds or territories that will occur. It is safe to say that the minimum use alternative will have slightly less impact than the maximum use alternative. However, raptor population structure factors outside of the Bolsa Chica area itself may end up having a similar impact on future breeding in the area.

Even without any further development in coastal California, continuing breeding territory occupancy in this area will be difficult to maintain. With further development of inland areas, the future of the Bolsa Chica area territories may be threatened. Whatever wintering territory is maintained at Bolsa Chica will be occupied by raptors, and with habitat enhancement the number of birds using the area could increase.

With the minimum use alternative, the maximum number of raptors will use the area for wintering. The maximum use alternative would result in slightly fewer raptors using the area during winter season. The three alternatives, and the inevitable human-use overflow into the area associated with those developments, will have the greatest potential for impact to the ground nesting and perching birds that inhabit the upper mesa grasslands. Those species include the burrowing owl, short-eared owl, and northern harrier.

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The original plan will generally have a high impact on raptor nesting and wintering as people can not be expected to respect buffers and stay on trails. These buffers seem real to humans, but are generally not buffers to sensitive fright/flight response of raptors and the presence of humans around prey areas always reduces predatory efficiency. Occupancy and productivity of territories would be lowest in this plan. Wintering birds are tolerant, but this plan would reduce prey availability due to access by humans and result in smaller numbers of wintering raptors than currently use the Bolsa Chica area.

I can not see much improvement in flight/fright distances, prey availability, or predatory efficiency occurring in the modified plan with wider buffers with passive recreation. The multiple use practices described when applied in many park or even wilderness habitats result in fewer breeding and wintering raptors. In this setting, multiple uses will most effect the primary predators while some prey species may be able to tolerate more intrusion. Occupancy and productivity of territories is likely to be similar to the original plan, wintering populations may fair slightly better with this modification than in the original plan.

The modified plan that has no trails or residential development on the lower bench is most likely to have the least impact on ground nesting species and nesting and wintering raptors in general.

With the very small number of breeders that remain due to the small size of the Bolsa Chica area and population structure problems for these species in southern California, the credit or blame for the future population size changes in the Bolsa Chica area will be difficult to assess.

TASKS- Negative effects

The negative effects include: 1) loss of prey species habitat acreage and as a result loss of prey availability, 2) increase human impacts disrupt daily raptor routine due to fright/flight response, 3) loss of nesting habitat for ground nesting species, 4) decrease in size of Bolsa Chica area results in less ability for the "island" to support a diversity of raptor and prey species, 5) enhancement of raptor habitat could cause greater predatory pressure on California least tern colony.

TASKS- Positive effects

The effects include: 1) enhancement of raptor or prey habitat and numbers if management actions are included (could include enhancement of trees, planting of natives in ESHA).

Conclusion

There are significant problems facing the raptors of southern California due to vast degree of past development. To insure future breeding, further loss of habitat or creation of small islands of habitat needs to be limited. When development occurs, it is nearly a simple linear effect. The number of territories will decrease. Eventually there will be no breeders. As habitat development increases, the decrease in wintering birds will occur. Eventually when habitat loss is complete, no wintering birds will reside. This is the existing history for southern California. It is not speculative, but based on experiences seen in 30 years of habitat loss and raptor declines. Complicating the Bolsa Chica area raptor issues are the established procedures of the state and federal California least tern and western snowy plover recovery or working teams. Raptors are tern and plover predators that are actively removed to enhance productivity and fledging success of those species. Should any raptor management and habitat enhancement occur at Bolsa Chica, then increased predator control will follow at the Bolsa Chica/Huntington Beach tern and plover colonies. The enhancement of breeding raptor habitat is a tern problem. The enhancement actions that favor only wintering raptors do not affect the migratory tern populations.

The modified plan for development of the Bolsa Chica mesa presents the least impacts to raptors. However, final future evaluation of impact will be complicated due to the declining raptor habitat and population structure problems already being experienced by raptor populations throughout southern California.

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Raptor Use of Bolsa Chica Area

Species	Recent Breeding Pairs (Habitat degraded)	Estimated Maximum # Breeding Pairs Supportable on BC Parcel (some use of adjacent habitat)	Estimated Maximum # Wintering Birds Supportable on BC Parcel (all include use of adjacent habitat)
Red-tailed hawk	0-1	1	12-20 (occasional larger influxes)
Great horned owl	0	1	2
American kestrel	0-1	2	6-8
White-tailed kite	1	2	4
Red-shouldered hawk	0	1	2
Northern harrier	0	2	6-8
Barn owl	0-1	3	6
Burrowing owl	0	5	10
Turkey vulture	0	1	6-10
Osprey	0	1	2
Sharp-shinned hawk	0	1	5
Cooper's hawk	0	1	3
Rough-legged hawk	0	0	3
Merlin	0	0	2
Peregrine falcon	0	0	2
Screech owl	0	1	6
Short-eared owl	0	3	6-8
		Number could be similar pre- & post- development with raptor habitat enhancements made by developers	Number could be similar pre- & post- development with raptor habitat enhancements made by developers

See 8/6/13

Earlier Walton Comments on Bolsa Chica raptors

There are several factors in the population ecology of raptors that deserve mention when considering the species that inhabit the Bolsa Chica parcel.

Birds of prey do not return to their natal territories to breed, instead they disperse a few, to 100+ miles and occupy viable territories where adult mortality has occurred. There is a large floating population of adults (it may equal the size of the nesting population) that inhabits a region. The floating population consists of birds seeking a breeding territory, thus insuring for the population that competition will occur and that all viable territories are occupied. Mortality of immatures and adults in the region can have great impact on the re-occupancy of territories. Adults of most nesting species are year-round residents. They are replaced by floating adults originally fledged from territories outside of the parcel unless mortality is too high in the region to stimulate longer dispersal distance.

In coastal southern California, activities of the CDFG, USFWS, and US Navy to protect rare or endangered prey species are resulting in mortality of many raptors foraging at least tern nesting colonies. In parts of coastal California, raptor mortality is also occurring at snowy plover colonies. Species most affected include the northern harrier, the red-shouldered hawk, the red-tailed hawk, the burrowing owl, the barn owl, the great horned owl, the loggerhead shrike, the common raven, and several others. All of these could occur as breeders at the Bolsa Chica parcel and territory occupancy or re-occupancy could be reduced by that regional mortality. Birds that would likely disperse to Bolsa Chica from nearby coastal territories, or who currently occupy the region as floaters, are lost during efforts to protect terns and other declining prey species.

Habitat loss results in the elimination of territories and resident pairs of birds. It may not eliminate the use of an area by floaters. Habitat alteration can affect resident nesting species in a variety of ways. It may have no affect, it may cause nest failures, it may cause seasonal territory abandonment, it may result in a reduced rate of adult replacement, or it may result in a reduced rate of territory occupancy.

Human persecution of many species has been reduced in recent decades. Habitat once thought to be lost or degraded has in some cases been found to be utilized by raptors when they are not disturbed or directly harassed.

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Generally speaking, if prey is abundant and floaters are available to maintain competition for territories, occupancy of territories with good prey populations has occurred in areas once thought to be no longer suitable (freeway right-of-ways, powerline corridors, city parks, orchards, introduced forests, and mature residential vegetation).

The isolation of small areas of wildlife habitat in open space, refuges, or in reserves essentially creates islands of habitat. Islands are generally inhabited by a paucity of nesting species. It is unlikely that small isolated areas like Bolsa Chica will maintain nesting territories of many species at any one time. Raptors are naturally rare and nest at low densities due to their requirement of tremendous prey abundance. That abundance enhances prey availability and enables a good rate of predatory efficiency.

While it is unlikely that there will be a variety of species occupying the parcel, there is likely to be a diurnal and nocturnal contingent. Northern harriers are often found occupying same areas as barn owls. Great horned owls are often found occupying the same areas as red-tailed hawks. American kestrels can be replaced at night by burrowing owls.

None of the individual raptors that reside at Bolsa Chica are essential to the overall species survival. As individuals they are important for aesthetic and natural history observations, but their small number and remoteness to major populations do not enable their contribution to the population to be significant. All of these species were once common in coastal southern California and throughout Orange County. Nearly complete development of the natural coastal landscape has occurred. Small islands of natural landscape provide remnant areas for raptors to nest. These are rather common species elsewhere that are protected by the Migratory Bird Treaty Act. Only their nests and the individuals themselves are protected. Their habitat, as occurred earlier throughout southern California, is altered routinely throughout California in the non-breeding season.

All of these species are being killed or removed in areas just north and south of Bolsa Chica at least tern colonies. In those areas perches and nest trees are considered negative and are eliminated or considered problems. If least tern or snowy plover populations were to expand near Bolsa Chica, recovery managers will consider the raptors at this parcel a negative presence. Ironically, if burrowing owls or northern harriers nested, it would be very

significant for these species in this region, as the declines of these species are significant.

There are virtually no raptors nesting at Bolsa Chica this nesting season. If habitat were viable and prey available, breeding should be occurring at this time. There appears to be adequate habitat for at least one pair of most of the species that have been recorded there as nesting species. However, many factors determine if nesting will occur. No studies are available to accurately judge what prey is available. If status of the prey is poor, that factor may eliminate some potential nesters. The distance to other habitat or occupied territories reduces encounters with floating members of each species population. The extreme small size of the Bolsa Chica parcel and distance to next areas of abundant prey and suitable nest sites may limit year-round occupancy by pairs. It may also limit use of the area to individuals.

Allowing past development of the surrounding area to be so complete, and due to mortality of the potential nesting species in other nearby areas of habitat, the possibility of habitat becoming occupied in the future by additional pairs of raptors is reduced. The future use of the Bolsa Chica parcel will likely be restricted to individual residents and visitors with one or two occasional breeding pairs of common California species of raptor.

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EXHIBIT 22

RONAL JUREK LETTER OF OCTOBER 16, 2000

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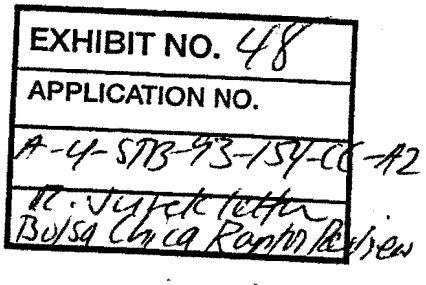

State of California - The Resources Agency
GRAY DAVIS, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
1416 Ninth Street
Sacramento, CA 95814
(916) 654-4267

October 16, 2000

Ms. Susan Hansch
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, California 94105-2219

Dear Ms. Hansch:

I have 30-years experience as a wildlife biologist with California Department of Fish and Game, working on management and protection programs for populations and habitats of various endangered species, including three species of raptors (California condor, bald eagle, American peregrine falcon) and several species of coastal wetland-dependent species (California least tern, light-footed clapper rail, Belding's savannah sparrow, western snowy plover). Also, my long experience working on wetland wildlife issues includes assisting the effort to manage and control nonnative and urban animals (e.g., nonnative red fox, feral cat) and other threats to vulnerable wetland wildlife. Such problems become more serious with increasing fragmentation of remnant coastal wildlife habitats.

I am familiar with the wetlands of Bolsa Chica mainly because of my involvement since 1994 with management and protection of California least terns. I have assisted in coordinating annual recovery efforts and have contracted studies to manage, protect, and monitor least tern populations at Bolsa Chica Ecological Reserve and more than 30 other tern nesting colonies in California. I have visited the Bolsa wetlands area many times over the past 20-25 years to meet with local biologists working in that area for least tern protection. I traveled about frequently and widely in the late 1960s to hike, birdwatch and photograph natural subjects in the open spaces of Orange County, including Bolsa Chica and Upper Newport Bay.

I have not visited the subject Environmentally Sensitive Habitat Area (ESHA), and I have seen the Bolsa Chica Mesa only at a distance from the highway, so my evaluation of the plans and documents I received on October 10, 2000, must be general.

I can address only in a general sense the effects of alternative plans on raptor use of the ESHA and population size and composition. I am providing more specific review comments to address what I consider to be potentially detrimental effects on local endangered species resulting from changes in foraging behavior of some of the raptor species that use the ESHA for perching and nesting. Based on these concerns, I feel that Alternative Plan #3 would have the least detrimental effects on the raptors of the ESHA and on potential prey species in the wetland.

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It is not possible for me to accurately project differences over the next 20-25 years in raptor use between these three alternatives. This ESHA is a small area within a relatively small, isolated fragment of wild land, and all of the development plans will further add to that fragmentation. The close proximity of public activity to the ESHA development alternatives #1 and #2 may differ in their effects on certain raptor breeding pairs and individuals in the short term, but over the next 20-25 years any differences in their effects on the population of raptors, if any, would be difficult to distinguish. Complicating any this would be the many other factors that would affect raptor use of this particular area independent of current and projected human activity and habitat conditions in the ESHA, such as changing foraging conditions locally and regionally, year-to-year changes and longer-term trends in regional population size and movements of the various raptor species.

The ESHA is a zone of trees with good perching and nesting conditions within raptor habitat. It is not the raptor habitat itself. In my professional opinion, for most of the raptor species known to use the ESHA, raptor use depends primarily on the availability of the food resources of the surrounding lands, the undeveloped mesa, beaches, wetlands, lowlands, and the urban areas. The best nesting tree for a red-tailed hawk, for example, will not be successfully used by that species for nesting if there isn't readily and consistently available food available for the adults and young birds during the entire breeding cycle. Readily available means that all of the food is available from within the hunting territory that the hawks use. Consistently available means that the adults would be obtaining food regularly for chicks to fully meet their nutrition needs, as well as the needs of the adults. These needs can't be met if the adults must go too far or spend too much time trying to obtain prey, or can't effectively hunt in otherwise suitable areas because of competition with other raptors. Such factors change continuously and affect the levels of raptor use, even if all other conditions in the nesting area in the ESHA were to remain stable.

The presence of perching raptors in the ESHA reflects the dependable presence of high perches near foraging grounds, where the raptors can search for prey and keep watch on possible danger, mainly other raptors, and in some cases defend their breeding site.

The use of the ESHA for hunting and nesting raptors would undoubtedly change with any of the three alternatives, but each species of raptor would be affected differently. The raptors that have been using the mesa as a significant part of their foraging range would be the most affected, because they would be forced to shift their foraging behavior to focus on other prey that remain or become available on the developed parts of the mesa, or to concentrate their foraging on undeveloped portions of their hunting areas. In the latter case, because of the increased predation pressure on those areas by various raptors and other predatory species, the individual raptors eventually would have to expand their hunting into additional areas nearby. Individuals of some raptor species may adjust to such changes and continue to use the ESHA for perching, but their new hunting range may not be sufficient to provide annual successful reproduction.

Exhibit E, the LSA raptor analysis, addressed 22 species of raptors that have been recorded at the ESHA. Given enough time and careful observation, additional raptor species could be documented there regardless of local changes. Species occurrences in the ESHA that are sporadic or result from chance events, I feel, should not be specially managed for. The ..

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characteristics of the ESHA and of the project area that would address the needs of the common raptors should be considered to be adequate for those rare visitors.
Most of these species, in my opinion, would continue to occur in the ESHA and vicinity in the future, regardless of pending changes in the mesa area, if protection and management of raptor use of the ESHA is focused on several of the other more regularly occurring raptors. A number of the previous reviewers of the project noted that some of these uncommon species might nest in the ESHA. I feel that current wildlife protection laws and regulations would afford such species adequate protection, and future management of the ESHA could be redirected to meet the needs of such eventualities.

Species that I feel do not need to be individually treated by my assessment of nesting or other use in this area are these:

osprey
bald eagle
ferruginous hawk
rough-legged hawk
golden eagle
merlin
prairie falcon
western screech-owl
long-eared owl
short-eared owl

Several other species that regularly occur in the ESHA and mesa area are so adaptable to the kinds of modified habitat changes being proposed here, that one can safely assume their occurrence in this area would not change substantially, or would possibly increase, under any of the development plans, even if the current conditions in the ESHA did not improve for other raptors. I feel that these species would not require special management attention to benefit their status and that any decisions made for addressing general protection of raptor use, including nesting, in and near the ESHA would be adequate for these:

sharp-shinned hawk
Cooper's hawk
red-shouldered hawk
American kestrel
peregrine falcon
barn owl
great horned owl

The effect of the proposals and management of the ESHA on kestrel populations is significant in relation to other wildlife conservation goals in the Bolsa Chica area, which I will address later in this assessment.

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Raptor Nesting

The three raptor species that I feel are most in need of potential and actual habitat protection efforts in the Bolsa Chica area are the burrowing owl, northern harrier, and white-tailed kite. Only the latter would nest in the eucalyptus grove. I think special attention to the needs of the kite are warranted in this project review, as I discussed below. Unfortunately, the Bolsa Chica area's potential value to nesting burrowing owls and northern harriers is complicated by the potential detrimental effects of locally nesting pairs of these species on endangered birds in this wetland, particularly the California least tern and western snowy plover. As discussed later, simultaneous nesting by these predator and prey species in small coastal wetlands usually leads to major conservation conflicts and serious management problems.

Comparing the numbers of nesting pairs of raptors in the ESHA from one year to another is, by itself, not a true measure of the value of the ESHA to the breeding population of that species. If the breeding success is significantly reduced by local changes in the forage conditions, monitoring the number of nesting pairs alone will not detect that. Some species of raptors, or at least particular pairs of individuals of a species, may persist in their nesting attempts annually despite consistent failure to raise young. In such cases, persistent attempts with little or no productivity do not benefit the population locally, and such areas of apparent value are termed habitat "sinks."

I discourage erecting raptor nesting platforms in the ESHA, but if that were done, the sites should be carefully monitored to avoid these becoming nest sites of corvids. Crows and ravens are serious predators of rare coastal wetland wildlife.

Negative Effects of Development Alternative on Disturbance to Raptors

Protective measures for nesting raptors will likely be adequate for the perching needs of all raptors. The number of perch sites in the ESHA may be declining now, but long term perching sites in this area will likely increase tremendously with any new development on the mesa (street lights, fences, and eventually ornamental garden and street trees). Elsewhere in the Bolsa Chica vicinity, there already is an abundance of power poles and lines, light standards, stakes, and other structures in open spaces the upper and lower Bolsa areas, so perch sites are extremely common.

In addition to what I wrote about the negative effects on kites and red-tailed hawks, I have some general comments regarding the common raptors that use the ESHA. Individuals within a species may have differing levels of response to human activities, owing to variations in the population for tolerating unusual situations, or to differences in habituating to human activities out of past experience or upbringing. The same level of activity that would not adversely affect one of the habituated raptors might be perceived by a newly arrived individual of the same species in the ESHA to be threatening, causing the bird to not return there. This does not mean the bird would abandon the Bolsa Chica area, since there are abundant perches in less disturbed areas in the vicinity. Other raptor biologists more familiar with behavior of the non-endangered species that use the ESHA might be able to address this more fully.

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Negative Effects of Development Alternatives on Loss of Foraging Habitat

The species of raptors that forage mainly in dry, open habitats and that have been found to nest in the ESHA only rarely are likely to be the ones to be affected most by these three development plans. If the current condition of the food resources have not supported successful nesting of a species, then reduction of the open mesa habitat would further reduce the value of the ESHA as a nesting place for the species. The red-tailed hawk and white-tailed kite are the two most likely to be affected. Plan 3 would leave a chance that a nesting pair of kites and perhaps of red-tailed hawks could succeed in nesting in the ESHA, because part of the mesa would not be developed, and that area could be managed to improve conditions for native rodents, important prey of both species.

The loss of any of the current open-space raptor foraging habitat would result in a change in foraging behavior of all local predatory bird and mammal species, including the raptor species that hunt rodents, insects and other small animals in open ground. Species affected would be red-tailed hawks, kestrels, northern harriers, kites, burrowing owls and several of the less commonly observed raptors, such as ferruginous hawks. Since all predators of the mesa would increase their foraging on the remaining upland habitat, those prey resources would likely be depleted and the raptors would be forced into other suitable hunting areas, including the Bolsa Chica wetlands. This increased raptor hunting pressure in the lowlands of Bolsa have ramifications for local endangered birds of the wetlands.

Possible Detrimental Effects on Threatened and Endangered Birds at Bolsa Chica

Three listed species of wetland birds of Bolsa Chica are at risk from predation by raptors, as has been well documented here and in other remnant nesting areas in coastal California. Reduction of the mesa raptor hunting area for birds of prey using the ESHA that compensates by foraging more in the Bolsa wetlands may add to the already serious predation pressure on California least terns, western snowy plovers, and, in the future, light-footed clapper rails, all of them rare, wetland-dependant birds. Alternative Plan #3, by retaining part of the mesa hunting area, would contribute least to this potential problem. Most of the common raptors that use the ESHA and nearby lands, including the burrowing owl and northern harrier, are known to have preyed upon one or more of these three marsh birds.

California least terns historically nested in the Bolsa Chica wetlands vicinity in the thousands, but when the subspecies was listed endangered in 1970, none nested here. Tern nesting islands were developed as part of the early restoration of the wildlife values of Outer Bolsa Chica. Nesting was first documented in the late 1970s and a colony has persisted annually since then, with about 100 to 200 or more pairs breeding annually since the early 1980s. However, successful breeding has occurred sporadically. Breeding success has been consistently poor since 1991. Predation has continually been a major cause of low breeding success, so predator control has become a major part of tern recovery efforts since 1988 (Choo, D. 1991; Caffrey 1995). Red foxes were major predators in the 1980s, but raptors have been the primary source of predation during the history of the colony. The species most consistently detrimental to least tern breeding success at this colony is the American kestrel. Peregrine falcons have been

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documented taking terns in the colony some years since 1988, as well. In 1991, a female red-tailed hawk continually caught a large number of tern chicks in the colony to take back to her nest to feed her young, and she seriously disrupted the colony (Johnston and Obst 1992).

From observations of the hunting behavior of nesting adult kestrels at other least tern nesting colonies, an adult kestrel has been documented taking tern chicks up to 1 ½ miles from the nest. Another kestrel was documented taking tern chicks at 1 1/4 miles from its nest (Caffre 1995). The ESHA eucalyptus grove is within this distance of the tern colony, and is it likely that some of the kestrel predation on the tern colony at Bolsa Chica has come from that grove. The female red-tailed hawk in 1991 apparently did not nest in the eucalyptus grove, however.

Raptor predation is so devastating to least tern breeding at many of California's coastal colonies that regular trapping efforts are undertaken to remove potential problem kestrels before and during the season, often only after predation has already been occurring. This must be undertaken many years at Bolsa Chica, under Federal Migratory Bird permits. Large numbers of kestrels are live-trapped and either held in captivity until after the tern breeding season or are transported great distances and released. One kestrel that was preying on tern chicks at Bolsa in 1988 was live-caught and relocated 60-70 miles inland to the Banning area, it returned in 1989 and continued killing chicks again, it had to be shot. Attempts were made to live-trap the female red-tailed hawk in 1991, but when that failed, attempts were made to track her to her nest and shoot her there, but that also failed. The female stopped preying on the colony after chicks either had been eaten had scattered off the island into the marsh.

Western Snowy Plover

In recent years, Bolsa Chica wetlands has been the only breeding area for snowy plovers between Mugu Lagoon, Ventura County, and Camp Pendleton, San Diego County (Powell 1996). The 27 adult plovers seen here in 2000 was several times higher than counted in 1991 and 1995 surveys (Page, G., unpublished data, 2000). This area is the only Orange County site with management potential identified in the draft recovery plan, which currently lists a management goal of 50 breeding adults (US Fish and Wildlife Service, Pacific coast western snowy plover recovery team). As for least terns, avian predators are seriously limiting snowy plover breeding. Many of the snowy plover breeding areas remaining in coastal California likely exist now because of the predatory bird removal and management efforts that have been undertaken for protection of least terns. Again, the kestrel is the raptor species most likely to jeopardize snowy plover breeding success in the Bolsa wetlands.

As is the case for the least tern, limited numbers of potential nesting areas exist for snowy plovers in the coastal wetlands and beaches, and formerly dynamic coastal conditions that created new nesting opportunities while removing old sites have been essentially stabilized, so there are limited opportunities for these birds to move to newly formed, safer sites once predators discover the nesting areas and return time after time. As a result, predation has become is a recurrent, serious threat to these colonies each breeding season (Powell and Collier 2000).

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Light-footed Clapper Rail

Light-footed clapper rails have not successfully bred in recent decades at Bolsa Chica, but prospects are good for eventual re-colonization by this bird here following marsh restoration efforts (Zembal, Hoffman, and Bradley 1998). Individual and unpair rails have been documented at Bolsa most years since 1987. A limiting factor for establishment and success of rail introduction efforts will be raptor predation. Currently, large wintering populations of red-tailed hawk some winters may have been contributing to the serious reduction of the large Anaheim Bay clapper rail population. An abundance of perch sites for wintering red-tailed hawks at Bolsa Chica are of concern because clapper rails forced onto dikes and other limited floating debris and high spots make them vulnerable at high tides to hawk predation (Zembal, Hoffman, and Bradley 1998).

Relationship of Raptor Predator Control to the Goals of the ESHA

It is likely that over the past decade or more, many of the kestrels nesting in the ESHA are individuals that were live-trapped and removed, and in some cases shot, near the least tern breeding island to protect breeding least terns. Certainly, eggs or chicks of kestrels breeding in the ESHA would not likely have survived.

Alternative Plans #1 and #2, by removing so much of the mesa hunting habitat for locally nesting raptors, would contribute more than Alternative #3 to forcing nesting raptors of the ESHA to forage in the wetlands and to come into conflict with endangered species protection efforts.

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References

Caffrey, C. 1995. Characteristics of California least tern nesting sites associated with breeding success of failure, with special reference to the site at the Naval Air Station, Alameda. Final Report to the Naval Facilities Engineering Command, Western Division, Department of the Navy (Award No. N62474-94T-00302), August 26, 1995.

Choo, D. 1991. ADC and the California least tern: Forming new alliances with the conservation community. Inside APHIS, Vol. 12, No. 1, pp. 26-29.

Johnston, S.M., and B.S. Obst. 1992. California least tern breeding survey, 1991 season. Calif. Dep. Fish and Game, Nongame Bird and Mammal Sec. Report, 92-06. Sacramento, CA 19 pp.

Powell, A. N. 1996. Western snowy plover use of State-managed lands in southern California, 1995. Calif. Dep. Fish and Game, Wildl. Manage. Div., Bird and Mammal Conservation Program Rep 96-03, Sacramento, CA. 14 pp.

Powell, Abby N., and Christine L. Collier. 2000. Habitat use and reproductive success of western snowy plovers at new nesting areas created for California least terns. Journal of Wildlife Management 64(1):24-33.

Zembal, R., S.M. Hoffman, and J.R. Bradley. 1998. Light-footed clapper rail management and population assessment, 1997. CA Dep. Fish and Game, Bird and Mammal Conservation Program Rep. 98-01. 23 pp.

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EXHIBIT 23

BRIAN JAMES WALTON LETTER OF OCTOBER 23, 2000

11 PAGES LONG

Draft Water Quality Comments for the Dos Pueblos Golf Course Project

INTERNAL MEMO
REVISED

To: Melanie Hale

From: Tracy Duffey

Date: May 28, 2002

Revised: November 8, 2002 (revisions shown in double underline)

The water quality staff of the California Coastal Commission (CCC) has reviewed the documents submitted by the applicant for the Dos Pueblos Golf Course Project. These documents include:

- Draft Final Agronomic Turf Management and Integrated Pest Management Plan (ATMIPM Plan), March 2002
- Technical Review of Surface Water Quality Issues and Treatment Options Report (Water Quality Report), March 12, 2002
- Surface Water Quality Protection Measures Site Plan – Exhibit A (Exhibit A), February 1, 2002
- Habitat Conservation Plan (HCP), January 2002
- Environmental Assessment (EA), January 2002
- Various documents regarding the US Fish and Wildlife Service's (USFWS) issuance of an Incidental Take Permit (ITP)

The water quality analysis for this project has been limited in its scope due to the information that was made available throughout the review. This analysis was limited to the surface water quality drainage and treatment issues, the use of chemicals and the impacts of these chemicals on water quality, and the monitoring plan to detect chemicals and other pollutants in nearby drainages and water bodies. The analysis did not include a review of biological impacts caused by chemical impairment of water quality, the remedial action plan for the contaminated soil, groundwater quality issues, adequacy of the siting and design of proposed on-site disposal system, or recently proposed erosion control structures in the drainages due to limited information and resources.

Introduction

Activities related to the development and use of the Dos Pueblos Golf Course have the potential to adversely affect the quality of water in surrounding creeks and drainages. Development will require grading and removal of vegetation, which will likely increase erosion and sedimentation. The Golf Course will use fertilizers and pesticides to maintain the turf and manage pests. In addition, development will include a parking lot, clubhouse and other impervious structures. These activities will potentially increase the amount of pollutants and the amount of runoff entering nearby waterways, even though Best Management Practices (BMPs) will be established. Due to the sensitivity of the aquatic habitat and species on site, it will be necessary for the Golf Course to take precautionary measures to ensure that water quality is protected.

The water quality staff has a number of comments regarding water quality issues related to this project. The following special conditions and findings should be included in the staff report for this project in order to adequately address these water quality issues and concerns.

Special Conditions

Special Condition 1

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit an **Erosion and Sediment Control Plan**, prepared by a qualified resource specialist, for review and approval by the Executive Director. The erosion and sediment control plan shall be reviewed and approved by a Certified Engineering Geologist to ensure that the plans are in conformance with the consultants' recommendations. The plan shall be in substantial conformance with the following requirements:

a) The plan shall delineate the areas to be disturbed by grading or construction activities and shall include any temporary access roads, staging areas and stockpile areas. The natural areas on the site shall be clearly delineated on the project site with fencing or survey flags.
b) The plan shall specify that should grading take place during the rainy season (November 1 – March 31) the applicant shall install or construct temporary sediment basins (including debris basins, desilting basins or silt traps), temporary drains and swales, sand bag barriers, silt fencing, stabilize any stockpiled fill with geofabric covers or other appropriate cover, install geotextiles or mats on all cut or fill slopes and close and stabilize open trenches as soon as possible. These erosion and sediment control measures shall be required on the project site prior to or concurrent with the initial grading operations and maintained throughout

the development process to minimize polluted runoff during construction. All sediment should be retained on-site unless removed to an approved dumping location either outside the coastal zone or to a site within the coastal zone permitted to receive fill.

c) The plan shall also include temporary erosion control measures should grading or site preparation cease for a period of more than 30 days, including but not limited to: stabilization of all stockpiled fill, access roads, disturbed soils and cut and fill slopes with geotextiles and/or mats, sand bag barriers, silt fencing; temporary drains and swales and sediment basins. These temporary erosion control measures shall be monitored and maintained until grading or construction operations resume.

Special Condition 2

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit for the review and approval of the Executive Director, a **Water Quality Management Plan**. This plan shall describe the drainage and polluted runoff control plan for the project both in a written document and in graphic detail on a site plan. The plan shall incorporate structural and non-structural Best Management Practices (BMPs) designed to control the volume, velocity and pollutant load of stormwater leaving the developed site. In addition to specifications above, the plan shall be in substantial conformance with the following requirements:

a) BMPs shall be selected to address the pollutants of concern for this development, including sediments, nutrients, pesticides, fertilizers, metals, petroleum hydrocarbons, trash and debris, and organic matter.
b) Source control BMPs shall be preferred over treatment control BMPs.
c) Selected BMPs (or suites of BMPs) shall be designed to treat or filter the amount of stormwater runoff produced by all storms up to and including the 85th percentile, 24-hour runoff event for volume-based BMPs, and/or the 85th percentile, 1-hour runoff event, with an appropriate safety factor (i.e., 2 or greater), for flow-based BMPs.
d) Runoff shall be conveyed off site in a non-erosive manner.
e) Energy dissipating measures shall be installed at the terminus of outflow drains, where necessary to prevent erosion.
f) The plan shall include provisions for maintaining the drainage system, including structural BMPs, in a functional condition throughout the life of the approved development. Such maintenance shall include the following: (1) BMPs shall be inspected, cleaned and repaired when necessary prior to the onset of the storm season, no later than September 30th each year and (2) should any of the project's surface or subsurface drainage/filtration structures or other BMPs fail or result in increased erosion, the applicant/landowner or successor-in-interest shall be responsible for any necessary repairs to the drainage/filtration system or

BMPs and restoration of the eroded area. Should repairs or restoration become necessary, prior to the commencement of such repair or restoration work, the applicant shall submit a repair and restoration plan to the Executive Director to determine if an amendment or new coastal development permit is required to authorize such work.

Special Condition 3

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit for the review and approval of the Executive Director, a **Water Quality Monitoring Plan**. The plan shall describe the methodology for monitoring, including specific threshold levels and sampling protocols, location of monitoring sites, schedule for monitoring, and reporting of results. A contingency plan describing the actions to be taken if water quality impacts are discovered shall also be included in the monitoring plan. In addition to specifications above, the plan shall be in substantial conformance with the following requirements:

a) The plan shall include monitoring for all pollutants of concern, including nitrates, nitrites, phosphates, dissolved oxygen, pH, total suspended solids (TSS), acute and chronic toxicity, and chemicals and additives. These parameters shall be sampled for according to the frequencies specified in the Surface Water Sampling Schedule in the Draft Final Agronomic Turf Management and Integrated Pest Management Plan, March 2002. Total suspended solids (TSS) shall be sampled for at the same frequency as the nutrients.
b) The plan shall specify maximum threshold levels for each water quality parameter, consistent with those established in the Draft Final Agronomic Turf Management and Integrated Pest Management Plan, March 2002.
c) The plan shall specify sampling protocols to be used for each water quality parameter. Measurements must be precise enough to evaluate compliance with applicable water quality threshold levels.
d) Monitoring shall be conducted at sites specified by the CCRWQCB and the County of Santa Barbara and as shown in Appendix C of the Draft Final Agronomic Turf Management and Integrated Pest Management Plan, March 2002.
e) Sampling for baseline data shall be conducted a minimum of three (3) times and during different level storms to acquire a representative sample of water quality conditions at the site.
f) Monitoring shall continue according to the Surface Water Sampling Schedule in the Draft Final Agronomic Turf Management and Integrated Pest Management Plan, March 2002 for a full three (3) years before this frequency may be considered for reduction.
g) The use of any chemical(s) within the established chemical use buffer zones as shown in Appendix C of the Draft Final Agronomic Turf

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Management and Integrated Pest Management Plan, March 2002 shall trigger sampling for that chemical within 48 hours of its use. In addition, the use of any chemical(s) within any area tributary to Eagle Creek shall trigger sampling for that chemical within 48 hours of its use. The chemical use buffer zone for Eagle Creek shall be updated on all plans to reflect this area.

h) Results of monitoring shall be submitted to the Executive Director annually.

i) If any water quality threshold levels referred to above in b) are exceeded, the applicant (or successor interest) shall notify the Executive Director of the exceedances and potential impacts and within 48 hours of receipt of the monitoring data. At the same time the applicant shall consult with the Executive Director regarding the need for additional sampling to evaluate the exceedance or corrective action to minimize water quality impacts. The applicant shall report to the Executive Director on the possible causes of the exceedance and proposed corrective actions within 30 days of the initial receipt of the data.

j) If any water quality impacts persist after one year of detection, not withstanding any corrective actions taken by the applicant, all use of the chemicals that exceed water quality threshold levels shall cease.

Special Condition 4

The applicant shall follow the protocols specified in the Draft Final Agronomic Turf Management and Integrated Pest Management Plan (IPM Plan), March 2002. Any changes to the IPM Plan shall be submitted to the Executive Director for review and approval. The plan shall also be in substantial conformance with the following requirement:

a) The IPM Plan shall favor non-chemical strategies over chemical strategies for managing pests on site. Chemical strategies shall only be employed after all other strategies have been used and proven ineffective. This shall be demonstrated by providing written notice to the Executive Director of the non-chemical strategies that were used, the reasons for their ineffectiveness, and the chemical strategies that are being considered.

Findings

Section 30231 of the Coastal Act states that:

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of

waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, minimizing alteration of natural streams.

The development of this golf course has the potential to adversely impact coastal water quality through the removal of native vegetation, the increase of impervious surfaces, the increase of runoff, erosion, and sedimentation, and the introduction of pollutants such as nutrients, fertilizers, and pesticides. The project is located on a bluff top adjacent to the Pacific Ocean. In addition, a number of creeks and other drainages run through the property or directly alongside the property. Two endangered species, the Red-Legged Frog and the Tidewater Goby, have been found to inhabit these creeks. The proposed development will include an 18-hole golf course, a 9-hole par-3 golf course, a clubhouse, parking lots, and maintenance facilities.

The proposed development will result in an increase in impervious surface, which in turn decreases the infiltrative function and capacity of existing permeable land on site. The reduction in permeable area therefore leads to an increase in the volume and velocity of stormwater runoff that can be expected to leave the site. Further, pollutants commonly found in runoff associated with golf courses include sediments, nutrients, pesticides, fertilizers, metals, petroleum hydrocarbons, trash and debris, and organic matter. The discharge of these pollutants to coastal waters can cause cumulative impacts such as: eutrophication and anoxic conditions resulting in fish kills and diseases and the alteration of aquatic habitat, including adverse changes to species composition and size; excess nutrients causing algae blooms and sedimentation increasing turbidity which both reduce the penetration of sunlight needed by aquatic vegetation which provide food and cover for aquatic species; disruptions to the reproductive cycle of aquatic species; and acute and chronic toxicity in marine organisms leading to adverse changes in reproduction and feeding behavior. These impacts reduce the biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes and reduce optimum populations of marine organisms and have adverse impacts on human health.

Erosion and Sediment Control Plan

The implementation of an Erosion and Sediment Control Plan during construction activities will serve to minimize the potential for adverse impacts to water quality resulting from erosion and sedimentation during construction. Therefore, the Commission finds that **Special Condition 1** is necessary to ensure the proposed development will be designed to minimize adverse impacts to water quality and coastal resources.

Water Quality Management Plan and Post Construction BMPs

In order to find the proposed development consistent with the water and marine resource policies of the Coastal Act, the Commission finds it necessary to require the incorporation of Best Management Practices designed to control the volume, velocity and pollutant load of stormwater leaving the developed site. Critical to the successful function of post-construction structural BMPs in removing pollutants in stormwater to the Maximum Extent Practicable (MEP), is the application of appropriate design standards for sizing BMPs. The majority of runoff is generated from small storms because most storms are small. Additionally, storm water runoff typically conveys a disproportionate amount of pollutants in the initial period that runoff is generated during a storm event. Designing BMPs for the small, more frequent storms, rather than for the large infrequent storms, results in improved BMP performance at lower cost.

The Commission finds that sizing post-construction structural BMPs to accommodate (infiltrate, filter or treat) the runoff from the 85th percentile storm runoff event, in this case, is equivalent to sizing BMPs based on the point of diminishing returns (i.e. the BMP capacity beyond which, insignificant increases in pollutants removal, and hence water quality protection, will occur, relative to the additional costs). Therefore, the Commission requires the selected post-construction structural BMPs be sized based on design criteria specified in **Special Condition 2**, and finds this will ensure the proposed development will be designed to minimize adverse impacts to coastal resources, in a manner consistent with the water and marine policies of the Coastal Act.

The applicant has proposed a series of BMPs to prevent polluted runoff for this project. The applicant writes in their Technical Review of Surface Water Quality Issues and Treatment Options Report, March 12, 2002:

> *For the Dos Pueblos Golf Links, several water quality improvement features are currently included in the design, such as desiltation basins, native vegetation buffers near the bluff zones, and construction envelopes outside of the drainage areas and around vernal pools. In addition, landscaping BMPs incorporated into the drainage scheme would provide even more treatment, particularly in and around the parking areas.*

The applicant has incorporated grass-lined or vegetated swales and vegetated buffer strips into their design of the golf course. These structural BMPs have been designed to collect and treat all dry weather flows (not storm related), nuisance flows, and runoff from minor storm events (less than .3 inches/hour). The applicant has proposed BMPs that are designed to minimize the impacts to water quality and coastal resources.

Water Quality Monitoring Plan

The development of a Water Quality Management Plan as specified in Special Condition 2 is essential to the protection of water quality for this project. Even with this plan and the proposed BMPs, however, there is the possibility that the development will create polluted runoff that will not be treated, filtered or infiltrated prior to leaving the site and, thus, will impair water quality in nearby creeks and drainages. BMPs are designed to minimize these impacts, but these practices have not been proven to be 100% effective. Often times the environmental conditions that the BMPs are designed to perform under are not ideal. For example, the applicant has proposed, as a BMP, that chemicals will not be applied when wind conditions exceed 5 miles per hour to prevent the spreading of chemicals outside of their intended area of use. However, because this site is on a bluff top overlooking the ocean and susceptible to unpredictable wind conditions, there will likely be times when chemicals will be applied when wind conditions are not ideal, resulting in the spreading of these chemicals beyond their intended use area, perhaps even into the water. In addition, the BMPs being proposed to minimize the impacts of NPS pollution will not provide protection from human error such as overuse of pesticides or chemical spills. Although the risk of human error should be small given the use of proper training and procedures, the addition of any chemicals into the water could have adverse impacts on the special status species in Eagle Creek. By monitoring the surrounding water bodies, impacts to water quality can be identified and the source of these impacts evaluated, thus measuring the effectiveness of the BMPs. However, monitoring is not a preventative measure to protect water quality, but a method used to detect a water quality impairment and evaluate options to remedy this impairment. Therefore, the Commission finds that the development of a Water Quality Monitoring Plan as specified in **Special Condition 3** is necessary to evaluate any impairments to water quality and coastal resources and develop strategies to reduce the likelihood of future impacts.

Eagle Creek Chemical Use Buffer Zone

The applicant has identified areas around the drainages as chemical use buffers. When a chemical is applied within these areas, the applicant must monitor the adjacent creek within 48 hours of the use of the chemical to determine if there have been any water quality impacts. These areas are misrepresented as buffers because they serve no vegetative buffering function to filter the chemicals or prevent the chemicals from entering the creeks. Instead, they are just zones or boundary lines on a map to indicate an area where chemical use will trigger monitoring. Eagle Creek is a sensitive habitat area for two special status species, and any addition of chemicals into the water may have adverse impacts. Therefore, monitoring for chemicals in Eagle Creek shall occur whenever chemicals are applied

within any areas that drain to Eagle Creek, not just in the chemical use buffer zone. This will ensure monitoring for all chemicals that have the potential to enter Eagle Creek through sheet runoff or runoff conveyed in swales or drains.

Therefore the Commission finds that monitoring for chemicals in Eagle Creek shall occur whenever chemicals are applied within any areas that drain to Eagle Creek, not just in the chemical use buffer zone, as specified in **Special Condition 3**.

Integrated Pest Management Plan

The use of fertilizers, pesticides and other chemicals at the Golf Course increases the likelihood of polluted runoff from the site. Pollutants associated with the use of fertilizers and chemicals include nutrients (such as nitrogen and phosphorus), organic compounds and chemical compounds. There are many different options available for managing pests at the Golf Course, including cultural, biological and chemical control. Chemical strategies have a higher potential to adversely impact water quality because they introduce pollutants to the site. Non-chemical strategies are preferred over chemical strategies to reduce the likelihood of these impacts. In some instances, where non-chemical strategies have been proven to be ineffective, chemical strategies that account for the environmental impacts of the chemical may be considered. An Integrated Pest Management (IPM) Plan is designed to evaluate the different options for pest management and choose those strategies that prove to be the most ecologically effective.

The applicant has submitted a Draft Final Agronomic Turf Management and Integrated Pest Management Plan (IPM Plan), March 2002 that discusses their proposed methods for using chemicals as a way to control pests. The applicant states in this plan that:

> *The Golf Links will incorporate a common sense proactive approach to golf course maintenance by emphasizing preventative measures. [Steps will be taken] to ensure the preservation of the natural environment and to incorporate the most environmentally compatible materials wherever possible in solving agronomic problems. ...The Golf Links will implement management practices that encourage optimum plant health and vigor, while minimizing fertilizer, water and chemical pest control to the extent feasible. ...The Integrated Pest Management system is designed to optimize prudent maintenance practices by combining proper plant selection, careful monitoring of pests and environmental conditions, biological control measures, and judicial pesticide use.*

The applicant proposes to use the following non-chemical strategies for pest management: host-plant resistance, pest-free propagation, site preparation,

cultural practices, biological control and habitat enhancement. The applicant states that:

> *Not all pest problems can be solved by host plant resistance, manipulating cultural practices in the plant environment, or by the use of biological control agents. In such cases, pesticides become the second line of defense.*

The strategies outlined in the IPM Plan are necessary to ensure the proposed development will be designed and maintained to minimize adverse impacts to water quality and coastal resources.

Therefore, the Commission finds that the development of an IPM Plan in accordance with **Special Condition 4** is necessary to ensure the proposed development will be designed to minimize adverse impacts to water quality and coastal resources.

Dos Pueblos – Water Quality Issues

Addendum Memorandum

To: Melanie Hale

From: Tracy Duffey

Date: November 18, 2002

Subject: Response to water quality questions/comments that have come up since 11/8/02 (date of revised memo)

Email from Andi Culbertson (11/13/02):
You might want your water quality people to look at Dr. Froke's recommendations for limiting pesticide and chemical use since this would dramatically change the conclusions of the memo prepared by the water quality folks.

Staff has reviewed Dr. Froke's report entitled "CONSERVATION OF WHITE-TAILED KITES AT DOS PUEBLOS GOLF LINKS IN SANTA BARBARA COUNTY, CALIFORNIA" dated October 10, 2002 (attached) to determine if his recommendations for limiting pesticide and chemical use would change the water quality conclusions. However, staff did not find any recommendations of this nature. The only references to chemicals are found in two sections – "Kites' Response to Humans on Golf Courses" where Froke states that "human activities essentially are limited to routine maintenance (mowing, irrigation adjustments and scouting), occasional chemical applications, and play." and "Rodent Tolerance and Management" where Froke states that "poison baits should not be used for removing rodents." There was no reference made to changing the proposed use of chemicals and pesticides for this project that is outlined in various documents that have been submitted and reviewed, including the Draft Final Agronomic Turf Management and Integrated Pest Management Plan (ATMIPM Plan), March 2002; Technical Review of Surface Water Quality Issues and Treatment Options Report (Water Quality Report), March 12, 2002; Surface Water Quality Protection Measures Site Plan – Exhibit A (Exhibit A), February 1, 2002; Habitat Conservation Plan (HCP), January 2002; and Environmental Assessment (EA), January 2002.

EXHIBIT NO. 50
APPLICATION NO.
A-4-STB-93-154-CC-A2
Addendum Staff memo - water quality

Email from Andi Culbertson (11/13/02):
At first glance, although this memo lists the Geosyntech report, it does not address it at all. Is there a reason?

Email from Tracy Duffey (11/13/02)
Andi - The Geosyntec report is addressed in the memo. In fact, it is quoted on the bottom of page 7, acknowledging the proposed BMPs designed to minimize water quality impacts.

Email from Andi Culbertson (11/13/02):
Thanks - I saw that. But my point was that the diversion eliminated the chemical issues. That diversion was not proposed when the USFWS reviewed the permit

> **A low flow diversion is planned for the project to divert runoff from dry weather flows, nuisance flows, and minor storm events (less than 0.3 inches/hour) to a biofiltration treatment system prior to release to Eagle Creek. Biofiltration BMPs will remove some pollutants from runoff, but they are not 100% effective under all flow conditions. They can remove some particulates and the pesticides/chemicals adsorbed to those particulates. Nevertheless a portion of the particulates and pesticides will pass through the swale and could enter Eagle Creek. The portion that passes through the swale depends on the design of the swale, but also on the quality and flow rate of the water being diverted to the swale.**

Email from Andi Culbertson (11/14/02):
just so I understand and the water quality experts understand, on what basis did you conclude that in spite of the diversion and the swales that pollutants would enter Eagle Canyon Creek? Our water quality expert, who is also a fisheries biologist, says that by the 2-year storm the dilution is so significant that there will be no effect, particularly since the sandbar in Eagle Canyon Creek is open at that point and there is no lagoon.

> **Staff has not seen data that conclusively show that pesticides will be reduced through the biofiltration treatment system to the point that there will be no impact to water quality in Eagle Creek. Nevertheless, the requirements outlined in the conditions from staff's May 28, 2002 memo follow the mandate of the California NPS Plan to treat the water from the 85th percentile flow event using approved BMPs for the pollutants of concern to the maximum extent feasible. As such, staff believes that the water quality program for this project is adequate as conditioned in the above-mentioned memo, although we cannot conclude that no pesticides or other chemicals from the project will enter Eagle Creek.**

Ex. 50/5.2

CALIFORNIA WILDLIFE ECOLOGY
3158 Bird Rock Road Pebble Beach CA 93953

CONSERVATION OF WHITE-TAILED KITES AT DOS PUEBLOS GOLF LINKS IN SANTA BARBARA COUNTY, CALIFORNIA

Prepared for

Andi Culbertson, Esq.
Culbertson, Adams & Associates
Aliso Viejo, California

Prepared by

Jeffrey B. Froke, Ph.D.
California Wildlife Ecology
Pebble Beach, California

Submitted, 10 October 2002

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PREFACE

Science is humanity's study of how Nature works. Successful natural resource conservation relies on both scientific understanding and creative input from non-scientific realms of Culture. As a technical and artistic endeavor, wildlife management derives much of its insight from science and simultaneously returns vital doses of feedback through inherent experimentation and constant observation of Nature.

Golf, as a wholly cultural (recreational and economic) pursuit, also has basic technical and scientific underpinnings; and when pressed to do so, the business of the game has more to offer wildlife conservation and management than many other areas of resource development.

This document has been prepared from the standpoint of wildlife management with support from a basic understanding of golf management. In this case, the purpose of management will be to conserve a persistent population of White-tailed Kites (ELANUS LEUCURUS) as one outcome of building and operating a golf course facility on portions of a ruderal landscape that presently is occupied by the species.

Therefore, the goal of this document is to establish -- using scientific and artistic insight -- whether long-term conservation of kites can reasonably be achieved in the course of golf development and if so, under what circumstances.

OBJECTIVE

This report responds to fundamental questions regarding the White-tailed Kite, golf courses as potential kite habitat, and the prospects for kites to continue occupying the Dos Pueblos Golf Links (hereinafter referred to as "Dos Pueblos") site after the proposed golf course project is completed and operational.

Q1 -- Will/do kite populations successfully occupy golf course environments, and if so under what circumstances?

Q2 -- Can two objectives, (1) protecting the Dos Pueblos kite population (including present and future birds), and (2) developing a championship golf program (18-hole facility) be made compatible?

BACKGROUND

Field biologists noted the presence of White-tailed Kites at Dos Pueblos as early as January 1999 (Dr. Rosemary Thompson, Science Applications International Corporation) and as recently as August 2002 (personal observation). Mr. John Storrer (Storrer Environmental Services) saw evidence of nesting on the property by a pair of kites on 10 March 2000. During 20-21 September 2001, Ms. Julie Vanderwier (Dudek & Associates) surveyed and described the non-reproductive activities of four adult kites. Subsequently, during May 2002, two groups of observers confirmed nesting and successful reproduction by a single pair of kites on the property and evidence of nesting by a second pair (Messrs. Mike Evans and Cornelius Bouscaren, Pacific Southwest Biological Services, Inc.; Messrs. Mark Holmgren and Morgan Ball, independent biologists). The findings and interpretations of these biologists, as well as an evaluation of their findings by senior CCC science staff (Dr. John Dixon) have been taken into consideration in making the present assessment.

To complement the available site-based data, this report examines two existing and reasonably analogous golf environments (comprising seven courses) that are persistently inhabited by breeding populations of White-tailed Kites. The comparable golf courses are located further up the California Central Coast in Monterey County, on or near the Monterey Peninsula.

Background for this report has been derived, in part, from reviewing the following project-related documents or sets of document:

- Grading & Drainage Plans (Coore & Crenshaw Inc. *et al.*, 16 April 1999);
- Habitat Enhancement Plan ... Associated with the Habitat Conservation Plan. (Dudek & Associates, January 2002);
- Dos Pueblos Golf Links Biological Landscape & Enhancement Plan and Southern Tarplant Materials (Katie O'Reilly Rogers, *et al.*, November 1998);
- Staff Report: Hearing on Changed Circumstances & Proposed Amendments (California Coastal Commission, 31 May 2002);
- Response to CCC Staff Report (Attachments A-I covered by letter from Steven H. Kaufmann to Sara Wan, dated 4 June 2002); and,
- White-tailed Kites at Dos Pueblos (an information packet with cover memo from Dr. John Dixon to Ms. Melanie Hale, California Coastal Commission, 7 June 2002; pp 43-243).

REFERENCE SITES

Figure 1 illustrates the locations of the following three study areas along the California Central Coast.

Dos Pueblos

From Dudek (2002) -- 'The 208-acre Dos Pueblos project site is located south of U.S. Highway 101, approximately one mile west of Winchester Canyon Road, in the County of Santa Barbara, California. The project site lies immediately adjacent to the Pacific Ocean above the coastal bluffs. Much of the site has been previously disturbed or developed from oil drilling and gas development and production. The project site consists of a coastal terrace that slopes gently (less than 10 percent) towards the ocean and ends in a steep bluff that drops almost vertically to the beach. Soils onsite are dominated by Diablo clay that is characterized by slow permeability and high shrink-swell potential. Milpitas and Conception soils also occur (Soil Conservation Service 1981). The terrace is cut by a number of moderately to deeply-incised intermittent drainages.'

Pebble Beach (Del Monte Forest)

Six golf courses comprise much of the coastal strand of Pebble Beach, a community that is located at the southwestern (ocean-facing) portion of the Monterey Peninsula in Monterey County, California. Much of the area, which also is known as Del Monte Forest, was initially developed for residential, equestrian and golf uses during the mid-1920s; and subsequent in-fill and redevelopment has been more-or-less continuous from that period to the present. The six golf courses, which are under three different ownerships and management regimes, can be characterized as coastal links situated in dune, terrace grassland, rocky bluff, and forest and urban forest settings. Elevation range throughout the course complex is approximately sea-level to 300 ft ASL. The gently sloping area is cut by a series of permanent and seasonally intermittent drainages; and seasonal and permanent wetlands are present. The six coastal courses are:

- Cypress Point Club
- Pebble Beach Golf Links (Pebble Beach Company)
- Spyglass Hill Course (Pebble Beach Company)
- Links at Spanish Bay (Pebble Beach Company)
- The Shore Course (Monterey Peninsula Country Club)
- The Dunes Course (Monterey Peninsula Country Club)

Santa Lucia Preserve

The Preserve Golf Club encompasses approximately 400 acres that are situated inside the 20,000-acre Santa Lucia Preserve in coastal Monterey County, California. The Preserve is a former cattle ranch (Rancho San Carlos) that was converted to a mixed-use of natural resource restoration and management, and residential and recreational development in 1998. The golf portion of the landscape is situated in an area consisting of oak woodland, native grassland, and riparian woodland and seasonal wetlands. Elevation range of the golf course is approximately 1,400 to 1,600 ft ASL.

ECOLOGICAL INFORMATION

Species Profiles

White-tailed Kite

White-tailed Kites are recognizable when far away as they appear wholly white at a distance. This simple fact -- combined with its relatively 'tolerance' of humans -- probably had contributed to the species' historic demise in California, as it was an easy and excessively sought target among ranchers and farmers during the late 19th and early 20th centuries. Ironically, the ensuing success of the species over much of its earlier ranges is in part a response to improved habitat conditions brought about by settlement: dry-land irrigation, pasture fencing, and even introduction of nonnative prey species, i.e., the House Mouse (MUS MUSCULUS) may have ameliorated the negative effects of wetland draining, cropping and landscape conversion for agriculture.

Movements

White-tailed Kites in California are non-migratory; however, the species is well-known as a wanderer, especially seasonally. Wandering, or nomadism -- as an incipient form of migration -- allows the birds to depart habitats that may have a seasonal or drastic paucity of rodent prey; and to search for and exploit sites where prey are more abundant, e.g., irrigated pastures, seasonally flooded wetlands, and sites affected by cultural and/or natural sources of precipitation. The singular movement patterns of kites in California probably are emigratory and to serve to facilitate the dispersal of young birds to emerging new ranges. Moreover, the species is successful because of its propensity to 'move about' in search of prey abundance, and once energy resources are secured, to adaptively pioneer a breeding territory and produce young at a rate that matches food availability.

Nesting & Reproduction

White-tailed Kites typically nest in the crown of a tree, usually 20-50 feet above ground. The single nest tree or grove may be on a slope, on flat terrain or even in a marsh or swamp. In general, kites build a new nest for each clutch; and a past year's nest is rarely refurbished and used again. Nest construction can take as long as 2-4 weeks, but many nests are built in only 7-10 days. According to Mr. Peter Bloom, kites are vigilant to protect their nests against corvids and other raptor species, yet they will build their nests within ¼ mile of nesting buteos and eagles; and nests may be successful even though their nests are plainly obvious even to humans.

Dr. Ralph Palmer reported that kites in California will nest as early as February and late as mid-July; and as with so many aspects of their lifestyle, timing of nesting is responsive to abundance of prey. A 'typical' kite clutch consists of four eggs, and most if not all incubation is performed by the female parent; and only the female broods the young. The male parent is kept busy hunting for both himself and his mate throughout all stages of nesting, and for the brood from hatching through fledging. Age-at-fledging appears to range from 30-40 days and perhaps longer.

White-tailed Kites are capable to produce two broods within a breeding season; and triple broods have been observed in southern California. When double-brooded, the two cycles may overlap (e.g., see Messrs. Holmgren & Ball, 6 June 2002). Pairs have been observed to copulate when still

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caring for nestlings; and construction (and defense) of a second nest has been reported for birds still feeding young.

Foraging & Prey Relationships

White-tailed Kites in California rely on the California Vole (MICROTUS CALIFORNICUS) for sustenance. Numerous other species of mammals plus birds, amphibians, reptiles and insects also are consumed by kites; but voles are their mainstay. A study of 26 nests in San Diego County (Wright 1978) revealed that the number of kite eggs per clutch was related to the density of active vole runways (an assay of prey density) in the kites' hunting areas. Further the number of successful nests and number of young fledged was linked to the percentage of voles in the kites' diet (based on 2,579 kite pellets).

Reported territory sizes for kites in California run from roughly 42 to over 198 acres per pair; and, Dr. Lee Waian's data from 1973 indicate that kites in Santa Barbara County have maintained territories ranging from 44 to 126 acres per pair. Annual variation in territory size for kite pairs inhabiting Humboldt Bay farmlands has been related to weather conditions, i.e., those affecting local vole densities and productivity (Dr. James Koplin, pers. comm.).

California Vole

California Voles are abundant and widespread throughout grassland and wet meadow habitats in California. Voles feed mainly on leafy parts of grasses and forbs, forming a network of runways linking to burrows and grazing sites. Voles seek cover in dense grass, beneath plant residue, in brush piles and underground burrows. Voles drink free water if available, but can rely on obtaining water from green vegetation.

The California Vole is active year-round and is non-migratory; and the species is weakly territorial, if at all. The species' home range in coastal California has been reported to vary from 0.25 to 2.50 acres; and individual voles are active within a radial distance of 16 - 110 ft.

California Voles breed throughout the year, reaching peaks whenever food and cover are abundant. In round numbers, females gestate young for 21 days and produce two to five litters per annum, each with an average of four young. Voles wean at +/- 21 days, and females attain sexual maturity at 29 days on average.

Botta's Pocket-Gopher

The Botta's Pocket-Gopher (THOMOMYS BOTTAE) is an abundant and yearlong resident throughout much of California. Optimal habitats are perennial meadows, grasslands, savanna and early seral stages of woodlands that are adjacent to grasslands. The species is herbivorous, feeding mainly on roots, tubers, bulbs, stems, and leaves of forbs and grasses. In annual pastures, pocket-gophers also are gramnivorous. Foraging is underground from tunnels and on ground surface. Entrances to pocket-gopher tunnels are plugged with loose dirt to deny intruders and to stabilize interior temperature and humidity.

Botta's Pocket-Gophers breed year-round, nesting in burrows with deep chambers in friable soils. Evidently, individuals remain in the same burrow system for life, but also are adept to re-colonize new areas in the event of burrow damage. Territory and home range are coincidental in this species; documented male home ranges vary from 2,700 to 4,800 sqft, and females range in an area about half the size as males. These animals are solitary except to breed. Mating and parturition may occur throughout the year. Females gestate for 18 days; and 1-3 litters per annum average five young each.

Western Harvest Mouse

The Western Harvest Mouse (REITHRODONTOMYS MEGALOTIS) is widely distributed in California and is most common in open shrublands and both annual and perennial grasslands. The species is omnivorous, eating insects, seeds, fruits and shoots from the ground surface. Harvest mice prefer thick grass or scattered shrub cover for foraging and nesting. Nests of woven dried grasses

are built in thick grass, at the base of shrubs and in debris piles. Although the species can adapt to near water-less conditions, it appears to prosper best near free water or in areas with seasonally-perennially green vegetation. Harvest mice typically use runways created by California Voles, and observers have reported that the two species co-occupy the grass tunnels with no attempt at avoidance.

Harvest mice are both nocturnal and crepuscular, the latter being the phase of day that they are vulnerable to kites. Home ranges are reported to vary from 0.30 to 1.40 acres; and density is known to fluctuate widely with up to 50 animals per acre. Reproduction occurs year-round at coastal elevations, with spring and summer peaks. Polyestrous females reach sexual maturity at 4 months, and will produce an average of 4 young per litter with multiple litters per year.

House Mouse

The introduced House Mouse, originally from Eurasia, is common throughout California near human habitation in urban and rural settings, and less common in a variety of natural and ruderal communities. These mice are found in buildings, fields and croplands, and disturbed herbaceous habitats. House mice forage on the ground, usually beneath or near cover, on a wide variety of foods, including grains, fruits, seeds, vegetables, fleshy roots, meat, arthropods, glue, paste, soap, and other household articles.

House Mouse populations may be regulated through behavioral interaction with California Voles; and the inverse relationship suggests that 'peaks' in mouse numbers that overlap 'valleys' of vole numbers may help compensate for fluctuations in the latter as prey for raptors. Outdoor home ranges are reported to vary from 1,500 sqft in an area of high vole density to 3,925 sqft in an area of low vole density. A population density of 82,000 house mice per acre was observed during a "House Mouse explosion" in the Central Valley in 1926-27; then another such population explosion occurred in 1941-42, also in the Central Valley.

The species' nests are made of shredded plant matter or virtually any soft material. Nests are constructed in burrows, or in protected spots in structures or woodpiles. House mice breed year-round, with peaks in early spring and late summer. Mice nest in-solitary or communally, with as many as 50 young reported from a single nest. Females gestate for +/- 20 days, producing an average of five young per litter. Females, which are sexually mature at eight weeks, have 5-8 litters per year.

ECOLOGICAL ASSESSMENT

Kites @ Dos Pueblos

The recent nesting activities of White-tailed Kites at Dos Pueblos were ascertained by two groups of observers working from both onsite and offsite locations during the spring of 2002. Working independently, Messrs. Evans and Bouscaren and Messrs. Holmgren and Ball carefully recorded the nesting activities and rearing of young by a single pair of kites ('western pair'), while noting the apparent nesting (but unconfirmed reproduction) by a second pair ('eastern pair'). At maximum, during June 2002 there may have been a total of nine White-tailed Kites present on the property, including four adults and the five nestlings produced by the western pair. By mid-August, during a 5-hour midday visit to the site, I observed only two adults (apparently the parental pair) and four juveniles (apparently siblings) in the general area that had previously had been occupied by the 'western pair' (marked trees 100-117; see Figure 2).

While it is not clear if kites have persistently occupied Dos Pueblos, i.e., whether to date the same birds have consistently inhabited the site for more than three years, it is clear that the site has been successfully used by at least one pair for reproduction and that it is providing at least some level of energetic resources for two pairs and the progeny of one. However, the use by these kites and ecological relationship of adjoining private properties (N-W-E) to the whole kite landscape has not been studied or otherwise ascertained.

Golf Environments As Kite Habitat

Terms and Definitions

To better understand and discuss whether White-tailed Kites (or any other species) can occupy and 'use' golf courses, several common terms and definitions about the golf environment may be helpful. The need for a common basis of discussion and description is highlighted by, for example, the recent email exchange gathered by Mr. Mike Evans (Pacific Southwest Biological Services, 05 June 2002) and submitted to Ms. Andi Culbertson (Culbertson, Adams & Associates; *Results of electronic mail survey of observations of White-tailed Kites using golf courses and similar parklands for proposed Dos Pueblos Golf Links, Santa Barbara County, California*). In my view, the email methodology was fundamentally flawed, and in large part because it lacked any definitions for golf courses as potential habitat.

Herein, "golf course" refers to the interconnected complex of tees, fairways and greens (collectively the turf area), plus the sand and grass bunkers, roughs, in-play water features, cart paths and ancillary facilities that are built or installed specifically for the purposes of golf. "Golf environment" has a broader meaning that takes in the course-proper and any variety of landscape elements that immediately adjoin the particular golf course in question. The entire golf course is encompassed by the golf environment. Surrounding (and interstitial) landscape elements include cultural, natural or managed-natural terrain that may or may not be in-play for golfers, but that are not specifically intended for routine or regular maintenance and player access. For present purposes, whether parts of a particular golf environment may be used by a wild animal depends on the species' foraging, reproductive and/or secretive cover needs and the extent to which such resources are sufficiently and safely available in the subject area.

In the above sense, White-tailed Kites positively are known to habitually use various elements of golf environments, including operational parts of the golf course. Kites feed comprehensively on burrowing and grass-tunneling rodents that inhabit areas running alongside areas of maintained turf. Unlike larger raptors and insectivorous bird species, kites generally do seek turf-dwelling prey. On the other hand, kites commonly will hovers directly over turfed areas while searching (at an angle) for prey in adjoining habitat, much like they hover over roadways and coastal bluffs when hunting. Kites do not hover over wooded and forested areas adjacent to golf courses, nor do they forage on rodents that occupy open ground under forested golf edges. Functionally, golf fairways provide airspace that kites can use when hunting, especially when actual prey habitat is confined to narrow patches.

Roughs as Habitat

White-tailed Kites forage for rodent prey in 'roughs' that are maintained at a mowing-frequency low enough to allow rodent communities and their infrastructure to develop and persist, or if destroyed, to recover. Outer roughs (playable tall grass and forbs) and especially transition areas (usually not playable, or severely punitive to the golfer) can be densely settled by rodent species and provide substantial amount of a kite's prey base. Roughs and transition areas demand and receive lesser amounts of irrigation than cropped turf, and depending on sprinkler apparatus and soil conditions, the mesic-xeric boundary may be stark or gradual leading away from the golf area.

Ecologically, consistent patterns of irrigation that are necessary to maintain turf tracts -- and that spill over or seep onto adjoining transition areas -- are equivalent to annually and seasonally reliable amounts of rainfall on natural terrain. From what is known about the response of rodent populations, and especially of voles, to rainfall abundance, i.e., consequent food and cover abundance, it is reasonable to assume and can be demonstrated that rodent communities are relatively prosperous inside golf environments.

Referring to a modern high-end 'links-style' golf course, Figure 3 illustrates a typical transition from fairway (close cropped turfgrass) into a playable rough (native grass or turf-native blend), including evidence of rodent activity. The next photograph (Figure 4) shows a more informal, or incidental, relationship of turf to rough conditions. The latter example highlights how a low-maintenance rough/outer rough setting that is dominated by invasive ice-plant is heavy populated by voles. Both examples are from sites that are routinely hunted by White-tailed Kites. The message is that burrowing rodents normally do not venture onto (or into) well-maintained

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turf when rougher habitat with sufficiently more friable soils and greater amounts of plant biomass (as stems, leaves and roots) are available in off-course habitats. The rough and transition areas are the optimal habitats and the turf is marginal, at best.

Kites Attracted to a New Golf Course

The Preserve Golf Club was constructed in 1998 and opened for play in 1999 after an 8-month grow-in period. Construction amounted to stripping nearly 200 acres and grading 350,000 cubic yards of earth to build the course and related infrastructure. Top soils and native ground covers were scraped and stockpiled for the duration of earthwork, and several hundred oak trees were either removed or relocated as part of the landscape project. Approximately 12 large trees that could not be salvaged were cut and relocated to locations along the periphery of the course for the purpose of creating (mitigating) large oak snags for wildlife. The resulting golf course is approximately 105 acres including 80 acres of irrigated turf. The balance of the +/- 200-acre construction area was re-vegetated with 100 percent native species and is an effective transition between the course and adjacent wildlands. White-tailed Kites had occupied the Preserve since at least 1990, but were not known to breed on site. The first year that the course was completed and irrigated (1999), a kite pair established a territory in the golf environment and successfully nested and fledged young. The pair consistently hunts along the margins of the golf course and in wet meadows that were established or restored in its vicinity.

Kites Attracted to an Established Golf Environment

The only known reproductive pair (or sequence of un-banded pairs) of White-tailed Kites on the Monterey Peninsula has nested for at least three years (2000-2002) at the centrum of a multi-course golf complex in Pebble Beach. Figure 5 summarizes the geographic position of the foraging and nesting habitats used by this pair(s). Of the 135 golf holes that exist inside the Del Monte Forest (Pebble Beach), +/- 60 are coastally-oriented golf holes and are regularly frequented by the nesting pair. Non-nesting kites move through the coastal complex, especially during winter, but only one pair appears to be resident year-round.

Pebble Beach kites daily forage over 125-200 acres of the total 500-acre coastal environment. Figure 6 zooms in to represent the specific area that kites use for foraging and day-long perching. Natural habitat, whether of native or exotic species composition, amounts to approximately 60 percent of the total 180-acre golf area represented by the diagram, and virtually all of the 108 non-golf acres are utilized by kites.

The Pebble Beach kites have nested in a mixed Coast Live Oak - Monterey Pine woodland that is situated between two golf courses and adjacent to other recreational and residential facilities. The nest sites are separated from foraging habitat, or potential foraging habitat, by approximately 600-1,000 feet of woodland and dunes, and in one direction by a riparian corridor. The kites can fly to foraging habitat within a few seconds, but nesting and foraging habitat are not contiguous.

Kites' Response to Humans on Golf Courses

Golf courses are distinguishable from other recreational environments in ways that can profoundly affect wildlife populations and management of wildlife habitat. Human activities essentially are limited to routine maintenance (mowing, irrigation adjustments and scouting), occasional chemical applications, and play. All activities including in particular play are guided by specific rules, regulations and protocol that result in a familiar pattern and pace of activities on the ground, even to the obvious point that all activities flow in a constant direction. Golf groups typically number 4-6 players at a pass; and on moderate to low round courses, the gap between groups moving through may last thirty minutes to several hours. All activity is diurnal with sudden diminishment in the early-late afternoon. Golf activities are relatively quiet, and with the exception of maintenance equipment produce few mechanical sounds or emissions. Trespass and vandalism cannot be tolerated on golf courses, or even in interstitial habitat areas, and untoward and disruptive human activities are vigilantly denied.

Native wildlife including several raptor species readily habituate to the routine of golf and golfers. Notable examples in coastal California are the Red-shouldered Hawk (BUTEO LINEATUS), American

Kestrel (FALCO SPARVERIUS), and White-tailed Kite. All three species tolerate close-approach by golfers on the Pebble Beach courses, especially those with lower rounds played (Cypress Point, Monterey Peninsula, and Spanish Bay), and at The Preserve. Non-golfer walkers, where permitted by course regulations, also are tolerated by kites to a remarkable degree (flushing from perches @ 30-50 feet), and will continue to hover when people are walking directly beneath the hunting birds. On the other hand, off-course walkers (tourists) who approach wildlife on the coastal courses by a trajectory that is perpendicular to the direction of play are much less tolerable to most species. Tourists as would-be wildlife photographers move directly and intently towards the animals, typically after pulling their automobiles abruptly to the side of the road nearest the subject bird or mammal.

Dos Pueblos Basics

(1) Voles and secondary prey species will positively respond to development of the golf course, including management of open space habitats and enhancement of roughs and transitional habitats. Given appropriate management, prey populations will exceed their present densities and availability to predators. There will be sufficient linkage and connection among eventual rodent habitat areas to convey genetic distribution; and the RR Tracks will continue to be the primary (partial) barrier to this natural objective.

(2) Prey populations will be available to kites at a level that will be comparable to or better than is demonstrated on the Monterey Peninsula. Dos Pueblos will not be dissected by popular roadways and tourist and residential infrastructure as is the case throughout Pebble Beach.

(3) Provided appropriate management, the landscape pattern proposed for Dos Pueblos and constituent prey resources, will continuously attract wandering and pioneering kites and sustain at least one resident pair.

(4) As a high-end, low-round (+/- 20,000 per annum) facility, the golf course will be professionally managed and regulated by the rules and protocol for human activities (maintenance and play) in a manner that is consistent with courses identified in this report and that support resident kites.

(5) The total turfed area that is planned for Dos Pueblos (including both courses, turf farm and practice facilities) amounts to +/- 88 acres, or 42 percent of the total property. The 18-hole course is planned at +/- 72 acres. In general, new golf courses that occupy fewer than 90-100 acres are considered environmental achievements for balancing land use and wildlife requirements.

Discussion of Findings

(1) As others have stated, kites do not characteristically occupy 'homogenous' turf areas of golf courses. Nonetheless, the species is capable and predisposed to exploit prey resources that are associated with golf course roughs, transitional areas and adjoining natural habitats.

(2) Otherwise (physically) appropriate trees in golf environments may also be ecologically suitable for nesting, provided sufficient distance and buffering from disruptive human activities. Sufficiency of separation or buffering cannot be measured or projected by distance, *per se,* but must consider the type of surrounding habitat, activity and resulting security for nesting birds. Nesting birds can be expected to tolerate low-frequency and non-disruptive activities to within 150-200 feet of their nest tree (better small grove).

(3) Kite nest trees and foraging habitat should be in proximity, but need not be contiguous or adjoining to meet the needs of the birds. Visual surveillance by both mated birds of the greater nesting-foraging environment, however, is important.

(4) Dos Pueblos, at 200 acres with approximately 40-50 percent available as foraging habitat may be sufficiently sized to support 1-2 territorial pairs; but, there appears to be a

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misconception that the site in its current condition is sufficient for the same purpose: (a) only one of two pairs that attempted to breed onsite in 2002 was confirmed to successfully fledge its young; and (b) there has been no evidence or assertion that any of the present or recent birds have limited their range to within the property. Because this is about a project, the natural bias has been to focus attention on kites resources within the legal boundaries of the subject property.

(5) Dos Pueblos kites have not yet demonstrated persistency of use (three to five) years, although that is a good management goal.

(6) I completely agree with Holmgren & Ball's assertion that for Dos Pueblos Golf Links to effectively support kites over the long haul, design and management will need to:

(a) Provide a range of nesting opportunities onsite (kites try something new each year, and should be offered options);

(b) Sustain refugia for small mammals (essential during and after construction; also may include coastal sage scrub as rodent habitat);

(c) Maintain sufficient and unobstructed foraging spaces (plenty of native grasslands); and,

(d) Provide spatially contiguous and connected rodent habitats.

ADDITIONAL COMMENTS & RECOMMENDATIONS

(1) Layout (Championship Course) -- The layout of the 18-hole course is sufficiently 'open' to create a turf/habitat matrix that will support wildlife, and given the following considerations, the area and configuration of turf (tees, fairways, greens) will not require additional modifications to accommodate kite management objectives.

(2) Layout (3-Par Course) -- The fundamental difference with layout of the 3-par is that the fairways located north of the RR Tracks are contiguous and lack interstitial roughs or transition areas, i.e., for foraging kites. On the other hand, these six golf holes are well-compressed and together amount to the size of a larger fairway on the 18-hole golf course. Further, it is appropriate from a wildlife management standpoint that the 3-Par is positioned immediately adjacent to the more densely developed part of the total golf complex.

(3) Setbacks -- If properly planted with a sufficient number, distribution and size-range of trees, or tree groupings, the existing layout of the 18-hole golf course will result in sufficient setback distances to provide nesting options for kites (see other re-vegetation comments, below). Specific setbacks for mowing and ancillary landscaping should be field fit during grow-in of the golf course, rather than arbitrarily designated on paper.

(4) Human Awareness -- Golfer and staff education must emphasize the importance of 'local rules' that will be designated to protect unnecessary encroachment into kites' more protective habitats, i.e., nesting areas. Out-of-bounds areas that permanently or seasonally abut protected sites must be signed to notify that ball-retrieval (or other access) is allowed. This is increasingly common on golf courses (e.g., Spanish Bay, Squaw Creek), and golfers are predisposed to understand and abide by such regulations. Such education messages are especially appropriate to extend to the 3-Par course in view of expected use by junior golfers and students.

(5) Landscape Elements -- The roughs as indicated by the site plan represent a potentially critical feature in determining the overall suitability of this links course as wildlife habitat, especially as foraging habitat for kites. To assure the best prospects for kites, as well as for other diurnal and nocturnal predators, the roughs should be planted with native perennial grasses, or a mix of natives and appropriate turf varieties such as

fescues. Valuable and popular native species for denser roughs include California Hair-grass (DESCHAMPSIA CAESPITOSA and/or HOLCIFORMIS), California Fescue (FESTUCA CALIFORNICA), and June-grass (KOELERIA CRISTATA), among others. All of the named native species can be cut (5-8 inches) and raked for maintenance purposes without damaging the plants or their usefulness to burrowing wildlife. LEYMUS TRITICOIDES is useful as a fringe grass that can be banded along the outer edge of the roughs, especially near drainages. (See also discussion of species selection and maintenance).

(6) Habitat Revegetation Treatments

(a) *Erosion Control Seeding* (Transition Areas) -- The seeding mix that was specified by Rogers and Dudek in 1998 (BELP Table A) and Dudek in 2002 (HEP Table 2) is substantially out-dated and should be revised for both kite/wildlife and golf management purposes. Since 1998, the availability and cost for native grass seeds has improved significantly, and particularly for species that are broadly and successfully integrated into both play and out-of-play areas of 'better' golf courses. The following species that are included in the BELP and HEP, all of which are nonnative, are potentially detrimental to ecological and golf objectives:

BROMUS HORDEACEUS and BROMUS MADRITENSIS: Both Soft Chess and Foxtail Chess are rapidly growing and invasive annual grasses that provide little and only short-term forage value to native wildlife. Both species produce a glabrous seed head that can catch in the eyes of foraging raptors, although not to the same severity as BROMUS DIANDRUS -- a species that was removed from the BELP in an earlier revision. As 'flashy' annuals, these bromes require frequent mowing to minimize build-up of accumulated dry materials and pose substantial fire hazards. On the other hand, the native California Brome, BROMUS CARINATUS var. MARITMUS is very well suited for erosion control purposes, is colorful and attractive and is readily sown by hand or hydro-mulching.

LOLIUM MULTIFLORUM: Italian Ryegrass is widely considered to be one of the most aggressive and noxious 'weed species' in California grasslands, an especially in golf-turf environments. This is the species that Julius Caesar planted in his enemies farmlands as a form of agricultural warfare (cultural weakening) in advance of actual battle. The entire genus is nonnative and should be disregarded for erosion and golf management purposes. In addition to being invasive into turfed areas, LOLIUM is attractive to golf insect pests including, e.g., cutworms and armyworms. Being a relatively stiff grass, fields dominated with Lolium are less accessible to foraging raptors than, for instance, softer NASELLA PULCHRA, KOELERIA CRISTATA, HORDEUM BRACHYANTHERUM, and DESCHAMPSIA CAESPITOSA, all of which are readily available through local seed producers. Eradication of existing onsite Lolium stands is not as important as avoiding importation and development of new stands. Typically, Lolium that would encroach into the turf and rough environments will be managed by routine mowing (to prevent seeding) and mechanical removal of offending patches.

Finally, TRIFOLIUM HIRTIUM is an exotic species that is *passé* in modern erosion mixes and can be successfully substituted with native or hybrid fescues such as RUBRA, CALIFORNICA and/or IDAHOENSIS, as well as other species of perennial forbs.

(b) *Transition Areas as Kite Habitat* -- Without diminishing erosion control objectives of the transition plantings; these areas represent crucial cover linkages throughout the golf course and should be optimized for grassland wildlife (rodents and kites). Species selection changes, as recommended above, will serve to accomplish this objective. Except where necessary, as on steeper slopes, hydro-seeding should be minimized or carefully 'cranked-down' to avoid caking the soil surface and thereby inhibiting microhabitat development by and for burrowing, grass-tunneling and grazing rodents.

(7) Nest & Perch Site Creation

In It looks as though there is a sufficient amount of open space distributed among six locations across the 18-hole course where kite nesting and/or perching options could be developed. None of the sites would require adjustments to the golf course; but modification to the habitat enhancement plan (Dudek 2002; see forthcoming mark-up) would be required. Specifically, the following relatively large open areas (providing circular diameters of 250-300 feet in out-of-play ground) appear to be available for exploration:

(a) Center of grouping 6-8-9;
(b) Center of grouping 4-5-turf farm (*could the farm be relocated?*);
(c) NW corner above 7 tees;
(d) SW corner below 5 dog-leg;
(e) The large area noted as "disturbed wetland" between holes 16 & 17; and
(f) On the narrow terrace bluff behind 17 back-tee.

Trees for these purposes could be relocated from other parts of the project area; and several large cut trees should be 'transplanted' to 'replant' as snags on vicinity of live-planted trees.

(8) Project Staging and Monitoring of Ice-plant Eradication

Notwithstanding the previous admonitions about the selection and use of nonnative grasses for erosion plantings, the proposed removal of existing ice-plant stands should be thoughtfully executed and monitored to avoid unnecessary disruption of rodent prey populations. Expansive stands of ice-plant (sea-fig) represent important foraging cover for kites in Monterey County; and although removal and replacement at Dos Pueblos is appropriate, it should be done in stages to maintain construction-phase refugia for the onsite rodent fauna. Details for staging the removal of ice-plant cover can be worked-out in concert with the golf course architect and construction contractor during the normal course of planning the grading and construction phases. A cover removal plan should be developed that will not hinder the normal and economical construction project, rather it can be planned to capitalize on construction staging. Total ice-plant removal can be accomplished after construction grading and planting has been completed and grassland habitats as well as turf are in advanced stages of grow-in.

(9) Course Management and Operations

(a) *Rodent Tolerance and Management*

Course management should set a relatively high threat threshold for rodents. Normally, treatment of burrowing rodents (pocket-gophers, moles, voles, ground-squirrels) in turf areas should be limited to trapping. However, in emergency situations, e.g., when burrowing rodents are encroaching towards or into greens complexes, management other than trapping should emphasize use of fumigants such as phosphine gas. Presently, fumigation is the most practical and ecologically sound method for controlling burrowing rodents within greens complexes. The professional golf course superintendent should be relied on to determine whether a rodent problem constitutes an bona fide emergency (threat to greens) and thereby be the one to decide when non-trapping methods such as fumigation should be employed. Poison baits should not be used for removing rodents. Finally, under no circumstances should rodent management by any means be conducted in non-turf environments, such as transitional and natural areas.

(b) *Mowing and Irrigation*

Cultivating native grasses and peripheral wildlife habitat in the roughs, especially first-cut roughs, does not preclude frequent mowing and irrigation to sustain

desired play conditions. Nothing suggested herein is intended to suggest otherwise. Included photographs [insert] of fairway-rough-transition conditions at The Preserve Golf Club best illustrate a maintenance regime that mutually offers premium-level championship play and successful kite foraging habitat.

WRITER'S QUALIFICATIONS

Jeff Froke has studied, restored and managed wildlife resources in coastal and cismontane environments of California for 30 years. His expertise is in understanding how vertebrates and their habitats respond to land-use and ecological change, particularly in ranchland, golf-resort, nature preserve, and urban-wildland interface settings. Jeff's education includes a B.S. (natural resource management) and M.S. (ornithology & wildlife ecology), both from Humboldt State University, and a Ph.D. (biogeography) from UCLA. He also undertook postgraduate studies in deep-ocean ecology at UC Scripps Institute of Oceanography, and Pacific Island studies at University of Hawaii. Jeff is a Loeb Fellow in Advanced Environmental Studies (landscape ecology) at Harvard University (1987-present) and former officer of Harvard College. Career-wise, and in addition to consulting, Jeff has worked as a ranger for the California State Parks, biologist/inspector for US Fish and Wildlife Service, manager and associate director of wildlife sanctuaries for National Audubon Society (11 years), president of the Roger Tory Peterson Institute of Natural History (three years), and president of the Santa Lucia Conservancy, which owns and manages 18,000 acres of Santa Lucia Preserve (12 years). For roughly 25 years including the present, Jeff has lived no more than a half-mile from nesting and foraging White-tailed Kites.

Ex. 50/25/15

Tracy Duffey

From:	Tracy Duffey
Sent:	Thursday, November 21, 2002 10:26 AM
To:	Melanie Hale
Cc:	Jack Gregg
Subject:	RE: Dos Pueblos Revised Project Description
Importance:	High

EXHIBIT NO. 10A
APPLICATION NO.
A-4-93-154-(EA2
Water quality staff

response to applicants' 11/20/02 amend of proj. descrip.

Hi Mel - I just returned from San Fran and have read the string of emails. The only one that is really important, in my mind, is this one with the attached revised project description. Up until then, they were just recommendations from Froke but not necessarily proposed changes. Anyway, here's the part I'm interested in:

4. Rodent tolerance and management - A series of measures is proposed to both preserve rodent populations during removal of invasive species and construction, and preserve rodent populations during operation and management of the golf course, including but not limited to trapping as opposed to rodenticides, mowing and irrigation protocols, and prohibition of poison baits.
5. Chemical restrictions - It is proposed that chemical and pesticide use on the Par 3 golf course be restricted to bonafide emergency situations. On the 18-hole course all pesticide use will be tightly restricted to managed turf areas except for limited use of herbicides to manage non-native plant infestations in either in-play or out of play rough and natural habitat areas.

These changes represent a significant departure from the Agronomic Turf Management Plan that offer a significant improvement in the operation of the Courses, with corresponding reductions in environmental impact. Taken together with water quality report modifications previously revised into this project, we believe that all issues identified have been resolved in favor of a finding of consistency with the Local Coastal Program on this appealed permit.

We would expect staff to fashion a condition of approval to be met prior to issuance of this permit that would modify the current Agronomic Turf Pest Management Program to incorporate these revisions. Such a condition would not involve impermissible delegation of these elements since the parameters of the modifications have already been set.

As the WQ memo states, the proposed water quality program is adequate to meet the water quality objectives of the CA NPS Plan and reduce impacts to the maximum extent feasible. We also state in the memo that "staff has not seen data that conclusively show that pesticides will be reduced through the biofiltration treatment system to the point that there will be no impact to water quality in Eagle Creek." The only way to 100% guarantee NO impacts from chemicals is to use NO chemicals. The revised project description does not say that there will be an elimination of all chemicals. The prohibition of poison baits only refers to rodenticides and measures to deal with rodents, but not to the use of other chemicals (pesticides and herbicides) for other purposes (i.e. turf management). The discussion of chemical restrictions states that the use of chemicals be restricted to "bonafide emergency situations". What might these be, and who determines this? Is it an emergency when the condition of the grass makes it difficult to play golf? It is also stated that pesticide use will be restricted to managed turf areas - have they delineated where these managed turf areas are? I would think that's quite a bit of area. Also, they did not mention alternatives to using pesticides for managing turf and invasive pests. What is their plan? I don't see how this changes the ATMIPM greatly, because the ATMIPM calls for pesticide use as a second line of defense after other methods have been tried and failed. The revised project description does not eliminate the use of pesticides or chemicals at all, but mentions that their use will be restricted. In this case, our conclusion from our previous memo still stand - we cannot conclude that no pesticides or other chemicals from the

project will enter Eagle Creek.

Jack - do you have anything to add???

Thanks,

Tracy

-----Original Message-----
From: Melanie Hale
Sent: Wednesday, November 20, 2002 11:36 AM
To: Sandy Goldberg; John Dixon; Tracy Duffey
Cc: Chuck Damm
Subject: FW: Dos Pueblos Revised Project Description
Importance: High

fyi I haven't opened her attached files yet-----Original Message-----
From: Andi Culbertson [mailto:aculbertson@caaplanning.com]
Sent: Wednesday, November 20, 2002 11:32 AM
To: Melanie Hale (E-mail)
Cc: Chuck Damm (E-mail)
Subject: Dos Pueblos Revised Project Description
Importance: High

This is the revised project description with the elements pulled out of Froker's reports. I will fedex today. Exhibit 1 is a map you already have 80 copies of. Exhibit 2 is attached. It is in Word, so you might want to just lift the language - I tried to make it suitable that way.

EX. 50 Apg 2

ENSR
Consulting • Engineering • Remediation

1220 Avenida Acaso
Camarillo, CA 93012
(805) 388-3775
FAX (805) 388-3577
http://www.ensr.com

May 15, 1998
Project No. 0480-341

Ms. Kate Sulka
Protection Services Division
County of Santa Barbara
195 West Highway 246, #102
Buellton, California 93427

Re: Justification for Not Performing Groundwater Sampling – ARCO Dos Pueblos Golf Links

Dear Ms Sulka:

As a follow-up to our telephone conversation of May 5, 1998, this letter presents evidence and justification why groundwater assessment is unnecessary as part of the ARCO Dos Pueblos Golf Links site assessment. ARCO and ENSR request your and the Central Coast Regional Water Quality Control Board's (RWQCB) concurrence that groundwater assessment is not required.

Background

Following review of the Dos Pueblos Site Assessment Work Plan, the Central Coast RWQCB requested (in correspondence, dated April 27, 1995) that groundwater quality be assessed during the Dos Pueblos site assessment, unless further convincing evidence for not assessing groundwater was provided. The RWQCB expressed concern that groundwater in the vicinity may be used for potential residential development (Naples) west of the Dos Pueblos site and that the water table depth may be shallower than 52 feet bgs (the previous limit of subsurface geophysical investigation) due to recent heavy rains.

Justification for Not Assessing Groundwater

1. A study of local hydrogeologic conditions by Hoover & Associates, Inc. in 1986 provided ENSR and ARCO with additional information regarding groundwater in the vicinity of the Dos Pueblos site (Appendix A, ENSR Document 0480-341-170, November 1996). The results, based are eight water wells on adjacent properties, are summarized below:

   - The Monterey Shale, the uppermost aquifer, is not widely used in the area due to poor water quality and difficulty in locating fractures that yield sufficient water to wells.
   - First groundwater encountered in the vicinity of the site occurs at 180 to 230 feet bgs (80 to 130 feet below mean sea level).

EXHIBIT NO. 5/
APPLICATION NO.
A-4-STB-93-134-G-A2
ARCO/ENSR groundwater etc.

ENSR

ARCO and ENSR believe that the results of the site assessment provide the further convincing evidence as requested by the Central Coast RWQCB to justify that groundwater assessment is not necessary at the site. We look forward to your written response to our request and are available to discuss this further at your convenience. Should you have questions or require additional information, please contact either of the undersigned.

Sincerely,

Jim D.J. Chaconas, P.E.
Project Manager
Chaconas Engineering

Michael Flack, C.E.G.
Program Manager

c: Michael Hagood, ARCO

EX. 51 pg 2
407

EXECUTIVE SUMMARY

This report presents the results of the second phase of site assessment activities conducted at the ARCO Dos Pueblos Oil and Gas Production Facilities, north of Goleta, California (subject site) from May through October 1997. The site is approximately 202 acres and is being decommissioned for construction of a public golf course (Dos Pueblos Golf Links). Oil and gas operations began in 1929 and 40 wells have been drilled at the site; 38 of the wells were drilled since 1940 to develop two offshore leases (state leases 129/208) in the Elwood Oil Field.

Assessment activities at the site were conducted consistent with ENSR's site assessment work plan, dated March 1995, assessment addendum, dated June 28, 1995, and assessment addendum letter dated June 24, 1997 to the County of Santa Barbara, Protection Services Division (County). The assessment programs have been conducted to meet the requirements of Conditional Use Permit (91-CP-085), condition No. 39 for the project which requires assessment of hazardous waste and petroleum hydrocarbons at the subject site and condition No. 42 which requires a geophysical investigation to locate pipelines and mud pits. The objectives of the additional site assessment program were to characterize the nature and extent of subsurface impacts and assess the threat of those impacts to human health and the environment in the areas of interest. The areas of interest for the assessment program are as follows and are shown on Figure 1-1, in the body of the report:

- Active (129/208) Tank Farm
- Area East of Active Tank Farm (Skim Pits)
- Former Gas Compressor
- Former (208) Tank Farm
- Well 129-2 Staining
- Mudpits
- Active Gas Compressor
- Gas Chiller
- Meter Locations
- Creekbeds
- Warehouse/Storage Areas

Consistent with CUP condition No. 42, a geophysical survey using terrain conductivity profiling was conducted to locate pipelines and former mudpits. Eleven (11) grids and 24 traverses were performed in the vicinity of the 40 wells. Eighty-one (81) exploratory soil borings were drilled during the second phase of assessment using hand auger, Geoprobe® and hollow-stem-auger drilling equipment. Two-hundred and thirty (230) soil samples were collected and analyzed for the following constituents of interest (COI): total volatile and extractable petroleum hydrocarbons (TVPH/TEPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polynuclear aromatic compounds (PNAs), polychlorinated biphenyls (PCBs) and California Administrative Code (Title 22) metals. In cases where total metal concentrations were in excess of the regulatory screening criteria established below, the California Waste Extraction Test (WET) was used to assess the leachability of the constituent chemical and whether or not the leachate

EX 57 B3
408

concentration posed a threat to groundwater. In addition to a soil gas survey that consisted of 95 points, including the 1996 assessment program, 131 exploratory borings have been drilled at the subject site.

Constituent of interest concentrations in soil samples collected from the assessment program were compared to the following criteria to determine if the results represented a threat to groundwater and/or human health:

- County Investigation Levels (Site Mitigation Unit Guidance Manual, 1995);
- County Cleanup Levels (Policy No. 5006.005);
- U.S. EPA Region IX, Preliminary Remediation Goals (Industrial Soils; August, 1996)
- California Hazardous Waste Criteria (Title 22).

During the initial phase of site assessment in 1996, site-specific fate and transport analysis was also used to establish action/investigation levels for TEPH-impacted soils. These performed site specific fate and transport-derived levels were approved by the California Regional Water Quality Control Board-Central Coast Region (RWQCB) in January 1997 and by the County in July 1997.

Based on the results of the assessment program the following areas did not contain soil samples with COI concentrations that indicate a threat to human health or the groundwater. Petroleum hydrocarbon, BTEX, PCBs and PNAs concentrations were below actions levels. In some instances, soil samples collected from the below-mentioned facilities contained total metals concentrations above action levels; however, selected WET testing showed the leachate metal concentrations to be below MCLs, thus a threat to groundwater was not indicated. None of the soil samples collected from these areas contained metals concentrations above PRGs.

- Former (208) Tank Farm;
- Active Gas Compressor;
- Gas Chiller;
- Mudpits (anomalies identified from the geophysical investigation);
- Warehouse/Storage Areas (except the loading dock area);
- Area East of Active Tank Farm (excluding Skim Pits, that have yet to be removed and sampled).

In addition to the above former facilities, no further assessment or remediation is proposed for the creek bed drainages, because soil samples collected did not contain petroleum hydrocarbon, PNA, PCB and metals concentrations above published ecological criteria developed by NOAA.

Ex. 57 pg. 4 of 4

Based on the results of the assessment program conducted in 1997, the following areas contained COI concentrations in excess of the action levels:

- Active (129/208) Tank Farm
- Former Gas Compressor
- Well 129-2 Staining
- Mudpits (those identified from aerial photographs)
- Meter Locations (mercury manometals)
- Warehouse/Storage Areas (loading dock area)

Of the 230 soil samples collected during the second phase of site assessment, 5 soil samples collected contained TVPH concentrations above action levels (200 mg/kg); one soil sample collected contained a TEPH concentrations above the action level (20,000 mg/kg >C20); and 12 soil samples contained benzene at concentrations greater that the action level of 0.1 mg/kg. The soil samples with COI above action levels were collected from borings drilled in the area of the former gas compressor, active tank farm and mudpits. However, no further assessment or remediation is proposed in these areas because:

- the extent of petroleum hydrocarbon impacted soils are limited laterally and vertically,
- the source of the COI has been removed,
- the site is underlain by unweathered bedrock that will impede vertical migration, and
- groundwater is reported at a depth of 180 feet bgs and is not suitable for domestic use.

In these areas, TVPH and TEPH above action levels were not reported below a depth of 9 feet below the groundsurface; benzene was reported above actions levels at depth between 22 and 44 feet bgs in the area of the former gas compressor. In general, based on the current development program these areas will not be exposed during the grading program. Additionally, the former gas compressor area is located within an archeologically sensitive area, which will not to be disturbed during development.

As with the prior areas of interest, soil samples collected from the mudpits and active tank farm sump contained barium, chromium, cadmium, nickel, arsenic, copper and for vanadium concentrations above groundwater protection-based action levels. In addition, some samples collected in the area of the former gas meters contained mercury concentrations above action levels. However, selected WET testing showed that the leachate metal concentrations of these soils to be below levels that would pose a threat to groundwater. One soil sample collected at one of the mudpits at a depth of 19 feet contained arsenic concentration above the PRG action

Ex. 57 of 85
~~410~~

level. However, because the area will not be exposed during the golf course grading, no further assessment or remediation is proposed.

Remedial action is proposed for the following areas and identified impacts. Remedial actions are proposed to be concurrent with or before golf course grading and construction operations.

Area of Interest	Excavation Location	Estimated Volume of Material to be Removed
Active (129/208) Tank Farm	Removal of petroleum-hydrocarbon-impacted berms	50 to 100 cubic yards
Meter Locations (Former Tank Farm, Gas Chiller, and Natural Gas Meter)	Removal of mercury-impacted surface soils	7 cubic yards
Warehouse Storage (Loading Dock)	Visually-stained surface soils	7 cubic yards
Well 129 Staining	Visually-stained surface soils	7 cubic yards
Mudpit Near 208-19 Well	Visually-stained surface soils	<50 cubic yards

No further remedial action is proposed in these areas, in as much as the impacts are generally, surface staining related to crude oil. Excavated materials will be transported and disposed of to an appropriate permitted offsite facility.

Based on the results of the site assessment program, no further assessment is proposed at the site, with the exception of soil sampling beneath the two yet-to-be-demolished concrete skim pits east of the active tank farm. Groundwater assessment is not proposed, based on the depth to groundwater, poor water quality, limited extent of petroleum hydrocarbon impacts above action levels and vertical separation to groundwater, and occurrence of unweathered Monterey Formation at depths below 45 feet bgs that has been shown to be a barrier to vertical migration.

Class II & class III soils sep. documents - to be addressed during golf course construction

Ex. 5 pg 6 411

Rick Hoffman and Associates
1149 Palomino Road, Santa Barbara, CA 93105
TELEPHONE (805) 569-1911 FAX (805) 569-0142

ENGINEERING GEOLOGISTS & HYDROGEOLOGISTS
RG #3740 EG #1135 HG#448

August 25, 1998

FILE:GR98H:Dudek

Dudek & Associates
621 Chapala Street
Santa Barbara, California 93101

Attn: Ms. Samantha Kim, Project Planner

Re: *SUMMARY LETTER: Proposed Lake Area*
Dos Pueblos Golf Links Project
west of Goleta, California

Dear Ms. Kim:

As a follow-up to our recent conversation regarding the Dos Pueblos Golf Links Project, I am providing herewith this brief summary letter outlining my preliminary findings regarding the placement of the proposed Lake located in the southeast portions of the golf course property.

As summarized within my ***Preliminary Geologic Investigation Report*** dated April 29, 1991, the subject property is underlain by several different soil and rock types. The proposed Lake area is located on an elevated terrace terrain with very gentle slope angles (less than approximately 5°). Surface water drainage in the area is generally to the east and southeast, although much or all of the rain that falls on the area is inferred to percolated directly through the soil profile and into the subsurface. Underlying the silty sand loam soils is an approximate 10 to 15 foot thick veneer of Older Alluvium. Review of the Test Boring Log prepared by ***Earth Systems Consultants of Northern California***, this material is composed of interbedded layers of silty sand, clayey sand, and sand. These materials are inferred to be moderate to highly permeable based on my experience in the area. Underlying the Older Alluvium is the parent bedrock in the area, the Monterey Formation. This formation is composed of siliceous to calcareous shale that is in some areas moderately fractured. This shale bedrock tends to have lower rates of permeability and therefore can, on occasion, act to form perched water conditions. As noted in the Boring Log however, the local earth materials were not water saturated at the time of the drilling of the test boring. This is noteworthy because during this past winter, the South Coast experienced exceptionally high amounts of El Niño rainfall with no apparent establishment of a "perched water" condition on the subject property.

8' approx 15' proposed depth as amended

The proposed Lake is located approximately 140 feet landward (north) of the top of bluff along the coastline. This distance is far in excess of the 55 foot "top of bluff" setback constraint I recommended within my 1991 report for "permanent structures". It is therefore my opinion that the reservoir should not be impacted by seacliff retreat within the design life (75 years) of the project.

EXHIBIT NO. 52
APPLICATION NO.
A-4-STB-93-154-C
applicants geology consultant - report

I recommend that the proposed Lake be completely lined with an impervious material to disallow the percolation of water into the subsurface. Percolating fluids could have the potential to migrate toward the sea cliffs considering the potential permeable nature of the Older Alluvium and the "head pressure" generated by standing water within the Lake. As outlined on your Grading Plan, an interior cut angle for the excavation of the Lake is proposed to be at an angle of 4:1 (horizontal to vertical). This gentle of a slope angle should be stable based on my experience with grading projects within areas underlain by Older Alluvium earth materials. I do, however, recommend that a representative from my office be present during the rough grading process to inspect the excavation for unforeseen geologic hazards.

I trust this summary letter provides you with the geologic information you requested. If you have any questions regrading this letter or other geologic matters, please feel free to contact me.

Sincerely,

Rick Hoffman

Mr. Rick Hoffman
Certified Engineering Geologist & Hydrogeologist
State of California
RG #3740 EG #1135 HG #448

enclosure

Ex. 52
18 2

EARTH SYSTEMS CONSULTANTS
NORTHERN CALIFORNIA

Boring No. 8

LOGGED BY: E. Chavez
DRILL RIG: Mobile B-53
AUGER TYPE: 8" Hollow Stem

DRAFT

PAGE 1 of 1
JOB NO.: NGS11010-01
DATE: 06/17/98

Dos Pueblos Golf Links
Highway 101,
Goleta, California

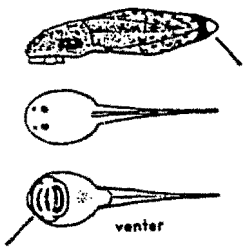
DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0			2" aggregate base over 3" poorly graded sand					
1	SM		SILTY SAND: loose, light brown, moist					
2								
3				2.0-3.5	Ring			6, 10, 18
4								
5			dense	5.0-6.5	Ring			19, 38, 50/4"
6								
7	SC		CLAYEY SAND: very dense, red brown, moist					
8								
9	CL		SANDY LEAN CLAY: very stiff, olive brown, moist					
10				10.0-11.5	SPT			11, 13, 15
11			SHALE: medium dense, orange/brown mottled, moist, moderately weathered (bedrock)					
12								
13								
14								
15			soft, less mottling, very moist, highly weathered	15.0-16.5	SPT			6, 7, 7
16								
17			END OF BORING @ 16.5'. No subsurface water encountered.					
18								
19								
20								
21								
22								
23								
24								
25								

DRAFT

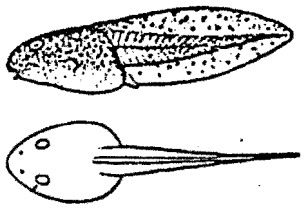
LEGEND: Ring Sample; Grab Sample; Shelby Tube Sample; SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

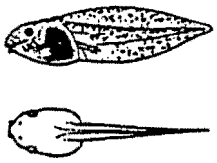
Ex. 52
pg 3



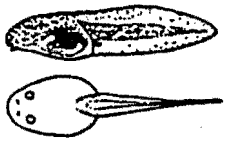
TAILED FROG



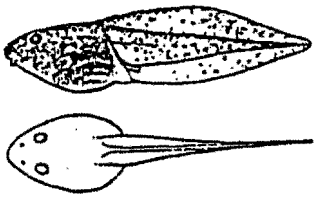
RED-LEGGED FROG



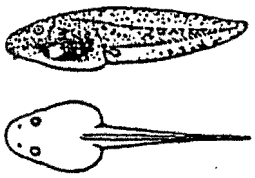
PACIFIC TREEFROG



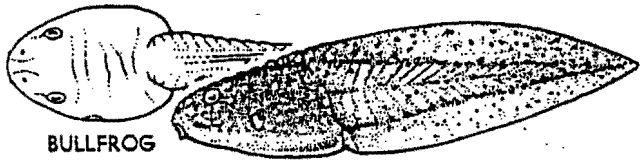
FOOTHILL YELLOW-LEGGED FROG



LEOPARD FROG



CALIFORNIA TREEFROG



BULLFROG

EXHIBIT NO. 53
APPLICATION NO.
A-4-STB-93-154-CC A 2
C. Red-Legged Frog Cannons

Key to tadpcles in riparian habitats in southern coastal California

1. Total length 12 mm (0.5") or less.....2
1a. Total length greater than 12 mm.....5
2. Ground color black.....3
2a. Ground color dark olive or tan.....4
3. Black body frosted with gold flecks.....Rana spp.*
3a. Body uniformly black.....Bufo spp.*
4. Dorsum brownish green or olive.....Hyla regilla
4a. Dorsum tan with dark marbling.....H. cadaverina
5. Total length 12-40 mm (0.5-1.5").....6
5a. Total length greater than 40 mm.....11
6. Dorsum dark (olive, brown or black).....7
6a. Dorsum pale (tan or khaki).....9
7. Eyes meet lateral outline of head.....H. regilla
7a. Eyes within outline of head.....8
8. Black; tail tan if >30 mm.....Bufo boreas
8a. Dark with pale belt if <20 mm; otherwise olive with tiny, distinct black dots.....Rana catesbeiana
8b. Olive green with smudgy dark spots on tail.....R. aurora
9. Tan above, white below, black band down tail.....B. microscaphus
9a. Tan with dark marbling above, iridescent pinkish white below, no tail stripe.....10
10. Lower labial teeth in 3 rows.....H. cadaverina
10a. Lower labial teeth in 6 rows.....R. boylii
11. Olive above, white or yellow below, not iridescent; back and tail with tiny black spots.....R. catesbeiana
11a. Greenish above, iridescent pinkish white below; smudgy dark spots on back and tail.....R. aurora

* species not readily identifiable

EX53/8 2
378

Ecological Applications, 11(2), 2001, pp. 464–479

DECLINES OF THE CALIFORNIA RED-LEGGED FROG: CLIMATE, UV-B, HABITAT, AND PESTICIDES HYPOTHESES

CARLOS DAVIDSON,[1,4] H. BRADLEY SHAFFER,[1] AND MARK R. JENNINGS[2,3]

[1]*Section of Evolution and Ecology and Center for Population Biology, University of California–Davis, California 95616 USA*
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Abstract. The federally threatened California red-legged frog (*Rana aurora draytonii*) has disappeared from much of its range for unknown reasons. We mapped 237 historic locations for the species and determined their current population status. Using a geographic information system (GIS), we determined latitude, elevation, and land use attributes for all sites and analyzed the spatial pattern of declines. We then compared the observed patterns of decline to those predicted by the climate change, UV-B radiation, pesticides, and habitat alteration hypotheses for amphibian decline. Declines were not consistent with the climate change hypothesis but showed a strong positive association with elevation, percentage upwind agricultural land use, and local urbanization. These results apply to patterns of decline across the entire range of *R. a. draytonii* in California, as well as within geographic subregions. The elevational gradient in declines is consistent with the UV-B hypothesis, although the UV-B hypothesis also predicts a north-to-south gradient in declines, which we did not observe. The association of declines with the amount of upwind agricultural land use strongly suggests that wind-borne agrochemicals may be an important factor in declines. This association was most pronounced within the Central Valley–Sierra region, where other studies have documented both transport and deposition of pesticides to the Sierra Nevada and the presence of pesticide residues in the bodies of congeneric (*Rana muscosa*) and more distantly related (*Hyla regilla*) frog species.

Key words: amphibian decline; California red-legged frog; climate change; declining amphibians; geographic information system (GIS); habitat alteration; pesticides; Rana aurora draytonii; *spatial analysis; upwind agricultural land use; UV-B; wind-borne agrochemicals.*

INTRODUCTION

Since they were first brought to the attention of the herpetological and conservation biology communities a decade ago (Barinaga 1990, Wake 1991), amphibian population declines have become a focal issue in both the scientific and popular media (for recent summaries, see Alford and Richards 1999, Corn 2000). Although controversy still persists over the existence, intensity, and optimal ways to document these declines (Shaffer et al. 1998, Alford and Richards 1999), most researchers now agree that many species and some entire communities (Fisher and Shaffer 1996) of amphibians are undergoing ecological collapse. To date, researchers have used observational studies, sometimes combined with historic records, to document declines (Fellers and Drost 1993, Ingram and MacDonald 1993, Drost and Fellers 1996, Fisher and Shaffer 1996, Lips 1998, 1999). At the same time, laboratory studies (Long et al. 1995, Berger et al. 1998), field experiments (Blaustein et al. 1994, Kiesecker and Blaustein 1995, Ovaska et al. 1997, Anzalone et al. 1998, Lawler et al. 1999), and field-based correlational studies (Hayes and Jennings 1988, Bradford 1989, Corn and Vertucci 1992) have been used to elucidate possible causes of declines.

In this study, we develop a two-pronged approach to testing hypotheses for declines. First, we use historic records and recent distributional data to document spatial patterns of decline (Bradford et al. 1993, Jennings and Hayes 1994*a*, Fisher and Shaffer 1996). We then generate predictions of the spatial pattern of declines for competing hypothesized causal mechanisms, and we statistically compare the observed and predicted patterns. The power of this strategy resides in its broad, species-wide approach that avoids reliance on one or a few study sites, as well as the ability to simultaneously evaluate multiple hypotheses for causes of declines. In addition, the analysis of spatial patterns is a powerful and relatively quick method to assess possible causes of decline. The approach takes advantage of the extensive distribution data that already exist in natural history museums and recent surveys (Reznick et al. 1994, Shaffer et al. 1998, Wake 1998), and combines this information with often readily accessible geographic information system (GIS) data on land use, elevation, and other factors.

Like many amphibians in western North America

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(Stebbins and Cohen 1995), the California red-legged frog (*Rana aurora draytonii*) was once abundant (Jennings and Hayes 1985). Today, it is a federally threatened species, which has disappeared from >70% of its historic range in California for unknown reasons (Hayes and Jennings 1986, 1988, Jennings 1988, 1995, 1996, Jennings and Hayes 1994*a*, *b*, Fisher and Shaffer 1996). A number of local factors, including commercial harvesting (Jennings and Hayes 1985) and habitat alteration due to urbanization, mining, grazing, water diversions, and dams have been suggested as possible causes of declines (Hayes and Jennings 1986, Jennings 1988, 1996, Jennings and Hayes 1994*a*, *b*). While past commercial harvesting and habitat alteration have certainly contributed to red-legged frog declines, the species has declined from many locations where these issues do not appear to be a factor. In addition, red-legged frogs continue to persist in many areas where habitats have been altered due to grazing, are near urban areas or in localities where commercial harvesting previously reduced populations. In addition to habitat alteration, a number of other factors have been proposed as possible causes of amphibian declines in general, some of which have been suggested specifically for *R. a. draytonii*. Primary among these are the following: (1) climate changes associated with global warming, (2) increases in ultraviolet radiation due to ozone depletion (hereafter referred to as the UV-B hypothesis), (3) airborne contaminants, (4) disease, and (5) introduced exotic fish and bullfrog (*Rana catesbeiana*) predators (for reviews see Corn [1994], Alford and Richards [1999], Corn [2000]). We analyzed the climate change, UV-B, pesticides, and habitat destruction hypotheses, because each has distinct implications for spatial patterns of declines.

The global warming and UV-B hypotheses predict specific patterns of decline associated with changing altitude and latitude. Global warming is expected to shift species ranges poleward and up slope to higher elevations (Peters 1991, Parmesan 1996). Climatic data for 1900–1994 indicate that almost all California state climate divisions show a 3°C/100 yr increase in mean daily temperature, and a 20%/100 yr decrease in mean precipitation (Karl et al. 1996). If global warming were a major contributor to red-legged frog declines, we would expect to see a greater proportion of declines (i.e., a greater proportion of historically present sites are now absent for the species) in southern latitudes, with reduced declines to the north. Similarly, greater declines would be expected at lower altitudes compared to montane sites. Global warming may also affect frogs through changes in precipitation (Pounds and Crump 1994, Laurance 1996, Pounds et al. 1999), in which case we might expect to see proportionately greater declines at drier sites.

Under the UV-B hypothesis, we would expect to find proportionately greater declines both at higher elevations and at more southerly latitudes, where there is greater UV-B exposure (Blumthaler 1993, Cabrera et al. 1995, Madronich et al. 1995, Herman et al. 1999). Based on stratospheric ozone, surface albedo, and cloud cover measurements taken from the Nimbus 7/TOMS satellite during 1979–1992, we estimate that the annual mean human erythema UV-B exposure increased from 0.46% to 0.7% per year along a north–south transect through our study area (calculations from data in S. Madronich, B. Mayer and C. Fisher, *unpublished manuscript*). Although there is a perception that declines have been concentrated at higher elevations (Wake 1991), and thus that UV-B is a potential causal agent, this pattern remains to be quantified for any individual species across an elevational gradient. In addition to increases in UV-B exposure with elevation, in California there is a north-to-south gradient of increasing UV-B exposure (Herman et al. 1999). Therefore, if UV-B were contributing to declines, we would expect to find both increased up-slope declines (opposite the climate change hypothesis) and a north-to-south gradient of declines similar to that predicted by the climate change hypothesis.

If wind-borne pesticides, herbicides, or other agrochemicals were contributing to declines, we would expect to see greater declines at sites that are closer to upwind agriculture, or that have greater amounts of upwind agricultural land use, compared to sites with different land use patterns. California agriculture used $>87 \times 10^6$ kg of pesticide active ingredients in 1995 alone (Department of Pesticide Regulation 1995). A number of studies have documented transport and deposition of pesticides from the Central Valley to the Sierra Nevada (Zabik and Seiber 1993, Aston and Seiber 1997, Datta 1997, McConnell et al. 1998), as well as reporting the presence of pesticide residues in the bodies of other species of congeneric (*Rana muscosa*) and more distantly related (*Hyla regilla*) Sierra frogs (Cory et al. 1970, Datta et al. 1998). However, to date, there has been no direct evidence linking pesticides to amphibian population declines.

Finally, if habitat destruction or modification associated with intensive human activities were contributing to declines, we would expect to see greater declines at sites that have greater amounts of surrounding urban or agricultural land use, compared to sites surrounded by wildlands. Such habitat effects could be due to direct habitat destruction, or they may be more indirect and linked to increased mortality due to automobiles (Fahrig et al. 1995), increases in human-associated predator activity (Crooks and Soulé 1999), or other effects.

Here, we examine the spatial relationship between the distribution of California red-legged frog sites with extant and extirpated populations to quantitatively test the predictions of the climate change, UV-B, pesticide, and habitat destruction hypotheses for red-legged frog declines. Although we cannot address all recently hypothesized reasons for declines (for example, intro-

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duced exotic predators or disease), we can use our historical approach to quantitatively test the predicted patterns of decline for four important postulated causes of decline.

Materials and Methods

We compiled California location records for *R. aurora draytonii* primarily from museum records and published literature (Lockington 1879, Grinnell and Storer 1924, Storer 1925, Ingles 1932*a*, *b*, 1933, 1936, Fitch 1949, Neitzel 1965, Cowan 1979, Wernette et al. 1982, Sweet and Leviton 1983). Jennings and Hayes provided additional sites from herpetologists' field notes and sightings used in their *Reptiles and Amphibians of Special Concern in California* (Jennings and Hayes 1994*a*). Locations within 0.8 km of each other were treated as a single site. Multiple location records for a single site were grouped together to determine the earliest observation date. In analyses using historic records, comparisons are often made between attributes of historic sites and the same attributes for recent survey sites. Thus, there are two possible sources of any observed changes: real changes in species distribution that have occurred between the historic and current sampling dates, and differences between the distribution of historic sites and the distribution of recent survey sites. To eliminate this second possible source of changes, we restricted our analysis entirely to historic sites. Sites for which at least one pre-1975 observation existed were deemed "historic locations," and these formed the main data set for statistical analysis. Locations with only observations from 1975 or later were treated as "nonhistoric" and only used in a single analysis. Although red-legged frogs have been in decline since the late 1800s due to commercial harvesting (Jennings and Hayes 1985) and habitat destruction (Jennings and Hayes 1994*a*), we chose 1975 as the cutoff year for historic locations, because recent, unexplained declines are believed to have begun sometime in the early 1970s. Because of our interest in analyzing the effects of climate change, UV-B, and pesticides, we decided to only include sites in our main data set where we felt that there was at least some remaining suitable habitat, hence where population status at the site could potentially indicate the impact of these factors. We therefore excluded 26 completely urbanized sites, mostly within the San Francisco, Los Angeles, or San Diego urban areas, where frogs are now absent. However, as part of a robustness analysis, we quantified the effect of deleting these sites on our overall conclusions.

We determined current population status (frogs present or absent) for all sites based primarily on published results of field surveys during 1988–1996 by Mark Jennings and Marc Hayes (Hayes and Jennings 1988, Jennings and Hayes 1994*a*, Jennings 1996) and surveys conducted by the authors in 1997 and 1998. Survey techniques included daytime visual encounter surveys, dipnetting for larvae, and nighttime visual surveys with flashlights. For a few additional sites, population status was assigned based on correspondence with local experts and recent literature. For roughly half of the sites, no direct field observations were available, but the regions were well enough known that we felt that it was appropriate to rely on the judgment of one of us (M. Jennings) to assign site population status, based on known habitat conditions at the site and the presence or absence of red-legged frogs in the immediate vicinity. This technique has been frequently used in large-scale analyses of this type (e.g., Moyle and Randall 1998; Marchetti et al., *in press*) and underlies the geographic approach to planning for biological diversity (GAP) analysis (Scott et al. 1993), which uses animal–habitat relationship models based in large part on expert opinion. We performed a number of statistical analyses to assess the effect of the "expert opinion" sites on our overall analysis of declines.

We mapped unique location records using U.S. Geologic Survey (USGS) 1:100 000 scale digital topographic quadrangles and ArcView version 3.0 GIS software, and employed Albers map projections to maximize the accuracy of area measurements (Environmental Systems Research Institute 1992). We derived elevation for all mapped locations using ARC/INFO versions 7.1.1 and 7.2.1 GIS software and USGS 1:250 000-scale digital elevation models for California. Mean annual precipitation spanning 1900–1960 for each site was estimated using a Teale Data Center digital precipitation map of California. Latitude for each location was determined directly from the coordinates for the mapped point. To assess the contribution of habitat destruction to declines, we measured the percentage of urban and agricultural land use in a 2 km radius circle surrounding each site.

To analyze upwind distance to agriculture and amount of upwind agricultural land use, we first estimated predominant wind direction for each site from streamline wind maps for California and wind direction data for 145 wind stations relevant to the range of the red-legged frog (Hayes et al. 1984). Wind direction observations are most often recorded using a compass divided into 16 sectors (e.g., north, north–northeast, northeast, etc.). Predominant wind direction is defined as the midpoint direction of the three contiguous sectors containing the greatest number of observations (Hayes et al. 1984). Based on the regional wind patterns in the San Francisco Bay Area, South Coast, Sacramento, and San Joaquin regions, the predominant summer wind pattern in all regions is also the predominant annual wind direction (Hayes et al. 1984). Therefore, we used the streamline wind map for summer (June–August) to estimate the predominant wind direction for frog sites.

For each red-legged frog site, we analyzed the relationship of the site to agricultural land use within a 33.75° (1.5 compass sectors) wide, 150 km long triangle facing upwind (Fig. 1). We choose 150 km as the length of the triangle, based on biologically relevant

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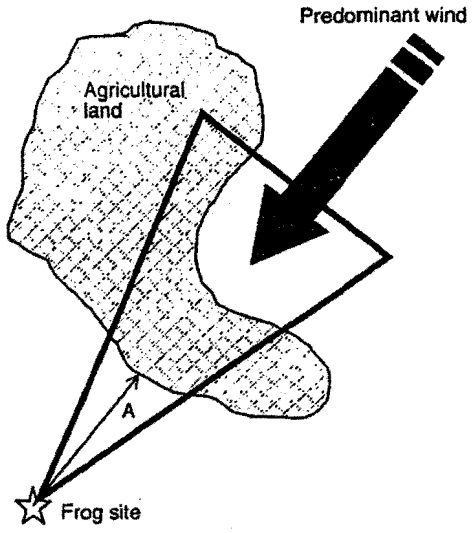

FIG. 1. Illustration of upwind agricultural land use measurements. For each frog site, we drew a 33.75°, 150 km long triangle oriented toward the direction of the prevailing winds. Within the triangle, we measured upwind distance to the nearest agricultural land use (A), and the percentage of the total area of the triangle consisting of agricultural land use.

estimates of possible transport distance for agricultural chemicals in the literature. Cory et al. (1970) and Datta et al. (1998) found agricultural chemicals in the bodies of tadpoles and fish in the Sierra Nevada, ~161 km and ~121 km, respectively, from their likely source in the Central Valley. We analyzed triangles of different widths, ranging 22.5–45° (one to two compass sectors) and found that the different widths did not significantly change the results presented here. Within the upwind triangle, we used USGS digital 1:250 000-scale land use/land cover maps to calculate the percentage of total area in agricultural land use and distance to the nearest agricultural land use from the red-legged frog site at the triangle's vertex (Fig. 1). For sites located within agricultural land use, distance to agriculture was assigned as 0 km. For sites with no agricultural land use within the triangle, distance to agriculture was assigned as 150 km. Measurements of agricultural land use in an upwind triangle might indicate habitat alteration, rather than wind-borne contaminant sources. If this were the case, the percentage of surrounding agricultural land use, but not the directionality with respect to wind (i.e., upwind agricultural land use), should predict frog declines. To test for this possibility, we measured agricultural land use in a triangle the same size as the upwind triangle, but oriented randomly at each site. We also analyzed agricultural land use in a square, 200 km on a side, centered on each site. The 200-km square provided a comparison measurement of agricultural land use at approximately the same distance from each locality as the upwind triangle, but taken in all directions. Although we focus on pesticides, a pattern of declines associated with upwind agricultural land use could be driven by any possibly wind-blown substance that negatively effects frogs (e.g., fertilizer; Marco and Blaustein 1999, Marco et al. 1999), although pesticides seem like the most likely candidate because of their toxicity and documented long-range transport.

For all statistical analyses, we conducted significance tests at the $\alpha = 0.05$ level. For univariate analyses, we used nonparametric Mann-Whitney rank tests to evaluate differences in the mean value of characteristics of sites with present populations and sites with absent populations. Variables with significantly different means were also analyzed as categorical variables and plotted to assess whether there was a consistent quantitative relationship between the proportion of sites with declines and changes in the variable. This is similar to the analysis of a dose–response relationship, and provides an additional and more explicit test of the quantitative relationship between declines and a variable than the simple difference in means between present and absent sites. We used χ^2 tests to evaluate the significance of the relationship between population status and each categorical variable. To assess the possibility of confounding effects due to high colinearity between variables, we calculated Pearson product-moment correlations for all pair-wise combinations of variables. Finally, we used multiple logistic regression to evaluate the multivariate relationship between declines and geographic, precipitation, elevational, and land use variables (Hosmer and Lemeshow 1989). We built a full model with all of the variables, and then removed variables with statistically insignificant coefficients, one by one, to derive a reduced model with only significant variables.

Observed patterns of declines, such as an elevation difference between present and absent sites, might be partially or wholly due to regional differences in declines. For example, if most historic high-elevation sites were in the Sierra Nevada, and for whatever reason there were great declines in the Sierra Nevada but not elsewhere, this would produce a pattern of declines concentrated at high elevations. To control for such potential regional variation, all sites were divided into three regions based on Jepson geographic regions of California (Hickman 1993). A "Central Valley–Sierra" region combined the Great Central Valley, Sierra Nevada, Cascade Range, and Northwestern Jepson regions, a "Southern California" region consisted of the Southwestern, Sonoran, and Mojave Desert regions, and a "Central Coast" region matched the Central Western region. "Region" was then treated as a categorical variable and entered in the reduced logistic regression model to check for interactions. If we found no region-by-factor interaction, we interpret this to mean that a factor has a relatively uniform effect across all regions. We also performed separate regression analyses for each region using the same procedures as

were used for the statewide model to estimate the effect of each causal factor in each of the three regions.

We performed a number of analyses to assess the reliability of our data and the robustness of our results to possible data errors. To validate both the expert-opinion and direct-observation status determinations, we compared the broad patterns on our map against three other datasets: the California Natural Diversity Data Base (NDDB 1999), a compilation of all U.S. Forest Service amphibian surveys conducted in the Sierra Nevada in the last nine years (Davidson 1999), and intensive surveys in Southern California conducted by Robert Fisher and Ted Case (Fisher and Case, *in press*).

We performed several tests to assess the effect of the expert opinion sites on our overall results. First, we added a new categorical variable for method of site status determination (direct observation or not) to the statewide logistic model, and assessed the significance of interactions between this new variable and the four model variables. Second, we divided the sites into two data sets, based on method of status determination, and analyzed each separately. We calculated mean site characteristics and reran our basic statewide logistic regression model on each set of data, and compared the results between these two datasets, as well as between the direct observation sites and the full data set containing both the direct-observation and expert-opinion sites. To assess the sensitivity of our analyses to errors in site population status in general, we conducted simulations in which population status (that is, frogs present or absent) was switched at 10% and 20% of all sites chosen at random. After switching population status, we reran the statewide logistic model and compared the coefficients and P values to the original model. We repeated each simulation 10 times. To assess the sensitivity of our results to population status errors at a few key sites, we performed traditional outlier analysis of regression residuals using studentized residuals and leverage, Cook's distance, and DFBETA indicators (Neter et al. 1996). All sites that were identified as potentially influential outliers based on these measures were tested in two ways. In one test, we dropped each site from the dataset one at a time, reran the basic statewide regression model, and compared the results to the original model. In a second test, we reran the regression model for each site, but instead of dropping the site, we switched its population status. Finally, we constructed a new categorical variable reflecting our certainty of a site's original historic record (site based on verified museum specimen or not) and used it to test the importance of historic record certainty on our final results.

When analyzing spatial data, there is always the possibility of unwanted spatial autocorrelation (in which nearby sites are not truly independent observations), which may influence statistical analyses (for a review see Legendre [1993]). If this were the case, then the situation would be akin to pseudoreplication, where degrees of freedom are inflated and estimated parameter variances are biased downwards, which may lead to erroneous conclusions concerning statistical significance. To assess this possibility in our data, we ran five simulations in which we randomly removed from our dataset all sites that were <5 km from any other site. Telemetry studies on California red-legged frogs have thus far observed maximum travel distances of <4 km (J. B. Bulger, *personal communication*), suggesting that sites ≥5 km apart are essentially demographically independent. We also ran simulations with a 10-km minimum separation distance. For each of these simulations, we reran the reduced logistic regression model and examined the coefficients and significance levels.

Results

We obtained 1520 location records for California red-legged frogs, representing ~659 unique locations. Slightly >80% of the records were from museum specimens, and the remainder were from the literature, field notes, and unpublished sightings. Of the unique locations, 339 had both population status information and sufficiently detailed location descriptions to permit mapping. Of the 339 mapped locations, 237 were based on at least one pre-1975 observation, and these formed the main dataset that we used in our analysis (Fig. 2; see the Appendix). An additional 102 locations were based only on nonhistoric (1975 and later) records. Of the 237 historic red-legged frog sites, 113 (48%) were assigned a current population status of "absent," and 124 (52%) were assigned "present" status. Field survey data from Jennings and Hayes (1994*a*), our own surveys, and personal communications with other observers accounted for status determination at 47% of the sites, and expert opinion accounted for the remaining 53%.

Univariate analysis of patterns of decline

Mean values for elevation, percentage upwind agricultural land use, and percentage surrounding urban land use were all significantly higher at sites with absent populations than sites with present populations (Table 1). Mean latitude was significantly to the south for absent sites compared to present sites, and mean percentage agricultural land use in a surrounding 200-km square was significantly higher at present sites than absent sites (although the absolute difference was <2%). Percentage surrounding agricultural land use in a circle with a 2-km radius shows a marginally significant increase for absent sites ($P = 0.023$), which we interpret cautiously given the large number of tests in this analysis. Means for average precipitation, distance to agriculture, upwind distance to agriculture, and percentage agricultural land use in a randomly oriented triangle all showed no significant difference between present and absent sites. There was a significant rela-

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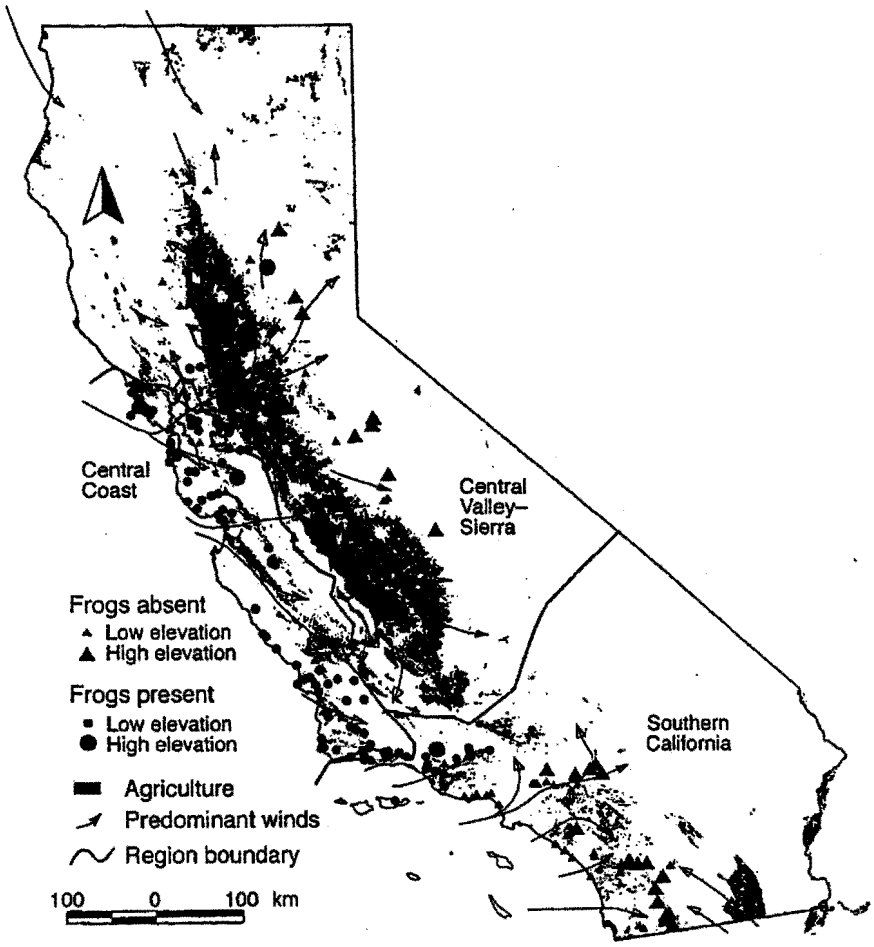

FIG. 2. Spatial patterns of decline of the California red-legged frog (*Rana aurora draytonii*). The map shows the location, current population status, and elevation of all historic frog sites (sites with at least one pre-1975 observation) used in our analysis. We also plot the distribution of agricultural lands based on U.S. Geological Survey land-use/land-cover maps, key predominant wind directions, and the boundaries of the three regions used in the regional analyses.

TABLE 1. Characteristics of present vs. absent sites for historic California red-legged frog sites.

Variable	Frogs present† (mean ± 1 SE)	Frogs absent‡ (mean ± 1 SE)	*P*§
Latitude (°)	36.31 ± 0.1	35.54 ± 0.2	<0.001
Precipitation (cm)	59.5 ± 2.2	59.6 ± 2.8	0.553
Elevation (m)	245 ± 20	514 ± 40	<0.001
Distance to AG (km)	3.8 ± 0.5	3.6 ± 0.4	0.349
Upwind distance AG	22.9 ± 3.4	24.1 ± 3.8	0.762
Percentage upwind AG	2.9 ± 0.7	18.9 ± 2.5	<0.001
Percentage urban 2-km circle	6.3 ± 1.2	11.2 ± 1.6	0.003
Percentage AG 2-km circle	6.6 ± 1.3	10.7 ± 1.8	0.023
Percentage AG 200-km square	16.3 ± 0.7	14.9 ± 0.9	0.001
Percentage AG random triangle	16.3 ± 1.8	12.2 ± 1.6	0.486

Note: AG = agricultural land use.
† n = 124.
‡ n = 113.
§ Mann-Whitney rank test of difference of means.

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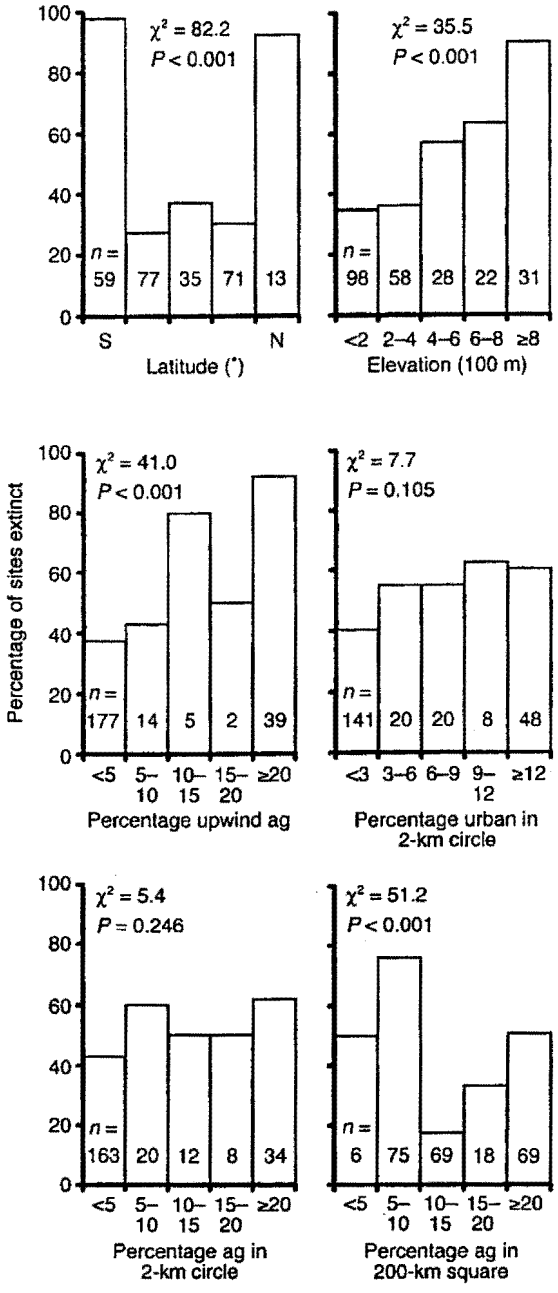

FIG. 3. Categorical variable graphs and associated χ^2 tests of the relationship between populations status and latitude, elevation, percentage upwind agricultural land use (ag), percentage urban land use in a surrounding 2-km radius circle, and percentage agricultural land use in 2- and 200-km radius circles for the statewide analysis of California red-legged frog sites. Inset numbers indicate n values.

tionship between population status and categorical variables for elevation and percentage upwind agricultural land use, as well as gradients in declines for both of these factors (Fig. 3). The results of the categorical analysis for upwind agriculture should be interpreted with some caution, because the low number of sites in the middle categories (a total of 21 sites in the 5–20% categories) makes it difficult to distinguish between a gradient and a threshold response. The relationship between population status and latitude as a categorical variable was also significant. However declines did not show a north-to-south gradient as predicted by the climate change hypothesis, but greater declines in both the north and south (Fig. 3). The relationship between population status and percentage surrounding urban land use as a categorical variable was not significant ($P = 0.10$), although there was a shallow, but fairly consistent increase in declines with increasing urbanization. As categorical variables, neither percentage agriculture within a 2-km radius nor in a 200-km square showed a clear relationship with population status (Fig. 3).

None of the correlation coefficients between variables were >0.5, with the exception of the 0.63 correlation between latitude and agricultural land use in the 200-km square, suggesting that the variables in our analyses are not highly colinear. The correlation between elevation and upwind agricultural land use was 0.21, confirming that these two critical variables are statistically independent for our sites.

Multivariate analysis of patterns of decline

The results of the statewide multivariate analysis were similar to the univariate analyses, except that the surrounding agricultural land use variables were not significant. Only latitude, elevation, percentage upwind agricultural land use, and percentage urban surrounding land use remained in the reduced model (Table 2). The likelihood ratio test for including all other variables as a group was not significant ($G = 10.15$, df = 5, $P = 0.07$). The likelihood ratio test for the overall (statewide) model was significant, the Hosmer-Lemeshow goodness of fit test (Hosmer and Lemeshow 1989) indicated the data fit the model, and the model correctly classified population status at 82.7% of the sites (Table 2).

In logistic regression, the odds ratio (exp[B]; Table 2) indicates the change in the odds of the dependent variable (here, presence/absence of frogs at a site) for a one unit increase in the independent variable, all other independent variables held constant. Thus, for elevation in our statewide model, for every 10 m increase in elevation (the unit used in the model), the odds of a site having a "present" population decline by a factor of 0.9789. Similarly, for a single percentage point increase in the amount of upwind agriculture, the odds of a site having a present population decline by a factor of 0.9141. Put another way, all else held constant, a site with one percent more upwind agriculture than another is ~0.91 times as likely to have a present population as a site without the additional agriculture. Thus, the odds ratio provides a quantitative indication

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TABLE 2. Logistic regression models.

Variable	B	1 SE	P	exp(B)
Statewide reduced model†				
Latitude	0.0599	0.0127	<0.0001	1.0618
Elevation	−0.0213	0.0068	0.0017	0.9789
Percentage upwind AG	−0.0898	0.0169	<0.0001	0.9141
Percentage urban 2-km circle	−0.0549	0.0123	<0.0001	0.9465
Statewide reduced model with regions‡				
Region			<0.0001	
Central Coast vs. Central Valley–Sierra	−2.4491	0.6798	0.0003	0.0862
Central Coast vs. Southern California	−3.5301	0.5379	<0.0001	0.0293
Elevation	−0.0200	0.0077	0.0096	0.9802
Percentage upwind AG	−0.0553	0.0159	0.0005	0.9462
Percentage urban 2-km circle	−0.0677	0.0145	<0.0001	0.9346
Central Valley-Sierra Nevada model§				
Percentage upwind AG	−0.0778	0.0215	0.0003	0.9251
Southern California model‖				
Latitude	5.5731	2.3417	0.0173	263.24
Elevation	−0.2144	0.0915	0.0191	0.8071
Distance to AG	2.8549	0.5125	0.0173	2.8549
Central Coast model¶				
Percentage AG 2-km circle	−0.0324	0.0176	0.0658	0.9681
Percentage urban 2-km circle	−0.0500	0.0152	0.0010	0.9512

Notes: The dependent variable for all models is frogs present (= 1) or absent. G is the likelihood ratio test for overall model significance. C is the Hosmer-Lemeshow goodness-of-fit test. Acc is the percentage of sites correctly classified as having present or absent populations. B is the regression coefficient; exp(B) is the odds ratio. Latitude is in tenths of degrees, and elevation is in tens of meters. AG = agricultural land use.

† For this model, $n = 237$; $G = 117$, df = 4, $P < 0.0001$; $C = 6.37$, df = 8, $P = 0.60$; Acc = 82.7.
‡ For this model, $n = 237$; $G = 157$, df = 5, $P < 0.0001$; $C = 8.4$, df = 8, $P = 0.4$; Acc = 83.1.
§ For this model, $n = 53$; $G = 26.0$, df = 1, $P < 0.0001$; $C = 5.8$, df = 8, $P = 0.67$; Acc = 83.0.
‖ For this model, $n = 84$; $G = 79.8$, df = 3, $P < 0.0001$; $C = 0.16$, df = 8, $P = 1.0$; Acc = 97.62.
¶ For this model, $n = 100$; $G = 13.7$, df = 2, $P = 0.001$; $C = 6.03$, df = 6, $P = 0.42$; Acc = 90.0.

of the magnitude of the effect of each independent variable.

To examine the potential for different patterns in different geographic regions, we reran the model with regions as a fifth variable. With regions in the model, the coefficients for all variables remained significant, with the exception of latitude ($P = 0.17$), indicating that the statewide effect of latitude is better explained by regional differences in declines. Therefore, we constructed a second model with latitude removed and regions included (Table 2). There were large regional differences in declines, with the odds of frogs present 12- and 34 times more likely in the Central Coast than in the Central Valley–Sierra and Southern California regions, respectively. In the new model, the coefficient of percentage upwind agriculture was reduced by 39%, indicating that approximately one-third of the upwind agricultural effect could be accounted for by regional differences in declines. A test for inclusion of the three possible pair-wise interaction terms between the model's three key variables (elevation × upwind agriculture, elevation × urbanization, and upwind agriculture × urbanization) indicated no significant interactions.

Tests for inclusion of all of the interaction terms between regions and elevation, urbanization, and upwind agriculture were insignificant ($G = 8.9$, df = 6, $P = 0.18$), indicating that the main model effects do not vary significantly across regions. Nonetheless, the separate regional regression models indicated that different variables predominate within each region (Table 2). For the Central Valley–Sierra region, upwind agriculture was the only significant variable, in spite of the fact that declines in the region are concentrated at higher elevations (Table 3). In the Central Coast region, only surrounding urban and agricultural land use in a 2-km radius circle were significant, indicating that local habitat alteration accounted for the relatively few declines in the region. This is consistent with the statewide model in that almost all sites in the Central Coast are low elevation (mean, 220 m) and have little upwind agriculture (mean, 2.3%). Thus, upwind agriculture and elevation are not significant variables in the separate Central Coast model, since they are essentially invariant over the range of values that are associated with California red-legged frog declines. In the Southern California region, latitude, elevation, and distance to agriculture were all significant. The large coefficient for latitude in the model (Table 2) was due to the concentration of absent sites in the south and present sites in the north (Fig. 2). However, this is largely an artifact of restricting our study to California and excluding sites further south in Baja California where the frog is still

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TABLE 3. Characteristics of present vs. absent sites for California red-legged frogs by region.

Sites	N	Latitude	Elevation (m)	Percentage upwind ag	Percentage local urban	Percentage local ag
Central Valley–Sierra						
All sites	53	38.0 ± 0.2	413 ± 57	38.2 ± 3.8	6.5 ± 2.0	12.7 ± 3.3
Present sites	14	37.6 ± 0.3	239 ± 62	8.4 ± 4.0	1.0 ± 0.6	10.0 ± 6.0
Absent sites	39	38.2 ± 0.2	476 ± 72	48.9 ± 3.6	8.4 ± 2.6	13.7 ± 4.0
Southern California						
All sites	84	33.9 ± 0.07	531 ± 43	2.9 ± 0.7	8.0 ± 1.6	6.8 ± 1.3
Present sites	21	34.5 ± 0.03	319 ± 54	1.7 ± 0.5	3.0 ± 0.8	3.5 ± 1.0
Absent sites	63	33.7 ± 0.07	601 ± 52	3.3 ± 0.9	9.7 ± 2.0	7.9 ± 1.6
Central Coast						
All sites	100	36.5 ± 0.13	220 ± 20	2.3 ± 0.6	10.4 ± 1.8	7.8 ± 1.6
Present sites	89	36.5 ± 0.13	229 ± 22	2.3 ± 0.7	8.0 ± 1.7	6.8 ± 1.5
Absent sites	11	36.6 ± 0.36	150 ± 46	2.2 ± 1.2	29.4 ± 6.3	16.2 ± 6.1

Note: Percentage local is percentage in a 2-km radius circle surrounding a site; ag = agricultural land use.

fairly common. Percentage upwind agriculture was not a significant variable, and, in Southern California, the amount of upwind agriculture was generally low (mean, 2.8%, Table 3).

Robustness analyses

Our map of California red-legged frog presence and absence (Fig. 2) was completely consistent with the three other comparison data sets, with all four showing a pattern of nearly complete declines in the Sierra Nevada, the Central Valley, and southern California, and relatively few declines in the Central Coast. Our results were also independent of the method of population status determination (expert opinion vs. direct observation). In the reduced statewide regression model, likelihood ratio tests for the inclusion of interaction terms between the four main coefficients (latitude, elevation, percentage upwind agriculture, percentage urban land use) and a categorical variable for expert opinion vs. direct observation were all nonsignificant. Similarly, when we ran the same four-variable model using the direct-observation and expert-opinion data sets separately, none of the differences in the coefficients were significant (all t test P values exceeded 0.05). Even when we deleted the expert-opinion data entirely, our results remain qualitatively similar to those for the full data set. Mean values for nine site characteristics for direct-observation sites (n = 111) and the full data set are very similar and, based on Mann–Whitney tests, none are significantly different (the sole exception is the distance to agriculture, where present sites are farther from agriculture in the direct-observation data set). The coefficients of the statewide regression model run on the direct-observation data are not identical with those from the full data set, but none of the differences in coefficient values are statistically significant (Table 4).

In general, our results are very robust to errors in site status (Table 5). For the 10%-error simulation, all coefficients remained significant in all 10 runs; and, even with the 20%-simulated-error runs, the majority of the coefficients remained significant (latitude was significant in 90% of runs, elevation in 50%, percentage upwind agriculture in 100%, and local urban in 60%). None of the potential outlier sites in the regression models strongly influenced our results. In all cases, when a single site was dropped, or population status was switched, the significance of the four variables in the regression model was unchanged, and regression coefficients changed very little. The greatest change to a regression coefficient was a 21% increase in the coefficient for upwind agriculture, if the present site in Northwest Kern County with high upwind agriculture was dropped or switched to absent. Most other changes were in the 5–10% range.

In the spatial autocorrelation analysis, the 5-km minimum intersite distance requirement produced five data sets with 56–59 sites dropped. When we ran the reduced

TABLE 4. Comparison of direct observation vs. pooled data set logistic regression models.

Variable	Pooled data set			Direct observation only			Difference t test
	B	1 SE	P	B	1 SE	P	
Latitude	0.0599	0.0127	<0.0001	0.0650	0.0188	0.0006	0.82
Elevation	−0.0213	0.0068	0.0017	−0.0121	0.0087	0.1637	0.41
Percentage upwind ag	−0.0898	0.0169	<0.0001	−0.0835	0.0210	0.0001	0.82
Percentage urban 2-km	−0.0549	0.0123	<0.0001	−0.0416	0.0169	0.0141	0.52

Notes: The pooled data set is with both direct observation and expert opinion data; P is the significance of the regression coefficient; the t test entries are P values for a t test of the differences between the regression coefficient for direct observation vs. the pooled data set; ag = agricultural land use.

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TABLE 5. Logistic regression with simulations of 10% and 20% site status errors.

Simulation parameter	Latitude	Elevation	Percentage upwind ag	Percentage local urban
B, statewide model	0.0599	−0.0213	−0.0898	−0.0549
Min. *B*, 10% errors	0.0334	−0.0104	−0.0494	−0.0229
Max. *B*, 10% errors	0.0481	−0.0187	−0.0630	−0.0454
No. runs $P < 0.05$	10	10	10	10
Min. *B*, 20% errors	0.0085	−0.0052	−0.0161	−0.0070
Max. *B*, 20% errors	0.0306	−0.0141	−0.0430	−0.0370
No. runs $P < 0.05$	9	5	10	6

Notes: In each simulation, population status was switched at 10% or 20% of all sites chosen at random. The 10% and 20% simulations were each run 10 times, and the statewide logistic model was recalculated on each run. *B* is the logistic regression coefficient. "No. runs $P < 0.05$" indicates the number of simulation runs for the 10% or 20% error simulation in which the coefficient for a variable was significant at the $\alpha = 0.05$ level.

four-variable logistic regression model on these data sets, all coefficients remained significant. The 10-km minimum intersite distance produced 5 data sets with 94–99 sites dropped. Again, all regression coefficients remained significant, with the exception that in one data set the *P* value for the elevation coefficient was 0.0522.

Although we restricted our primary analyses exclusively to historic sites (those with a date of first observation before 1975), the reduced model was largely unchanged by the inclusion of 102 nonhistoric sites in the dataset (all coefficients significant and magnitudes changed <25%). Inclusion of the 26 completely urbanized sites strengthened the effect of surrounding urban land use (the two univariate tests became significant), however it did not otherwise change our results. Finally, regression results were independent of whether or not location records for a site included a verified museum specimen. Likelihood ratio tests for the inclusion of interaction terms between the four model variables and the categorical variable for site with verified museum specimen were all nonsignificant.

DISCUSSION

The spatial analysis of patterns of decline is a powerful and rapid method for screening potential causal factors that have led to the widespread disappearance of the California red-legged frog. This strategy is not a replacement for experimental studies of specific mechanisms (e.g., Blaustein et al. 1994, Lawler et al. 1999), but rather a complement to such approaches. Compared to long-term, longitudinal studies of individual sites (Semlitsch et al. 1996, Trenham et al. 2000) large-scale spatial analyses may be better able to detect long-term patterns of change (Shaffer et al. 1998), although without the demographic detail provided by intensive longitudinal studies. In particular, the small sample sizes, high population variances, and corresponding low statistical power to detect changes that often plague longitudinal studies are not at issue with broad-scale spatial analyses. Thus, these two strategies can work together to provide a comprehensive view of population trends: intensive longitudinal studies provide a detailed view of one or a few sites, and broad spatial analyses can test those patterns at a landscape level.

In this study, we specifically address the predictions generated by four of the most widely cited causes of amphibian declines as they apply to California populations of *R. a. draytonii*. We discuss each in turn, as well as the disease and introduced-exotics hypotheses for this species.

Climate change

The spatial pattern of declines of the California red-legged frog is not consistent with that predicted by the climate change hypothesis. As predicted by the hypothesis, the mean latitude for extirpated sites is significantly to the south of the mean for extant sites, and latitude has a significant positive coefficient in the reduced regression model without regions (Table 1). However, the univariate categorical analysis (Fig. 3), the multivariate model with regions (Table 2), and inspection of the pattern of declines indicate that there is not a clear latitudinal gradient in declines. This conclusion is reinforced by the observation that, at the southern limits of *R. a. draytonii* in the San Pedro Martir Mountains in Baja California, Mexico, the frog is still fairly common in some areas (L. Grismer, *personal communication*). The lack of a clear north–south gradient in declines, combined with the *increase* (rather than predicted decrease) in declines with elevation, and the lack of an association of declines with mean precipitation all argue against climate change as a cause of red-legged frog declines.

UV-B

Declines of California red-legged frogs show a clear elevational gradient, with greater declines at higher elevations (Table 1, Fig. 3). To our knowledge, this is the first quantitative assessment, within a single species, of the widespread perception that amphibian declines are more pronounced at higher elevation (Wake 1991). Although populations at the very upper end of the species' elevational range might experience greater declines due to isolation, or possibly physiological stress, this would not produce the consistent elevation

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gradient that we observe. The elevational gradient in declines is consistent with the UV-B radiation hypothesis, and therefore UV-B may be a contributing factor to California red-legged frog declines. However, the UV-B hypothesis also predicts a north-to-south gradient in declines (with greater declines predicted as one moves south), and we find no such pattern (see *Discussion: Climate change*). How to weigh the conflicting results of an elevational gradient in declines with the lack of a latitudinal gradient in declines partly depends upon which pattern might predominate. The elevational range of *R. a. draytonii* is ~1 km, ranging from sea level to a maximum of 1700 m, but with most sites <1000 m in elevation (94% of the historic sites in this analysis). Based on theoretical models and empirical observations, UV-B is expected to increase by 5–6% for every 1-km increase in altitude for perfectly clear, cloudless skies with unpolluted air (S. Madronich, *personal communication*). However, tropospheric pollutants, aerosols, and fog may greatly reduce UV-B exposure at low elevations, producing elevational gradients that have been measured outside California ranging from 30% to 60% per kilometer (Blumthaler 1993, Cabrera et al. 1995). To assess latitudinal changes in UV-B along a north–south transect through our study area, we used data for 1979–1992 on monthly estimated erythema UV-B dose from the Nimbus 7/TOMS satellite (S. Madronich, B. Mayer and C. Fisher, *unpublished manuscript*). Our transect consisted of nine contiguous satellite "views" (single UV-B estimates made in a 1° latitude × 1.25° longitude window) running from Redding in the north to Mexicali in the south. Annual mean erythema UV-B exposure at the southern end of this transect is 28% higher than at the northern end, with an even gradient in between. However, the north-to-south difference in UV-B exposure changes dramatically by season, rising to 135% in December and falling to just 2% in July. Given the unknown magnitude of actual elevational differences in UV-B, and the huge seasonal differences in the latitudinal differences, it is unclear whether the predicted latitudinal or elevational gradients of declines should predominate.

The sensitivity of California red-legged frogs to UV-B is unknown. No effect of near-sea level, ambient UV-B has been found on hatching success (Blaustein et al. 1996, Ovaska et al. 1997) or larval survival (Ovaska et al. 1997) for the related northern red-legged frog (*R. a. aurora*), although enhanced UV-B (above ambient at sea level) had significant negative effects on *R. a. aurora* hatching success and larval survival (Ovaska et al. 1997). These results suggest that increased UV-B levels may be important for northern red-legged frogs, although results for *R. a. aurora* should not automatically be assumed to apply to *R. a. draytonii*. Biochemical, morphological, and behavioral studies (Hayes and Miyamoto 1984, Green 1985, Hayes and Kremples 1986) and mitochondrial DNA analysis in progress (H. B. Shaffer, *unpublished data*) all suggest the two taxa should be treated as distinct entities, and as such may differ in their response to UV-B. For example, Anzalone et al. (1998) found that ambient levels of UV-B negatively affected hatching success of *Hyla cadaverina*, but not its sister taxon *H. regilla*. Given the mixed results of our analysis (a strong elevational gradient, but no latitudinal gradient), the absence of UV-B research on *R. a. draytonii*, and the possibility of sublethal effects and synergisms with other factors such as disease (Kiesecker and Blaustein 1995) and contaminants (Long et al. 1995, Hatch and Burton 1998), we consider UV-B to be a potential factor that awaits further study.

Wind-borne agrochemicals

Our observed association of declines with the amount of upwind agricultural land use suggests that wind-borne agrochemicals may be an important factor in declines of the California red-legged frog. For all sites, the percentage of upwind land in agriculture for sites where *R. a. draytonii* has disappeared is 6.5 times greater than for sites where they persist (18.9% vs. 2.9%; Table 1), and there is a strong relationship between increasing levels of upwind agriculture and the percentage of extirpated sites (Fig. 3). The pesticides hypothesis predicts that declines would be associated with both the amount of upwind agriculture and the distance to the nearest agricultural land use. While declines were strongly associated with the amount of upwind agricultural land use, they were not associated with upwind distance to agriculture. This may be because our proximity metric only considers the nearest patch and, therefore, is sensitive to the position of even the smallest patches of agricultural land use. To assess the joint effect of upwind agricultural area and proximity, we constructed an upwind agricultural index by dividing all agricultural land within the upwind triangle into patches with maximum extent of 10 km², and then summing across all agricultural patches the area of the patch divided by the distance of the patch centroid to the frog site at the upwind triangle's vertex. This index thus combines both area and distance of agricultural lands into a single measure. The mean value of the index was 4.2 times greater at absent sites than at present sites (mean present, 3615; mean absent, 15 232; $P < 0.001$, Mann-Whitney test) and the index performed similarly to the percentage upwind agricultural land use variable in the statewide logistic regression model. The association of declines with upwind agriculture holds for California as a whole, is not significantly different between the regions (based on the interaction tests), and is particularly pronounced within the Sierra Nevada–Central Valley region where agricultural activity is greatest (Table 2).

This strong association of declines with the amount of upwind agricultural land use is not just a reflection of habitat alteration due to agriculture. We can test this in three ways. First, whereas the amount of upwind

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agricultural land use is associated with declines, the amount of agricultural land use in a random direction is not (Table 1). Second, when we analyzed the amount of agriculture in a 200-km square centered on each site, there was actually slightly greater agricultural land use surrounding sites with present populations than sites with absent populations. This pattern is exactly the opposite of what one would expect if the upwind agricultural land use measurements were simply reflecting surrounding agricultural land use. And third, neither the amount of surrounding agricultural land use in a 2-km circle nor in a 200-km square were associated with declines in either the categorical variable analyses, nor in the multivariate analysis.

In general, relatively little is known about the fate of pesticides (transport, dissolution, degradation, and deposition onto soil, plants, and water) and their impact on ecosystems in the topographically complex landscape of California. However, a number of studies for the Sierra Nevada have documented the transport and deposition of pesticides originating in the Central Valley. Zabik and Seiber (1993) found organophosphate pesticide residues (chlorpyrifos, diazanon, and parathion) in wintertime air and precipitation samples from sites at 533-m and 1920-m elevations in Sequoia National Park in the southern Sierra Nevada. They found that quantities of pesticides decreased with increased distance and elevation from agricultural lands in the Central Valley floor. In the same locations, Aston and Seiber (1997) found summertime transport and deposition of pesticide residues on pine tree needles. At other sites, McConnell et al. (1998) found organophosphate pesticides in winter and spring rain and snow both in the southern Sierra and further north in the Lake Tahoe region. In some cases, pesticide levels were, in their words, "uncomfortably close" to the published median lethal concentrations (LC50) for *Gammarus fasciatus,* an amphipod used by the U.S. Environmental Protection Agency for water quality assessment. Pesticides have been found in the bodies of frogs and fish in the Sierra Nevada, beginning with Cory et al.'s (1970) finding of DDT residues in the bodies of mountain yellow-legged frogs (*Rana muscosa*) throughout the Sierra. More recently, Datta et al. (1998) found PCBs and organophosphate pesticides in the bodies of trout and Pacific treefrog (*Hyla regilla*) tadpoles from the southern Sierra Nevada.

A potentially confounding aspect of the upwind agriculture pattern is the co-occurrence of low upwind agriculture levels with near-coast habitats. Although we know of no hypothesis for amphibian decline that would predict survival in areas downwind from the ocean and declines inland, it is clear from Fig. 2 that red-legged frogs mainly persist near the coast (although this is not the case in southern California). The amount of upwind agricultural land use is negatively correlated with the percentage of upwind area that is over ocean (Pearson correlation, −0.85), thus it is possible that our interpretation of a negative influence of upwind agriculture is, in reality, an unknown positive influence of upwind oceanic air. Alternatively, the inverse correlation may reflect the identical phenomenon: air downwind from agriculture may carry pollutants, while air coming off the ocean is relatively clean. Our work in progress on a number of other declining California amphibians indicates a similar association of declines with upwind agricultural land for inland species where upwind oceanic air is not a factor, leading us to conclude that upwind pesticides or other agrochemicals are the most likely interpretation for this pattern.

Habitat destruction

It is clear that habitat alteration and destruction due to urbanization have contributed to declines of the California red-legged frog. Even though we restricted our main analysis to sites that are not completely urbanized and where at least some suitable frog habitat still exists, we still find an association of declines with percentage surrounding urban land use. If we include sites that have been completely urbanized in the analysis, then the impact of urbanization is even stronger. Results for surrounding agricultural land are mixed, but they do not indicate a strong association between surrounding agricultural land use and declines. This may be because, unlike urban land use, the total extent of agricultural land use has been declining over the last 25 yr (California Economic Development Agency 1974, 1998), making it unlikely that the relatively recent declines analyzed here would be associated with habitat destruction due to agriculture. If so, then in areas such as Santa Barbara and San Luis Obispo Counties, where vineyards are expanding rapidly, we may see negative impacts on red-legged frogs in the future.

Other potential factors

We were not able to analyze the spatial implications of two other important hypotheses for declines: disease (Bradford 1991, Carey 1993, Berger et al. 1998, Lips 1998, Lips 1999) and introduced species (Moyle 1973, Hayes and Jennings 1988, Fisher and Shaffer 1996, Knapp 1996, Lawler et al. 1999, Knapp and Matthews 2000). Not enough is known about the biology of possible disease agents, such as the chytrid fungus (Berger et al. 1998), to generate spatial implications that could be tested. For exotic species, there is much more biological information available. Moyle (1973) surveyed 130 stream sites in the southern Central Valley, and found bullfrogs but no California red-legged frogs, and attributed the absence of red-legged frogs to bullfrog predation and competition. Hayes and Jennings (1988) also found a negative association between the presence of red-legged frogs and bullfrogs in the Central Valley, and Fisher and Shaffer (1996) found a negative association between the presence of introduced predators and several other native amphibian species in the Central Valley. In field experiments, Lawler et al. (1999)

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found that postmetamorphic bullfrogs preyed on California red-legged frog tadpoles, significantly reducing mean tadpole survival. Mosquitofish, (another introduced predator) were also found to reduce the mass of new metamorphs (Lawler et al. 1999), and this reduced size at emergence has cascading fitness consequences on adult survival in other amphibian species (Smith 1987, Semlitsch et al. 1988).

Ideally, one could test the exotic-predator hypothesis by comparing the pattern of declines with the distribution of specific exotic species, such as bullfrogs, mosquitofish, or other predatory fishes. In this case, however, there are several difficulties with such an approach. Because we do not have data on the status of exotic species at each site, we cannot perform a site-by-site analysis of the association of red-legged frogs and exotics. On a broader scale, bullfrogs and mosquitofish are distributed widely in the state, and they occur both in areas where red-legged frogs have persisted and where they have declined. Therefore, a broad-scale analysis based upon presence and absence of these predators could not explain the regional patterns of frog declines seen in Fig. 2. Furthermore, in the western United States, the introduction of exotic aquatic species has been facilitated by habitat alterations, making it difficult to disentangle the effect of exotics from that of habitat alteration (Hayes and Jennings 1988). For example, within the Central Valley, Fisher and Shaffer (1996) found an up-slope shift in the distribution of several native amphibians that they attributed to introduced predators, habitat modifications at low elevations, or both. Consistent with this observation, we found that, within the Central Valley proper, sites with red-legged frogs present were on average at higher elevations (mean, 177 m; $n = 11$) than sites with frogs absent (mean, 91 m; $n = 12$), which is the opposite of the statewide pattern. However, we also found within the Central Valley that low-elevation sites (<150 m) on average had 33.1% combined agricultural or urban land use in a 2-km radius circle surrounding the site, whereas sites >150 m had 19.8% agricultural-plus-urban surrounding land use, suggesting that low-elevation sites are generally more disturbed than higher elevation Central Valley localities. In addition, site-specific studies suggest that bullfrogs and red-legged frogs can apparently coexist in some places (Cook 1998; S. Christopher, *personal communication*), indicating that introduced predators do not always exclude red-legged frogs from a site.

In summary, pathogens and introduced exotics undoubtedly both play a role in the decline of many amphibians, including California red-legged frogs, and their importance probably varies on a site-by-site basis depending on overall habitat quality, refugia, and synergisms with other factors. Understanding the impact of exotic predators on red-legged frogs may require information on predator abundance coupled with habitat characteristics influencing potential refugia. Unfortunately, this type of information was not available for multiple sites across the range of *R. a. draytonii* to allow us to analyze the spatial patterns of decline and test the exotic-predator hypothesis.

Conclusions

What should we make of the spatial patterns presented here, and the spatial analysis of causal factors in general? First and foremost, multiple processes can generate similar patterns; therefore, the link between observed patterns and presumed underlying processes must be made with caution. Conversely, given potential confounding factors, the absence of pattern should not be taken as proof of the absence of a process. Even with these qualifications, there are at least two important roles for the spatial analysis presented here. First, while field and laboratory experiments on individual organisms are vital to understanding possible mechanisms causing declines, such experiments are necessarily restricted to individuals or small local populations. Population changes above the local-site level cannot be subjected to experiments, and can only be quantified and analyzed through large-scale observational studies. Spatial analysis is a valuable approach for examining large-scale observational data and associating declines with plausible mechanisms.

Second, the spatial results we have presented generate clear predictions that can be tested with field and laboratory studies. For example, field studies could test the relationship between pesticide levels at a site, the amount of upwind agricultural land use, and frog declines. We hope that our work will encourage further investigation of the role of agrochemicals in amphibian declines, given that to date there has been relatively little research on this hypothesis for declines. The Sierra Nevada has been the subject of some recent toxicological work (Zabik and Seiber 1993, Aston and Seiber 1997, Datta, 1997, Datta et al. 1998, McConnell et al. 1998), but similar studies have not been conducted in other areas of California or elsewhere where declines have occurred. For example, in both Central America and Australia, major amphibian declines (Ingram and MacDonald 1993, Richards et al. 1993, Pounds and Crump 1994, Lips 1998, 1999) have occurred in areas close to, and downwind for part of the year from, large agricultural zones. To date, very little contaminants research has been conducted in these areas. Even when pesticide residues are found in frogs (Cory et al. 1970, Datta et al. 1998), we do not understand the biological relevance of these residue levels. This is particularly true for sublethal effects, such as interference with hibernation or immune system suppression (Carey and Bryant 1995, Stebbins and Cohen 1995, Taylor et al. 1999).

Our analysis indicates that multiple factors may be responsible for declines of the California red-legged frog. At a number of sites, declines are associated with urbanization. We find a strong elevational gradient in

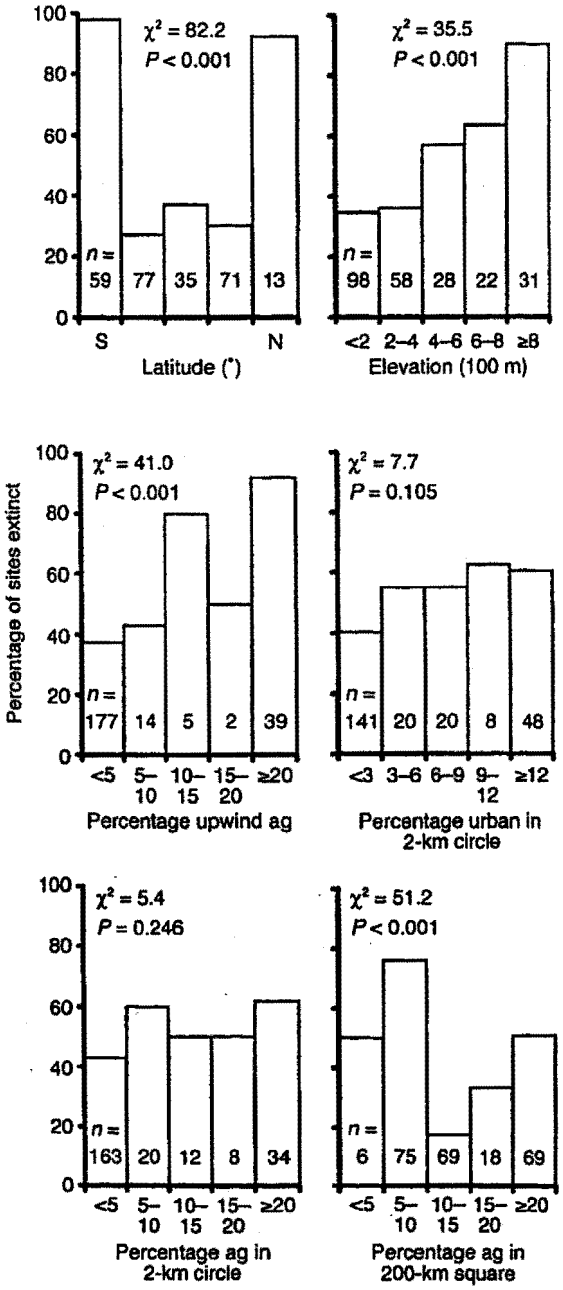

FIG. 3. Categorical variable graphs and associated χ^2 tests of the relationship between populations status and latitude, elevation, percentage upwind agricultural land use (ag), percentage urban land use in a surrounding 2-km radius circle, and percentage agricultural land use in 2- and 200-km radius circles for the statewide analysis of California red-legged frog sites. Inset numbers indicate n values.

tionship between population status and categorical variables for elevation and percentage upwind agricultural land use, as well as gradients in declines for both of these factors (Fig. 3). The results of the categorical analysis for upwind agriculture should be interpreted with some caution, because the low number of sites in the middle categories (a total of 21 sites in the 5–20% categories) makes it difficult to distinguish between a gradient and a threshold response. The relationship between population status and latitude as a categorical variable was also significant. However declines did not show a north-to-south gradient as predicted by the climate change hypothesis, but greater declines in both the north and south (Fig. 3). The relationship between population status and percentage surrounding urban land use as a categorical variable was not significant ($P = 0.10$), although there was a shallow, but fairly consistent increase in declines with increasing urbanization. As categorical variables, neither percentage agriculture within a 2-km radius nor in a 200-km square showed a clear relationship with population status (Fig. 3).

None of the correlation coefficients between variables were >0.5, with the exception of the 0.63 correlation between latitude and agricultural land use in the 200-km square, suggesting that the variables in our analyses are not highly colinear. The correlation between elevation and upwind agricultural land use was 0.21, confirming that these two critical variables are statistically independent for our sites.

Multivariate analysis of patterns of decline

The results of the statewide multivariate analysis were similar to the univariate analyses, except that the surrounding agricultural land use variables were not significant. Only latitude, elevation, percentage upwind agricultural land use, and percentage urban surrounding land use remained in the reduced model (Table 2). The likelihood ratio test for including all other variables as a group was not significant ($G = 10.15$, df = 5, $P = 0.07$). The likelihood ratio test for the overall (statewide) model was significant, the Hosmer-Lemeshow goodness of fit test (Hosmer and Lemeshow 1989) indicated the data fit the model, and the model correctly classified population status at 82.7% of the sites (Table 2).

In logistic regression, the odds ratio (exp[B]; Table 2) indicates the change in the odds of the dependent variable (here, presence/absence of frogs at a site) for a one unit increase in the independent variable, all other independent variables held constant. Thus, for elevation in our statewide model, for every 10 m increase in elevation (the unit used in the model), the odds of a site having a "present" population decline by a factor of 0.9789. Similarly, for a single percentage point increase in the amount of upwind agriculture, the odds of a site having a present population decline by a factor of 0.9141. Put another way, all else held constant, a site with one percent more upwind agriculture than another is ~0.91 times as likely to have a present population as a site without the additional agriculture. Thus, the odds ratio provides a quantitative indication

TABLE 2. Logistic regression models.

Variable	B	1 SE	P	exp(B)
Statewide reduced model†				
Latitude	0.0599	0.0127	<0.0001	1.0618
Elevation	−0.0213	0.0068	0.0017	0.9789
Percentage upwind AG	−0.0898	0.0169	<0.0001	0.9141
Percentage urban 2-km circle	−0.0549	0.0123	<0.0001	0.9465
Statewide reduced model with regions‡				
Region			<0.0001	
Central Coast vs. Central Valley–Sierra	−2.4491	0.6798	0.0003	0.0862
Central Coast vs. Southern California	−3.5301	0.5379	<0.0001	0.0293
Elevation	−0.0200	0.0077	0.0096	0.9802
Percentage upwind AG	−0.0553	0.0159	0.0005	0.9462
Percentage urban 2-km circle	−0.0677	0.0145	<0.0001	0.9346
Central Valley-Sierra Nevada model§				
Percentage upwind AG	−0.0778	0.0215	0.0003	0.9251
Southern California model‖				
Latitude	5.5731	2.3417	0.0173	263.24
Elevation	−0.2144	0.0915	0.0191	0.8071
Distance to AG	2.8549	0.5125	0.0173	2.8549
Central Coast model¶				
Percentage AG 2-km circle	−0.0324	0.0176	0.0658	0.9681
Percentage urban 2-km circle	−0.0500	0.0152	0.0010	0.9512

Notes: The dependent variable for all models is frogs present (=1) or absent. G is the likelihood ratio test for overall model significance. C is the Hosmer-Lemeshow goodness-of-fit test. Acc is the percentage of sites correctly classified as having present or absent populations. B is the regression coefficient; exp(B) is the odds ratio. Latitude is in tenths of degrees, and elevation is in tens of meters. AG = agricultural land use.

† For this model, $n = 237$; $G = 117$, df = 4, $P < 0.0001$; $C = 6.37$, df = 8, $P = 0.60$; Acc = 82.7.
‡ For this model, $n = 237$; $G = 157$, df = 5, $P < 0.0001$; $C = 8.4$, df = 8, $P = 0.4$; Acc = 83.1.
§ For this model, $n = 53$; $G = 26.0$, df = 1, $P < 0.0001$; $C = 5.8$, df = 8, $P = 0.67$; Acc = 83.0.
‖ For this model, $n = 84$; $G = 79.8$, df = 3, $P < 0.0001$; $C = 0.16$, df = 8, $P = 1.0$; Acc = 97.62.
¶ For this model, $n = 100$; $G = 13.7$, df = 2, $P = 0.001$; $C = 6.03$, df = 6, $P = 0.42$; Acc = 90.0.

of the magnitude of the effect of each independent variable.

To examine the potential for different patterns in different geographic regions, we reran the model with regions as a fifth variable. With regions in the model, the coefficients for all variables remained significant, with the exception of latitude ($P = 0.17$), indicating that the statewide effect of latitude is better explained by regional differences in declines. Therefore, we constructed a second model with latitude removed and regions included (Table 2). There were large regional differences in declines, with the odds of frogs present 12- and 34 times more likely in the Central Coast than in the Central Valley–Sierra and Southern California regions, respectively. In the new model, the coefficient of percentage upwind agriculture was reduced by 39%, indicating that approximately one-third of the upwind agricultural effect could be accounted for by regional differences in declines. A test for inclusion of the three possible pair-wise interaction terms between the model's three key variables (elevation × upwind agriculture, elevation × urbanization, and upwind agriculture × urbanization) indicated no significant interactions.

Tests for inclusion of all of the interaction terms between regions and elevation, urbanization, and upwind agriculture were insignificant ($G = 8.9$, df = 6, $P = 0.18$), indicating that the main model effects do not vary significantly across regions. Nonetheless, the separate regional regression models indicated that different variables predominate within each region (Table 2). For the Central Valley–Sierra region, upwind agriculture was the only significant variable, in spite of the fact that declines in the region are concentrated at higher elevations (Table 3). In the Central Coast region, only surrounding urban and agricultural land use in a 2-km radius circle were significant, indicating that local habitat alteration accounted for the relatively few declines in the region. This is consistent with the statewide model in that almost all sites in the Central Coast are low elevation (mean, 220 m) and have little upwind agriculture (mean, 2.3%). Thus, upwind agriculture and elevation are not significant variables in the separate Central Coast model, since they are essentially invariant over the range of values that are associated with California red-legged frog declines. In the Southern California region, latitude, elevation, and distance to agriculture were all significant. The large coefficient for latitude in the model (Table 2) was due to the concentration of absent sites in the south and present sites in the north (Fig. 2). However, this is largely an artifact of restricting our study to California and excluding sites further south in Baja California where the frog is still

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TABLE 3. Characteristics of present vs. absent sites for California red-legged frogs by region.

Sites	N	Latitude	Elevation (m)	Percentage upwind ag	Percentage local urban	Percentage local ag
Central Valley–Sierra						
All sites	53	38.0 ± 0.2	413 ± 57	38.2 ± 3.8	6.5 ± 2.0	12.7 ± 3.3
Present sites	14	37.6 ± 0.3	239 ± 62	8.4 ± 4.0	1.0 ± 0.6	10.0 ± 6.0
Absent sites	39	38.2 ± 0.2	476 ± 72	48.9 ± 3.6	8.4 ± 2.6	13.7 ± 4.0
Southern California						
All sites	84	33.9 ± 0.07	531 ± 43	2.9 ± 0.7	8.0 ± 1.6	6.8 ± 1.3
Present sites	21	34.5 ± 0.03	319 ± 54	1.7 ± 0.5	3.0 ± 0.8	3.5 ± 1.0
Absent sites	63	33.7 ± 0.07	601 ± 52	3.3 ± 0.9	9.7 ± 2.0	7.9 ± 1.6
Central Coast						
All sites	100	36.5 ± 0.13	220 ± 20	2.3 ± 0.6	10.4 ± 1.8	7.8 ± 1.6
Present sites	89	36.5 ± 0.13	229 ± 22	2.3 ± 0.7	8.0 ± 1.7	6.8 ± 1.5
Absent sites	11	36.6 ± 0.36	150 ± 46	2.2 ± 1.2	29.4 ± 6.3	16.2 ± 6.1

Note: Percentage local is percentage in a 2-km radius circle surrounding a site; ag = agricultural land use.

fairly common. Percentage upwind agriculture was not a significant variable, and, in Southern California, the amount of upwind agriculture was generally low (mean, 2.8%, Table 3).

Robustness analyses

Our map of California red-legged frog presence and absence (Fig. 2) was completely consistent with the three other comparison data sets, with all four showing a pattern of nearly complete declines in the Sierra Nevada, the Central Valley, and southern California, and relatively few declines in the Central Coast. Our results were also independent of the method of population status determination (expert opinion vs. direct observation). In the reduced statewide regression model, likelihood ratio tests for the inclusion of interaction terms between the four main coefficients (latitude, elevation, percentage upwind agriculture, percentage urban land use) and a categorical variable for expert opinion vs. direct observation were all nonsignificant. Similarly, when we ran the same four-variable model using the direct-observation and expert-opinion data sets separately, none of the differences in the coefficients were significant (all t test P values exceeded 0.05). Even when we deleted the expert-opinion data entirely, our results remain qualitatively similar to those for the full data set. Mean values for nine site characteristics for direct-observation sites (n = 111) and the full data set are very similar and, based on Mann–Whitney tests, none are significantly different (the sole exception is the distance to agriculture, where present sites are farther from agriculture in the direct-observation data set). The coefficients of the statewide regression model run on the direct-observation data are not identical with those from the full data set, but none of the differences in coefficient values are statistically significant (Table 4).

In general, our results are very robust to errors in site status (Table 5). For the 10%-error simulation, all coefficients remained significant in all 10 runs; and, even with the 20%-simulated-error runs, the majority of the coefficients remained significant (latitude was significant in 90% of runs, elevation in 50%, percentage upwind agriculture in 100%, and local urban in 60%). None of the potential outlier sites in the regression models strongly influenced our results. In all cases, when a single site was dropped, or population status was switched, the significance of the four variables in the regression model was unchanged, and regression coefficients changed very little. The greatest change to a regression coefficient was a 21% increase in the coefficient for upwind agriculture, if the present site in Northwest Kern County with high upwind agriculture was dropped or switched to absent. Most other changes were in the 5–10% range.

In the spatial autocorrelation analysis, the 5-km minimum intersite distance requirement produced five data sets with 56–59 sites dropped. When we ran the reduced

TABLE 4. Comparison of direct observation vs. pooled data set logistic regression models.

Variable	Pooled data set			Direct observation only			Difference t test
	B	1 SE	P	B	1 SE	P	
Latitude	0.0599	0.0127	<0.0001	0.0650	0.0188	0.0006	0.82
Elevation	−0.0213	0.0068	0.0017	−0.0121	0.0087	0.1637	0.41
Percentage upwind ag	−0.0898	0.0169	<0.0001	−0.0835	0.0210	0.0001	0.82
Percentage urban 2-km	−0.0549	0.0123	<0.0001	−0.0416	0.0169	0.0141	0.52

Notes: The pooled data set is with both direct observation and expert opinion data; P is the significance of the regression coefficient; the t test entries are P values for a t test of the differences between the regression coefficient for direct observation vs. the pooled data set; ag = agricultural land use.

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TABLE 5. Logistic regression with simulations of 10% and 20% site status errors.

Simulation parameter	Latitude	Elevation	Percentage upwind ag	Percentage local urban
B, statewide model	0.0599	−0.0213	−0.0898	−0.0549
Min. *B*, 10% errors	0.0334	−0.0104	−0.0494	−0.0229
Max. *B*, 10% errors	0.0481	−0.0187	−0.0630	−0.0454
No. runs $P < 0.05$	10	10	10	10
Min. *B*, 20% errors	0.0085	−0.0052	−0.0161	−0.0070
Max. *B*, 20% errors	0.0306	−0.0141	−0.0430	−0.0370
No. runs $P < 0.05$	9	5	10	6

Notes: In each simulation, population status was switched at 10% or 20% of all sites chosen at random. The 10% and 20% simulations were each run 10 times, and the statewide logistic model was recalculated on each run. *B* is the logistic regression coefficient. "No. runs $P < 0.05$" indicates the number of simulation runs for the 10% or 20% error simulation in which the coefficient for a variable was significant at the $\alpha = 0.05$ level.

four-variable logistic regression model on these data sets, all coefficients remained significant. The 10-km minimum intersite distance produced 5 data sets with 94–99 sites dropped. Again, all regression coefficients remained significant, with the exception that in one data set the *P* value for the elevation coefficient was 0.0522.

Although we restricted our primary analyses exclusively to historic sites (those with a date of first observation before 1975), the reduced model was largely unchanged by the inclusion of 102 nonhistoric sites in the dataset (all coefficients significant and magnitudes changed <25%). Inclusion of the 26 completely urbanized sites strengthened the effect of surrounding urban land use (the two univariate tests became significant), however it did not otherwise change our results. Finally, regression results were independent of whether or not location records for a site included a verified museum specimen. Likelihood ratio tests for the inclusion of interaction terms between the four model variables and the categorical variable for site with verified museum specimen were all nonsignificant.

DISCUSSION

The spatial analysis of patterns of decline is a powerful and rapid method for screening potential causal factors that have led to the widespread disappearance of the California red-legged frog. This strategy is not a replacement for experimental studies of specific mechanisms (e.g., Blaustein et al. 1994, Lawler et al. 1999), but rather a complement to such approaches. Compared to long-term, longitudinal studies of individual sites (Semlitsch et al. 1996, Trenham et al. 2000) large-scale spatial analyses may be better able to detect long-term patterns of change (Shaffer et al. 1998), although without the demographic detail provided by intensive longitudinal studies. In particular, the small sample sizes, high population variances, and corresponding low statistical power to detect changes that often plague longitudinal studies are not at issue with broad-scale spatial analyses. Thus, these two strategies can work together to provide a comprehensive view of population trends: intensive longitudinal studies provide a detailed view of one or a few sites, and broad spatial analyses can test those patterns at a landscape level.

In this study, we specifically address the predictions generated by four of the most widely cited causes of amphibian declines as they apply to California populations of *R. a. draytonii*. We discuss each in turn, as well as the disease and introduced-exotics hypotheses for this species.

Climate change

The spatial pattern of declines of the California red-legged frog is not consistent with that predicted by the climate change hypothesis. As predicted by the hypothesis, the mean latitude for extirpated sites is significantly to the south of the mean for extant sites, and latitude has a significant positive coefficient in the reduced regression model without regions (Table 1). However, the univariate categorical analysis (Fig. 3), the multivariate model with regions (Table 2), and inspection of the pattern of declines indicate that there is not a clear latitudinal gradient in declines. This conclusion is reinforced by the observation that, at the southern limits of *R. a. draytonii* in the San Pedro Martir Mountains in Baja California, Mexico, the frog is still fairly common in some areas (L. Grismer, *personal communication*). The lack of a clear north–south gradient in declines, combined with the *increase* (rather than predicted decrease) in declines with elevation, and the lack of an association of declines with mean precipitation all argue against climate change as a cause of red-legged frog declines.

UV-B

Declines of California red-legged frogs show a clear elevational gradient, with greater declines at higher elevations (Table 1, Fig. 3). To our knowledge, this is the first quantitative assessment, within a single species, of the widespread perception that amphibian declines are more pronounced at higher elevation (Wake 1991). Although populations at the very upper end of the species' elevational range might experience greater declines due to isolation, or possibly physiological stress, this would not produce the consistent elevation

gradient that we observe. The elevational gradient in declines is consistent with the UV-B radiation hypothesis, and therefore UV-B may be a contributing factor to California red-legged frog declines. However, the UV-B hypothesis also predicts a north-to-south gradient in declines (with greater declines predicted as one moves south), and we find no such pattern (see *Discussion: Climate change*). How to weigh the conflicting results of an elevational gradient in declines with the lack of a latitudinal gradient in declines partly depends upon which pattern might predominate. The elevational range of *R. a. draytonii* is ~1 km, ranging from sea level to a maximum of 1700 m, but with most sites <1000 m in elevation (94% of the historic sites in this analysis). Based on theoretical models and empirical observations, UV-B is expected to increase by 5–6% for every 1-km increase in altitude for perfectly clear, cloudless skies with unpolluted air (S. Madronich, *personal communication*). However, tropospheric pollutants, aerosols, and fog may greatly reduce UV-B exposure at low elevations, producing elevational gradients that have been measured outside California ranging from 30% to 60% per kilometer (Blumthaler 1993, Cabrera et al. 1995). To assess latitudinal changes in UV-B along a north–south transect through our study area, we used data for 1979–1992 on monthly estimated erythema UV-B dose from the Nimbus 7/TOMS satellite (S. Madronich, B. Mayer and C. Fisher, *unpublished manuscript*). Our transect consisted of nine contiguous satellite "views" (single UV-B estimates made in a 1° latitude × 1.25° longitude window) running from Redding in the north to Mexicali in the south. Annual mean erythema UV-B exposure at the southern end of this transect is 28% higher than at the northern end, with an even gradient in between. However, the north-to-south difference in UV-B exposure changes dramatically by season, rising to 135% in December and falling to just 2% in July. Given the unknown magnitude of actual elevational differences in UV-B, and the huge seasonal differences in the latitudinal differences, it is unclear whether the predicted latitudinal or elevational gradients of declines should predominate.

The sensitivity of California red-legged frogs to UV-B is unknown. No effect of near-sea level, ambient UV-B has been found on hatching success (Blaustein et al. 1996, Ovaska et al. 1997) or larval survival (Ovaska et al. 1997) for the related northern red-legged frog (*R. a. aurora*), although enhanced UV-B (above ambient at sea level) had significant negative effects on *R. a. aurora* hatching success and larval survival (Ovaska et al. 1997). These results suggest that increased UV-B levels may be important for northern red-legged frogs, although results for *R. a. aurora* should not automatically be assumed to apply to *R. a. draytonii*. Biochemical, morphological, and behavioral studies (Hayes and Miyamoto 1984, Green 1985, Hayes and Kremples 1986) and mitochondrial DNA analysis in progress (H. B. Shaffer, *unpublished data*) all suggest the two taxa should be treated as distinct entities, and as such may differ in their response to UV-B. For example, Anzalone et al. (1998) found that ambient levels of UV-B negatively affected hatching success of *Hyla cadaverina*, but not its sister taxon *H. regilla*. Given the mixed results of our analysis (a strong elevational gradient, but no latitudinal gradient), the absence of UV-B research on *R. a. draytonii*, and the possibility of sublethal effects and synergisms with other factors such as disease (Kiesecker and Blaustein 1995) and contaminants (Long et al. 1995, Hatch and Burton 1998), we consider UV-B to be a potential factor that awaits further study.

Wind-borne agrochemicals

Our observed association of declines with the amount of upwind agricultural land use suggests that wind-borne agrochemicals may be an important factor in declines of the California red-legged frog. For all sites, the percentage of upwind land in agriculture for sites where *R. a. draytonii* has disappeared is 6.5 times greater than for sites where they persist (18.9% vs. 2.9%; Table 1), and there is a strong relationship between increasing levels of upwind agriculture and the percentage of extirpated sites (Fig. 3). The pesticides hypothesis predicts that declines would be associated with both the amount of upwind agriculture and the distance to the nearest agricultural land use. While declines were strongly associated with the amount of upwind agricultural land use, they were not associated with upwind distance to agriculture. This may be because our proximity metric only considers the nearest patch and, therefore, is sensitive to the position of even the smallest patches of agricultural land use. To assess the joint effect of upwind agricultural area and proximity, we constructed an upwind agricultural index by dividing all agricultural land within the upwind triangle into patches with maximum extent of 10 km², and then summing across all agricultural patches the area of the patch divided by the distance of the patch centroid to the frog site at the upwind triangle's vertex. This index thus combines both area and distance of agricultural lands into a single measure. The mean value of the index was 4.2 times greater at absent sites than at present sites (mean present, 3615; mean absent, 15 232; $P < 0.001$, Mann-Whitney test) and the index performed similarly to the percentage upwind agricultural land use variable in the statewide logistic regression model. The association of declines with upwind agriculture holds for California as a whole, is not significantly different between the regions (based on the interaction tests), and is particularly pronounced within the Sierra Nevada–Central Valley region where agricultural activity is greatest (Table 2).

This strong association of declines with the amount of upwind agricultural land use is not just a reflection of habitat alteration due to agriculture. We can test this in three ways. First, whereas the amount of upwind

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agricultural land use is associated with declines, the amount of agricultural land use in a random direction is not (Table 1). Second, when we analyzed the amount of agriculture in a 200-km square centered on each site, there was actually slightly greater agricultural land use surrounding sites with present populations than sites with absent populations. This pattern is exactly the opposite of what one would expect if the upwind agricultural land use measurements were simply reflecting surrounding agricultural land use. And third, neither the amount of surrounding agricultural land use in a 2-km circle nor in a 200-km square were associated with declines in either the categorical variable analyses, nor in the multivariate analysis.

In general, relatively little is known about the fate of pesticides (transport, dissolution, degradation, and deposition onto soil, plants, and water) and their impact on ecosystems in the topographically complex landscape of California. However, a number of studies for the Sierra Nevada have documented the transport and deposition of pesticides originating in the Central Valley. Zabik and Seiber (1993) found organophosphate pesticide residues (chlorpyrifos, diazanon, and parathion) in wintertime air and precipitation samples from sites at 533-m and 1920-m elevations in Sequoia National Park in the southern Sierra Nevada. They found that quantities of pesticides decreased with increased distance and elevation from agricultural lands in the Central Valley floor. In the same locations, Aston and Seiber (1997) found summertime transport and deposition of pesticide residues on pine tree needles. At other sites, McConnell et al. (1998) found organophosphate pesticides in winter and spring rain and snow both in the southern Sierra and further north in the Lake Tahoe region. In some cases, pesticide levels were, in their words, "uncomfortably close" to the published median lethal concentrations (LC50) for *Gammarus fasciatus,* an amphipod used by the U.S. Environmental Protection Agency for water quality assessment. Pesticides have been found in the bodies of frogs and fish in the Sierra Nevada, beginning with Cory et al.'s (1970) finding of DDT residues in the bodies of mountain yellow-legged frogs (*Rana muscosa*) throughout the Sierra. More recently, Datta et al. (1998) found PCBs and organophosphate pesticides in the bodies of trout and Pacific treefrog (*Hyla regilla*) tadpoles from the southern Sierra Nevada.

A potentially confounding aspect of the upwind agriculture pattern is the co-occurrence of low upwind agriculture levels with near-coast habitats. Although we know of no hypothesis for amphibian decline that would predict survival in areas downwind from the ocean and declines inland, it is clear from Fig. 2 that red-legged frogs mainly persist near the coast (although this is not the case in southern California). The amount of upwind agricultural land use is negatively correlated with the percentage of upwind area that is over ocean (Pearson correlation, −0.85), thus it is possible that our interpretation of a negative influence of upwind agriculture is, in reality, an unknown positive influence of upwind oceanic air. Alternatively, the inverse correlation may reflect the identical phenomenon: air downwind from agriculture may carry pollutants, while air coming off the ocean is relatively clean. Our work in progress on a number of other declining California amphibians indicates a similar association of declines with upwind agricultural land for inland species where upwind oceanic air is not a factor, leading us to conclude that upwind pesticides or other agrochemicals are the most likely interpretation for this pattern.

Habitat destruction

It is clear that habitat alteration and destruction due to urbanization have contributed to declines of the California red-legged frog. Even though we restricted our main analysis to sites that are not completely urbanized and where at least some suitable frog habitat still exists, we still find an association of declines with percentage surrounding urban land use. If we include sites that have been completely urbanized in the analysis, then the impact of urbanization is even stronger. Results for surrounding agricultural land are mixed, but they do not indicate a strong association between surrounding agricultural land use and declines. This may be because, unlike urban land use, the total extent of agricultural land use has been declining over the last 25 yr (California Economic Development Agency 1974, 1998), making it unlikely that the relatively recent declines analyzed here would be associated with habitat destruction due to agriculture. If so, then in areas such as Santa Barbara and San Luis Obispo Counties, where vineyards are expanding rapidly, we may see negative impacts on red-legged frogs in the future.

Other potential factors

We were not able to analyze the spatial implications of two other important hypotheses for declines: disease (Bradford 1991, Carey 1993, Berger et al. 1998, Lips 1998, Lips 1999) and introduced species (Moyle 1973, Hayes and Jennings 1988, Fisher and Shaffer 1996, Knapp 1996, Lawler et al. 1999, Knapp and Matthews 2000). Not enough is known about the biology of possible disease agents, such as the chytrid fungus (Berger et al. 1998), to generate spatial implications that could be tested. For exotic species, there is much more biological information available. Moyle (1973) surveyed 130 stream sites in the southern Central Valley, and found bullfrogs but no California red-legged frogs, and attributed the absence of red-legged frogs to bullfrog predation and competition. Hayes and Jennings (1988) also found a negative association between the presence of red-legged frogs and bullfrogs in the Central Valley, and Fisher and Shaffer (1996) found a negative association between the presence of introduced predators and several other native amphibian species in the Central Valley. In field experiments, Lawler et al. (1999)

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found that postmetamorphic bullfrogs preyed on California red-legged frog tadpoles, significantly reducing mean tadpole survival. Mosquitofish, (another introduced predator) were also found to reduce the mass of new metamorphs (Lawler et al. 1999), and this reduced size at emergence has cascading fitness consequences on adult survival in other amphibian species (Smith 1987, Semlitsch et al. 1988).

Ideally, one could test the exotic-predator hypothesis by comparing the pattern of declines with the distribution of specific exotic species, such as bullfrogs, mosquitofish, or other predatory fishes. In this case, however, there are several difficulties with such an approach. Because we do not have data on the status of exotic species at each site, we cannot perform a site-by-site analysis of the association of red-legged frogs and exotics. On a broader scale, bullfrogs and mosquitofish are distributed widely in the state, and they occur both in areas where red-legged frogs have persisted and where they have declined. Therefore, a broad-scale analysis based upon presence and absence of these predators could not explain the regional patterns of frog declines seen in Fig. 2. Furthermore, in the western United States, the introduction of exotic aquatic species has been facilitated by habitat alterations, making it difficult to disentangle the effect of exotics from that of habitat alteration (Hayes and Jennings 1988). For example, within the Central Valley, Fisher and Shaffer (1996) found an up-slope shift in the distribution of several native amphibians that they attributed to introduced predators, habitat modifications at low elevations, or both. Consistent with this observation, we found that, within the Central Valley proper, sites with red-legged frogs present were on average at higher elevations (mean, 177 m; $n = 11$) than sites with frogs absent (mean, 91 m; $n = 12$), which is the opposite of the statewide pattern. However, we also found within the Central Valley that low-elevation sites (<150 m) on average had 33.1% combined agricultural or urban land use in a 2-km radius circle surrounding the site, whereas sites >150 m had 19.8% agricultural-plus-urban surrounding land use, suggesting that low-elevation sites are generally more disturbed than higher elevation Central Valley localities. In addition, site-specific studies suggest that bullfrogs and red-legged frogs can apparently coexist in some places (Cook 1998; S. Christopher, *personal communication*), indicating that introduced predators do not always exclude red-legged frogs from a site.

In summary, pathogens and introduced exotics undoubtedly both play a role in the decline of many amphibians, including California red-legged frogs, and their importance probably varies on a site-by-site basis depending on overall habitat quality, refugia, and synergisms with other factors. Understanding the impact of exotic predators on red-legged frogs may require information on predator abundance coupled with habitat characteristics influencing potential refugia. Unfortunately, this type of information was not available for multiple sites across the range of *R. a. draytonii* to allow us to analyze the spatial patterns of decline and test the exotic-predator hypothesis.

Conclusions

What should we make of the spatial patterns presented here, and the spatial analysis of causal factors in general? First and foremost, multiple processes can generate similar patterns; therefore, the link between observed patterns and presumed underlying processes must be made with caution. Conversely, given potential confounding factors, the absence of pattern should not be taken as proof of the absence of a process. Even with these qualifications, there are at least two important roles for the spatial analysis presented here. First, while field and laboratory experiments on individual organisms are vital to understanding possible mechanisms causing declines, such experiments are necessarily restricted to individuals or small local populations. Population changes above the local-site level cannot be subjected to experiments, and can only be quantified and analyzed through large-scale observational studies. Spatial analysis is a valuable approach for examining large-scale observational data and associating declines with plausible mechanisms.

Second, the spatial results we have presented generate clear predictions that can be tested with field and laboratory studies. For example, field studies could test the relationship between pesticide levels at a site, the amount of upwind agricultural land use, and frog declines. We hope that our work will encourage further investigation of the role of agrochemicals in amphibian declines, given that to date there has been relatively little research on this hypothesis for declines. The Sierra Nevada has been the subject of some recent toxicological work (Zabik and Seiber 1993, Aston and Seiber 1997, Datta, 1997, Datta et al. 1998, McConnell et al. 1998), but similar studies have not been conducted in other areas of California or elsewhere where declines have occurred. For example, in both Central America and Australia, major amphibian declines (Ingram and MacDonald 1993, Richards et al. 1993, Pounds and Crump 1994, Lips 1998, 1999) have occurred in areas close to, and downwind for part of the year from, large agricultural zones. To date, very little contaminants research has been conducted in these areas. Even when pesticide residues are found in frogs (Cory et al. 1970, Datta et al. 1998), we do not understand the biological relevance of these residue levels. This is particularly true for sublethal effects, such as interference with hibernation or immune system suppression (Carey and Bryant 1995, Stebbins and Cohen 1995, Taylor et al. 1999).

Our analysis indicates that multiple factors may be responsible for declines of the California red-legged frog. At a number of sites, declines are associated with urbanization. We find a strong elevational gradient in

declines, which may be due to UV-B, although our test of the UV-B hypothesis produced mixed results. Finally, declines are associated with the amount of upwind agricultural land use, suggesting that wind-borne agrochemicals may be contributing to declines.

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LITERATURE CITED

Alford, R. A., and S. J. Richards. 1999. Global amphibian declines: a problem in applied ecology. Annual Review of Ecology and Systematics **30**:133–165.

Anzalone, C. R., L. B. Kats, and M. S. Gordon. 1998. Effects of solar UV-B radiation on embryonic development in *Hyla cadaverina, Hyla regilla,* and *Taricha torosa.* Conservation Biology **12**:646–653.

Aston, L. S., and J. N. Seiber. 1997. Fate of summertime airborne organophosphate pesticide residues in the Sierra Nevada mountains. Journal of Environmental Quality **26**: 1483–1492.

Barinaga, M. 1990. Where have all the froggies gone? Science **247**:1033–1034.

Berger, L., et al. 1998. Chytridiomycosis causes amphibian mortality associated with population declines in the rain forests of Australia and Central America. Proceedings of the National Academy of Sciences of the United States of America **95**:9031–9036.

Blaustein, A. R., P. D. Hoffman, D. G. Hokit, J. M. Kiesecker, S. C. Walls, and J. B. Hays. 1994. UV repair and resistance to solar UV-B in amphibian eggs: a link to population declines? Proceedings of the National Academy of Sciences of the United States of America **91**:1791–1795.

Blaustein, A. R., P. D. Hoffman, J. M. Kiesecker, and J. B. Hays. 1996. DNA repair activity and resistance to solar UV-B radiation in eggs of the red-legged frog. Conservation Biology **10**:1398–1402.

Blumthaler, M. 1993. Solar UV measurements. Pages 17–79 *in* M. Tevini, editor. Environmental effects of UV (ultraviolet) radiation. Lewis, Boca Raton, Florida, USA.

Bradford, D. F. 1989. Allotopic distribution of native frogs and introduced fishes in high Sierra Nevada lakes of California: implications of the negative impact of fish introductions. Copeia 1989:775–778.

Bradford, D. F. 1991. Mass mortality and extinction in a high elevation population of *Rana muscosa.* Journal of Herpetology **25**:369–377.

Bradford, D. F., F. Tabatabai, and D. M. Graber. 1993. Isolation of remaining populations of the native frog, *Rana muscosa,* by introduced fishes in Sequoia and Kings Canyon National Parks, California. Conservation Biology **7**: 882–888.

Cabrera, S., S. Bozzo and H. Fuenzalida. 1995. Variations in UV radiation in Chile. Journal of Photochemistry and Photobiology **28**:137–142.

California Economic Development Agency (CEDA). 1974. California statistical abstract. CEDA, Sacramento, California, USA.

California Economic Development Agency (CEDA). 1998. California statistical abstract. CEDA, Sacramento, California, USA.

Carey, C. 1993. Hypotheses concerning the causes of the disappearance of boreal toads from the mountains of Colorado. Conservation Biology **7**:355–362.

Carey, C., and C. J. Bryant. 1995. Possible interrelations among environmental toxicants, amphibian development, and decline of amphibian populations. Environmental Health Perspectives **103**:13–17.

Cook, D. 1998. Microhabitat use and reproductive success of the California red-legged frog and bullfrog in an ephemeral marsh. Thesis. Sonoma State University, Rohnert Park, California, USA.

Corn, P. S. 1994. What we know and don't know about amphibian declines in the west. Pages 59–67 *in* W. W. Covington and F. D. Leonard, editors. Sustainable ecological systems: implementing an ecological approach to land management. U.S. Forest Service, Rocky Mountain Forest and Range Experimental Station, Fort Collins, Colorado, USA.

Corn, P. S. 2000. Amphibian declines: review of some current hypotheses. Pages 639–672 *in* D. W. Sparling, C. A. Bishop, and G. Linder, editors. Ecotoxicology of amphibians and reptiles. Society of Environmental Toxicology and Chemistry, Pensicola, Florida, USA.

Corn, P. S., and F. A. Vertucci. 1992. Descriptive risk assessment of the effects of acidic deposition on Rocky Mountain amphibians. Journal of Herpetology **26**:361–369.

Cory, L., P. Fjerd, and W. Serat. 1970. Distribution patterns of DDT residues in the Sierra Nevada mountains. Pesticide Monitoring Journal 3:204–211.

Cowan, J. B. 1979. Mammals, reptiles and amphibians of Gray Lodge Wildlife Area. California Department of Fish and Game, Sacramento, California, USA.

Crooks, K. R., and M. E. Soulé. 1999. Mesopredator release and avifaunal extinctions in a fragmented system. Nature **400**:563–566.

Datta, S. 1997. Studies on the atmospheric transport and deposition of polychlorinated biphenyls and pesticides in aquatic ecosystems of the Sierra Nevada. Dissertation. University of California-Davis, California, USA.

Datta, S., L. Hansen, L. McConnell, J. Baker, J. Lenoir, and J. N. Seiber. 1998. Pesticides and PCB contaminants in fish and tadpoles from the Kaweah River Basin, California. Bulletin of Environmental Contamination and Toxicology **60**:829–836.

Davidson, C. 1999. SIERRAFROG database documentation. U.S. Forest Service, Pacific Southwest Research Station, Arcata, California, USA.

Department of Pesticide Regulation. 1995. Pesticide use report: 1995. Department of Pesticide Regulation, Sacramento, California, USA.

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Drost, C. A., and G. M. Fellers. 1996. Collapse of a regional frog fauna in the Yosemite area of the California Sierra Nevada, USA. Conservation Biology 10:414–425.

Environmental Systems Research Institute (ESRI). 1992. Map projections and coordinate management: ARC/INFO users' guide. ESRI, Redlands, California, USA.

Fahrig, L., J. H. Pedlar, S. E. Pope, P. D. Taylor, and J. F. Wegner. 1995. Effect of road traffic on amphibian density. Biological Conservation 73:177–182.

Fellers, G. M., and C. A. Drost. 1993. Disappearance of the Cascades frog *Rana cascadae* at the southern end of its range, California USA. Biological Conservation 65:177–181.

Fisher, R. N., and T. J. Case. *In press.* Distribution of the herpetofauna of southern California with reference to elevation effects. *In* Jon Keeley, editor. Second Conference on the Interface between Ecology and Land Development in California.

Fisher, R. N., and H. B. Shaffer. 1996. The decline of amphibians in California's Great Central Valley. Conservation Biology 10:1387–1397.

Fitch, H. S. 1949. Study of snake populations in central California. American Midland Naturalist 41:513–579.

Green, D. M. 1985. Differentiation in amount of cantromaric heterochromatin between subspecies of the red-legged frog, *Rana aurora.* Copeia 1985:1071–1074.

Grinnell, J., and T. Storer. 1924. Animal life in the Yosemite. University of California Press, Berkeley, California, USA.

Hatch, H. C., and G. A. Burton. 1998. Effects of photoinduced toxicity of fluoranthene on amphibian embryos and larvae. Environmental Toxicology and Chemistry 17:1777–1785.

Hayes, M. P., and M. R. Jennings. 1986. Decline of ranid frog species in western North America: are bullfrogs (*Rana catesbeiana*) responsible? Journal of Herpetology 20:490–509.

Hayes, M. P., and M. R. Jennings. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylii*): implications for management. Pages 144–158 *in* R. C. Szaro, K. E. Severson, and D. R. Patton, technical coordinators. Management of amphibians, reptiles and small mammals in North America. U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado, USA.

Hayes, M. P., and D. M. Kremples. 1986. Vocal sac variation among frogs of the genus *Rana* from western North America. Copeia 1986:927–936.

Hayes, M. P., and M. M. Miyamoto. 1984. Biochemical, behavioral, and body size differences between *Rana aurora aurora* and *R. a. draytoni.* Copeia 1984:1018–1022.

Hayes, T. P., J. J. R. Kinney, and N. J. M. Wheeler. 1984. California surface wind climatology. California Air Resources Board, Aerometric Data Division, Aerometric Projects and Laboratory Branch, Meteorology Section, Sacramento, California, USA.

Herman, J. R., N. Krotkov, E. Celarier, D. Larko, and G. Labow. 1999. Distribution of UV radiation at the Earth's surface from TOMS-measured UV-backscattered radiances. Journal of Geophysical Research 104:12 059–12 076.

Hickman, J. C., editor. 1993. The Jepson manual: higher plants of California. University of California Press, Berkeley, California, USA.

Hosmer, D. W., and S. Lemeshow. 1989. Applied logistic regression. Wiley, New York, New York, USA.

Ingles, L. G. 1932*a*. *Cephalogonimus brevicirrus,* a new species of trematoda from the intestine of *Rana aurora* from California. University of California Publications in Zoology 37:189–201.

Ingles, L. G. 1932*b*. Four new species of haematoloechus (trematoda) from *Rana aurora draytonii* from California. University of California Publications in Zoology 37:189–202.

Ingram, G. L., and K. R. MacDonald. 1993. An update on the decline of Queensland's frogs. Pages 297–303 *in* D. Lunney and D. Ayers, editors. Herpetology in Australia: a diverse discipline. Royal Zoological Society of New South Wales, Mosman, New South Wales, Australia.

Jennings, M. R. 1988. Natural history and decline of native ranids in California. Pages 61–72 *in* H. F. De Lisle, P. R. Brown, B. Kaufman, and B. M. McGurty, editors. Southwestern Herpetologists Society special publication number 4: proceedings of the Conference on California Herpetology. Southwestern Herpetologists Society, Van Nuys, California, USA.

Jennings, M. R. 1995. Native ranids in California. Pages 131–134 *in* E. T. LaRoe, G. S. Farris, C. E. Puckett, P. D. Doran, and M. J. Mac, editors. Our living resources: a report to the nation on the distribution, abundance and health of U.S. plants, animals and ecosystems. U.S. Department of the Interior, National Biological Service, Washington, D.C., USA.

Jennings, M. R. 1996. Status of amphibians. Pages 921–944 *in* Sierra Nevada ecosystem project: final report to Congress, volume 2, assessments and scientific basis for management options. University of California, Centers for Water and Wildland Resources, Davis, California, USA.

Jennings, M. R., and M. P. Hayes. 1985. Pre-1900 overharvest of California red-legged frogs (*Rana aurora draytonii*): the inducement for bullfrogs (*Rana catesbeiana*) introduction. Herpetologica 41:94–103.

Jennings, M. R., and M. P. Hayes. 1994*a*. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California, USA.

Jennings, M. R., and M. P. Hayes. 1994*b*. Decline of native ranid frogs in the desert Southwest. Pages 183–211 *in* P. R. Brown and J. W. Wright, editors. Southwestern Herpetologists Society special publication number 5: proceedings of a Symposium on Herpetology of the North American Deserts. Southwestern Herpetologists Society, Van Nuys, California, USA.

Karl, R. T., R. W. Knight, R. R. Easterling, and R. G. Quale. 1996. Indices for climate change for the United States. Bulletin of the American Meteorological Society 77:279–292.

Kiesecker, J. M., and A. R. Blaustein. 1995. Synergism between UV-B radiation and a pathogen magnifies amphibian embryo mortality in nature. Proceedings of the National Academy of Sciences of the United States of America 92: 11 049–11 052.

Knapp, R. A. 1996. Non-native trout in natural lakes of the Sierra Nevada: an analysis of their distribution and impact on native aquatic biota. Pages 363–407 *in* Sierra Nevada Ecosystem Project: final report to Congress, volume 3, assessments and scientific basis for management options. University of California, Centers for Water and Wildland Resources, Davis, California, USA.

Knapp, R. A., and K. R. Matthews. 2000. Non-native fish introductions and the decline of the mountain yellow-legged frog (*Rana muscosa*) from within protected areas. Conservation Biology 14:428–438.

Laurance, W. F. 1996. Catastrophic declines of Australian rainforest frogs: is unusual weather responsible? Biological Conservation 77:203–212.

Lawler, S. P., D. Dritz, T. Strange and M. Holyoak. 1999. Effects of introduced mosquitofish and bullfrogs on the threatened California red-legged frog. Conservation Biology 13:613–622.

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Legendre, P. 1993. Spatial autocorrelation: trouble or new paradigm? Ecology 74:1659–1673.
Lips, K. R. 1998. Decline of a tropical montane amphibian fauna. Conservation Biology 12:106–117.
Lips, K. R. 1999. Mass mortality and population declines of anurans at an upland site in western Panama. Conservation Biology 13:117–125.
Lockington, W. N. 1879. Notes on some reptiles and batrachia of the Pacific Coast. American Naturalist 13:780–783.
Long, L. E., L. S. Saylor, and M. E. Soulé. 1995. A pH/UV-B synergism in amphibians. Conservation Biology 9:1301–1303.
Madronich, S., R. L. McKenzie, M. M. Caldwell, and L. O. Bjorn. 1995. Changes in ultraviolet radiation reaching the Earth's surface. Ambio 24:143–152.
Marchetti, M. P., T. S. Light, J. Feliciano, T. Armstrong, Z. Hogan, and P. B. Moyle. *In press.* Homogenization of California's fish fauna through abiotic change. *In* J. L. Lockwood and M. L. McKinney, editors. Biotic homogenization. Kluwer/Academic Press, New York, New York, USA.
Marco, A., and A. R. Blaustein. 1999. The effects of nitrite on behavior and metamorphosis in cascades frogs (*Rana cascadae*). Environmental Toxicology and Chemistry 18: 946–949.
Marco, A., C. Quilchano, and A. R. Blaustein. 1999. Sensitivity to nitrate and nitrite in pond-breeding amphibians from the Pacific Northwest, USA. Environmental Toxicology and Chemistry 18:2836–2839.
McConnell, L. L., J. S. Lenoir, S. Datta, and J. N. Seiber. 1998. Wet deposition of current-use pesticides in the Sierra Nevada mountain range, California, USA. Environmental Toxicology and Chemistry 17:1908–1916.
Moyle, P. B. 1973. Effects of introduced bullfrogs, *Rana catesbeiana,* on the native frogs of the San Joaquin Valley, California. Copeia 1973:18–22.
Moyle, P. B., and P. J. Randall. 1998. Evaluating the biotic integrity of watersheds in the Sierra Nevada, California. Conservation Biology 12:1318–1326.
Natural Diversity Data Base (NDDB). 1999. Natural diversity data base. California Department of Fish and Game, Natural Heritage Division, Sacramento, California, USA.
Neitzel, W. J., editor. 1965. The flora and fauna of Solano County. Solano County Office of Education, Fairfield, California, USA.
Neter, J., M. H. Kutner, C. J. Nachtsheim, and W. Wasserman. 1996. Applied linear statistical models. Irwin, Chicago, Illinois, USA.
Ovaska, K., T. M. Davis, and I. N. Flamarique. 1997. Hatching success and larval survival of the frogs *Hyla regilla* and *Rana aurora* under ambient and artificially enhanced solar ultraviolet radiation. Canadian Journal of Zoology–Revue Canadienne De Zoologie 75:1081–1088.
Parmesan, C. 1996. Climate and species' range. Nature 382: 765–766.
Peters, R. L. 1991. Consequences of global warming on biological diversity. Pages 99–118 *in* R. L. Wyman, editor. Global climate change and life on Earth. Chapman & Hall, New York, New York, USA.
Pounds, J. A., and M. L. Crump. 1994. Amphibian declines and climate disturbance: the case of the golden toad and the harlequin frog. Conservation Biology 8:72–85.
Pounds, J. A., M. P. L. Fogden, and J. H. Campbell. 1999. Biological response to climate change on a tropical mountain. Nature 398:611–614.
Reznick, D., R. J. Baxter, and J. Endler. 1994. Long-term studies of tropical stream communities: the use of field notes and museum collections to reconstruct communities of the past. American Zoologist 34:452–462.
Richards, S. J., K. R. McDonald, and R. A. Alford. 1993. Declines in populations of Australia's endemic tropical rainforest frogs. Pacific Conservation Biology 1:66–77.
Scott, J. M., H. Anderson, F. Davis, S. Caicoo, B. Csuti, T. C. Edwards, R. Noss, J. Ulliman, C. Groves, and R. G. Wright. 1993. Gap analysis: a geographic approach to protection of biological diversity. Wildlife Monographs 123: 1–41.
Semlitsch, R. D., D. E. Scott, and J. Pechmann. 1988. Time and size at metamorphosis related to adult fitness in *Ambystoma talpoideum.* Ecology 69:184–192.
Semlitsch, R. D., D. E. Scott, J. H. K. Pechmann, and J. W. Gibbons. 1996. Structure and dynamics of an amphibian community: evidence from a 16-year study of a natural pond. Pages 217–248 *in* L. M. Cody and J. Smallwood, editors. Long-term studies of vertebrate communities. Academic Press, New York, New York, USA.
Shaffer, H. B., R. N. Fisher, and C. Davidson. 1998. The role of natural history collections in documenting species declines. Trends in Ecology and Evolution 13:27–30.
Smith, D. C. 1987. Adult recruitment in chorus frogs: effects of size and date at metamorphosis. Ecology 68:344–350.
Stebbins, R. C., and N. W. Cohen. 1995. A natural history of amphibians. Princeton University Press, Princeton, New Jersey, USA.
Storer, T. I. 1925. A synopsis of the amphibia of California. University of California Publications in Zoology 27:1–342.
Sweet, S. W., and A. E. Leviton. 1983. *Rana aurora draytonii.* Herpetological Review 14:27.
Taylor, S. K., E. S. Williams, and K. W. Mills. 1999. Effects of malathion on disease susceptibility in Woodhouse's toads. Journal of Wildlife Disease 35:536–541.
Trenham, P. C., H. B. Shaffer, W. D. Koenig, and M. R. Stromberg. 2000. Life history and demographic variation in the California Tiger Salamander (*Ambystoma californiense*). Copeia 2000:365–377.
Wake, D. B. 1991. Declining amphibian populations. Science 253:860.
Wake, D. B. 1998. Action on amphibians. Trends in Ecology and Evolution 13:379–380.
Wernette, F. G., F. A. Hall, C. J. Brown, C. L. Mayer, and N. A. Villa. 1982. Los Vaqueros project—fish and wildlife impacts. California Department of Fish and Game, Sacramento, California, USA.
Zabik, J. M., and J. N. Seiber. 1993. Atmospheric transport of organophosphate pesticides from California's Central Valley to the Sierra Nevada Mountains. Journal of Environmental Quality 22:80–90.

APPENDIX

Site locations and sources are available online in ESA's Electronic Data Archive: *Ecological Archives* A011-009.

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Suit filed to protect red-legged frog

EPA accused of allowing killer pesticides

Jane Kay, Chronicle Environment Writer
Wednesday, April 3, 2002
San Francisco Chronicle

Citing studies that pesticides used on agricultural land are harming the famed California red-legged frog, an environmental group sued the U.S. Environmental Protection Agency yesterday.

The Center for Biological Diversity's suit accuses the EPA of disregarding the Endangered Species Act by allowing certain pesticides to remain on the market even though they kill or deform the state's jumping frog, thus jeopardizing its very existence.

The California red-legged frog is celebrated for its jumping ability and protected for its rarity.University of California at Santa Barbara. University of California, Santa Barbara file photo via Associated Press

The federal suit, filed in San Francisco, says the EPA is breaking the law by not consulting with the U.S. Fish and Wildlife Service regarding the effects of the EPA's pesticide review and registration programs on the frog.

By allowing the continued use of the pesticides, the EPA is failing to implement reasonable and prudent steps to protect the California red-legged frogs and their habitat, the suit says.

A spokesman for the EPA rejected the allegations yesterday.

"The EPA always considers endangered species when registering pesticides," said Leo Kay, a spokesman for the EPA's office in San Francisco. "We take the steps necessary to ensure that sensitive animals such as red-legged frogs receive an added protection from potential exposure to chemicals."

The red-legged frog, celebrated in Mark Twain's "The Celebrated Jumping Frog of Calaveras County," is listed as threatened under federal law. The once abundant croaker has disappeared from nearly three-quarters of its natural range. Only 10 percent of its original population remains. Only four regions contain populations numbering more than 350.

A year ago, the federal government designated as critical habitat for the frog 4.14 million acres in 28 counties scattered from the coast to the Sierra Nevada, including 500 miles of streams and rivers.

In the Bay Area, sites include those near Sears Point in Sonoma and Marin counties, American Canyon Creek and Sulphur Springs Creek in Napa and Solano counties, and Bolinas Lagoon, Point Reyes and

Ex. 53 p 3 of 3

Tomales Bay in Marin County. Others are the Belvedere Lagoon watershed adjacent to the Tiburon Peninsula, coastal watersheds in San Mateo and Santa Cruz counties, North Fork Feather River watershed in Butte and Plumas counties and Weber Creek and North Fork Cosumnes River watersheds in El Dorado County.

The environmental group is seeking an order compelling the EPA to begin the consultation process, promote conservation programs for the frogs and stop allowing the sale of pesticides that harm the frog.

"The EPA is asleep at the switch," said Brent Plater, attorney with the Center for Biological Diversity, which has offices in the West.

"Ample evidence exists that pesticides are a contributing factor in the decline of the species, yet even the basic requirements of federal endangered species law have been ignored by the EPA," Plater said.

In California, Kay responded, the EPA works "closely with the state Department of Pesticide Registration to map endangered species habitats, evaluate potential exposure risks and develop strategies to reduce those risks. "

The environmental group cited studies from the last two years linking pesticides with the decline of amphibians, a global problem. One study by the U.S. Geological Survey found that increased pesticide concentrations in Pacific tree frogs downwind of San Joaquin Valley agriculture correlated with a decline in amphibian numbers in the Sierra. The pesticides included chlorpyrifos and Diazinon, both widely sprayed for farm and urban uses.

Last year, California scientists published a study that found that there were fewer red-legged frogs in their historic habitat when that land was downwind of croplands.

"The more agricultural land, the less likely there were to be frogs," said Carlos Davidson, assistant professor in environmental studies at California State University at Sacramento, one of the study's authors. The researchers used the amount of agriculture land as a surrogate for pesticide use, he said.

Currently, Davidson and other scientists from the University of California at Davis and the California Academy of Sciences in San Francisco are examining the state's pesticide use data to see whether there's a correlation between the chemicals and the decline.

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Center for Biological Diversity

California Red-legged Frog (*Rana aurora draytonii*)

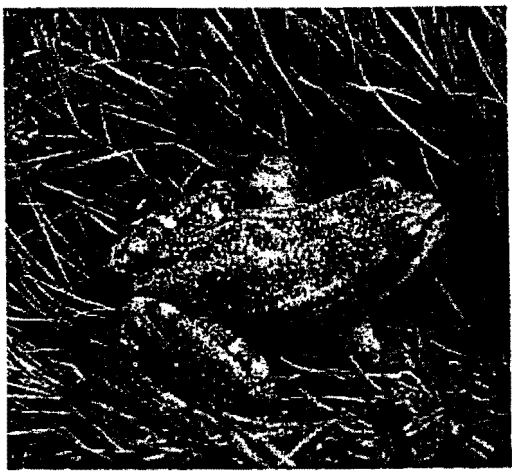


photo by Dr. Mark Jennings

Golden State Biodiversity Initative

- Main page
- Species Protected
- Habitat Protected

Red-Legged Frog

- *The Celebrated Jumping Frog of Calaveras County*
- 2001 Federal Register, Critical Habitat Final Rule
- 1996 ESA listing
- Draft recovery plan
- U.S. Fish & Wildlife Service

Critical Habitat

- Lawsuit
- Court order
- 29 protected areas
- Maps
  All Units
  Units 1 & 6
  Units 3 & 5

Other Groups Protecting the Red-Legged Frog

- Jumping Frog Research Institute

EPA FAILS TO PROTECT CALIFORNIA RED-LEG FROGS

On April 2, 2002, the Center for Biological Diversity filed a complaint ag Environmental Protection Agency (EPA) to force the EPA to consider th effects of chemical pesticides on the California red-legged frog. The re frog is listed as threatened under the federal Endangered Species Act

The Center is concerned that the EPA's pesticide registration program thousands of pesticides to be used across California that maybe harmi threatened California red-legged frog. Under the Endangered Species EPA is required to consult with U.S. Fish and Wildlife Service to deter EPA's activities are harming listed species.

Recent studies (*Declines of the California Red-legged Frog: Climate, U Habitat, and Pesticides Hypotheses*. *Pesticides and Amphibian Popula Declines in California, USA*.) have indicated that pesticides, particularly agricultural users, are negatively impacting populations of California re frogs. The red-legged frog may not be the only species harmed by pest Amphibians are declining across the globe and many scientists believe industrial chemicals and pesticides may be to blame.

4.1 MILLION ACRES PROTECTED FOR MARK TV ENDANGERED JUMPING FROG

In a hard fought victory involving over a thousand supporting letters fro and a federal lawsuit, the Center for Biological Diversity, the Jumping F Research Institute, Pacific Rivers Council, and the Center for Sierra Ne Conservation won the designation of 4,138,064 acres of "critical habita endangered California red-legged frog on March 6, 2001. The designat 29 separate areas spanning 28 California counties and over 500 miles and rivers (Federal Register, Critical Habitat Final Rule).

As defined by the Endangered Species Act, "critical habitat" includes al necessary to ensure the survival and recovery of threatened and endar species. Federal agencies are not permitted to fund or authorize any a destroys or "adversely modifies" critical habitat areas. On federal lands by agencies such as the U.S. Forest Service, Bureau of Land Manager the Bureau of Reclamation, such activities typically include timber sale grazing allotments, road construction, water diversions, and dams. On lands, critical habitat is only protected if a federal permit or federal fund required. Timber sales and large construction projects, for example, oft Clean Water Act permits and/or permits for the "take" of threatened or species.

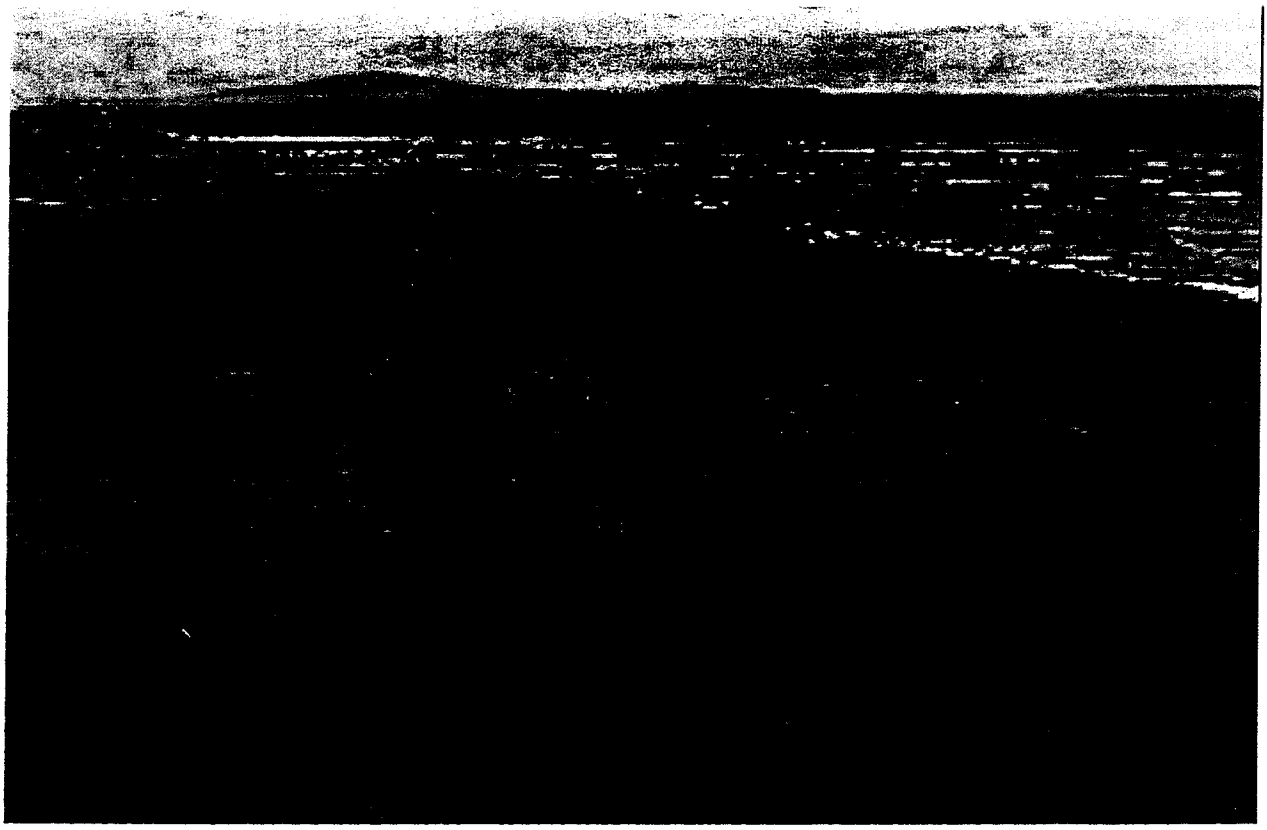
Mark Twain's Jumping Frog Nearly Extinct

The California red-legged frog is the

EX. 53 PG 24 394

Dos Pueblos Golf Links

Technical Review of Surface Water Quality Issues and Treatment Options



PREPARED FOR:

MAKAR

MAKAR PROPERTIES LLC

SANTA BARBARA CA

PREPARED BY:

GEOSYNTEC CONSULTANTS

PORTLAND OREGON

3/12/02

INTRODUCTION

Makar Properties LLC (Owner) has retained GeoSyntec to perform an evaluation of the overall stormwater system and specifically the post-construction surface water quality treatment best management practices (BMPs) that have been proposed for the Dos Pueblos Golf Links. The purpose of this evaluation is to ensure that the proposed stormwater conveyance systems and (BMPs) adequately address potential water quality concerns that may be associated with the project and that they are consistent with current surface water quality enhancement water quality guidelines specific to golf course development as proposed by other jurisdictions.

This report summarizes the findings of the evaluation and assessment of the surface water quality protection measures proposed for the Dos Pueblos Golf Links and provides recommendations for improving the effectiveness of water quality enhancement features.

PROJECT DESCRIPTION

PROPOSED ACTION

Dos Pueblos Golf Links is an 18-hole links style golf course that is proposed for southern Santa Barbara County in an unincorporated area just west of Goleta (incorporation effective February 1, 2002). In addition to the 18-hole golf course, a clubhouse, parking lots, maintenance facilities, and a 9-hole 3-par golf course is also included in the project plan. The total property, formerly an oil production and storage facility, occupies about 202 acres of which 140 acres will be redeveloped as part of this project.

The proposed project received approval by the County of Santa Barbara in 1993 and the California Coastal Commission in 1994. These approvals were upheld by the Superior Court in 1996 and the Court of Appeals in 1997.

The project was approved to be implemented under two phases. Phase one is the removal of existing oil and gas operations, roadways, and remediation of contaminated soils. Phase two of the project is the construction of the golf course and associated facilities. Phase one construction commenced in late 1996. By early 1998, all of the former oil and gas facilities were removed. In November 1998, the County of Santa Barbara issued the final permit for the onsite remediation and for the second phase of the project. The appeal of these permits is presently pending before the Coastal Commission. All of the other permits from various agencies (including the US Fish and Wildlife Service) have been issued.

HYDROLOGY

Three drainages contribute the majority of surface water that is generated on or passes through the site. Figure 1 provides an aerial photo showing the project site and major drainages, which include:

1. Eagle Canyon is the largest of the watersheds and forms the easternmost boundary of the

project. The watershed for Eagle Canyon is approximately 2,937 acres of which about 11 acres lies within the proposed project site. As will be discussed later, low flows and nuisance runoff from these 11 acres of onsite drainage will be collected and treated before being released to Eagle Creek as part of the proposed development. Figure 2 shows a topographic map of the project area and the boundary of the Eagle Creek watershed.

2. Drainage B is approximately 259 acres of which 80 acres is on-site.
3. Drainage F is approximately 281 acres of which 34 acres is on-site.

The creeks are seasonal and run north to south. Both the Union Pacific Railroad track and Highway 101 run east/west (perpendicular to the flow direction of the streams) and have significantly altered the drainage patterns of the creeks. Culverts have been installed under the highway, roadways, and railroad track to which normal sheet flow is diverted and transported downstream.

The project hydrology report identified twenty-one sub-catchments on-site that contribute to surface runoff. Figure 3 shows these sub-catchments as identified in the hydrology report superimposed on an aerial photograph of the site taken prior to remediation. The size of each sub-catchment (listed on Figure 3) was estimated by GeoSyntec based on information provided in the hydrology report and on design drawings.

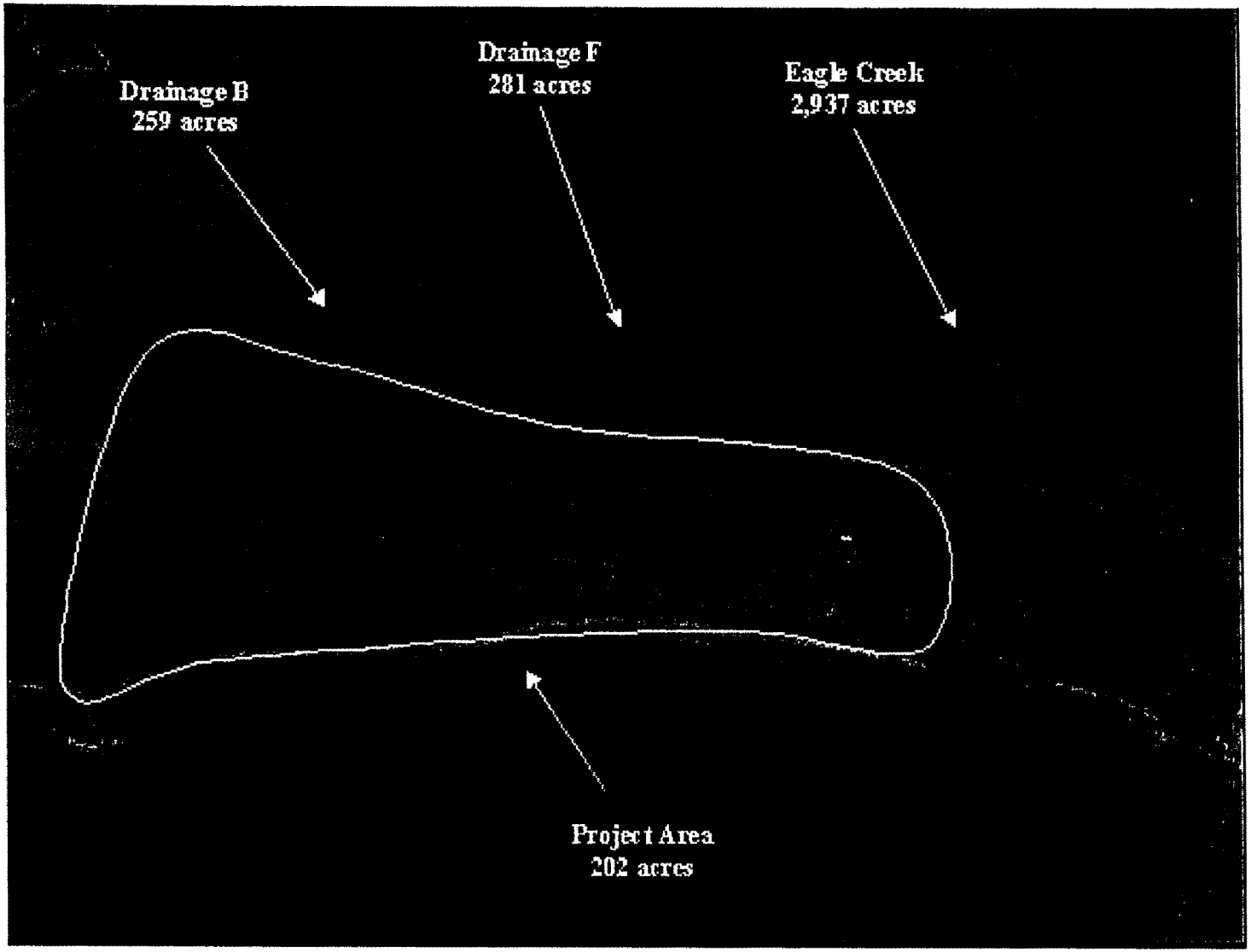


Figure 1: Dos Pueblos Golf Links Project Area and Major Drainages

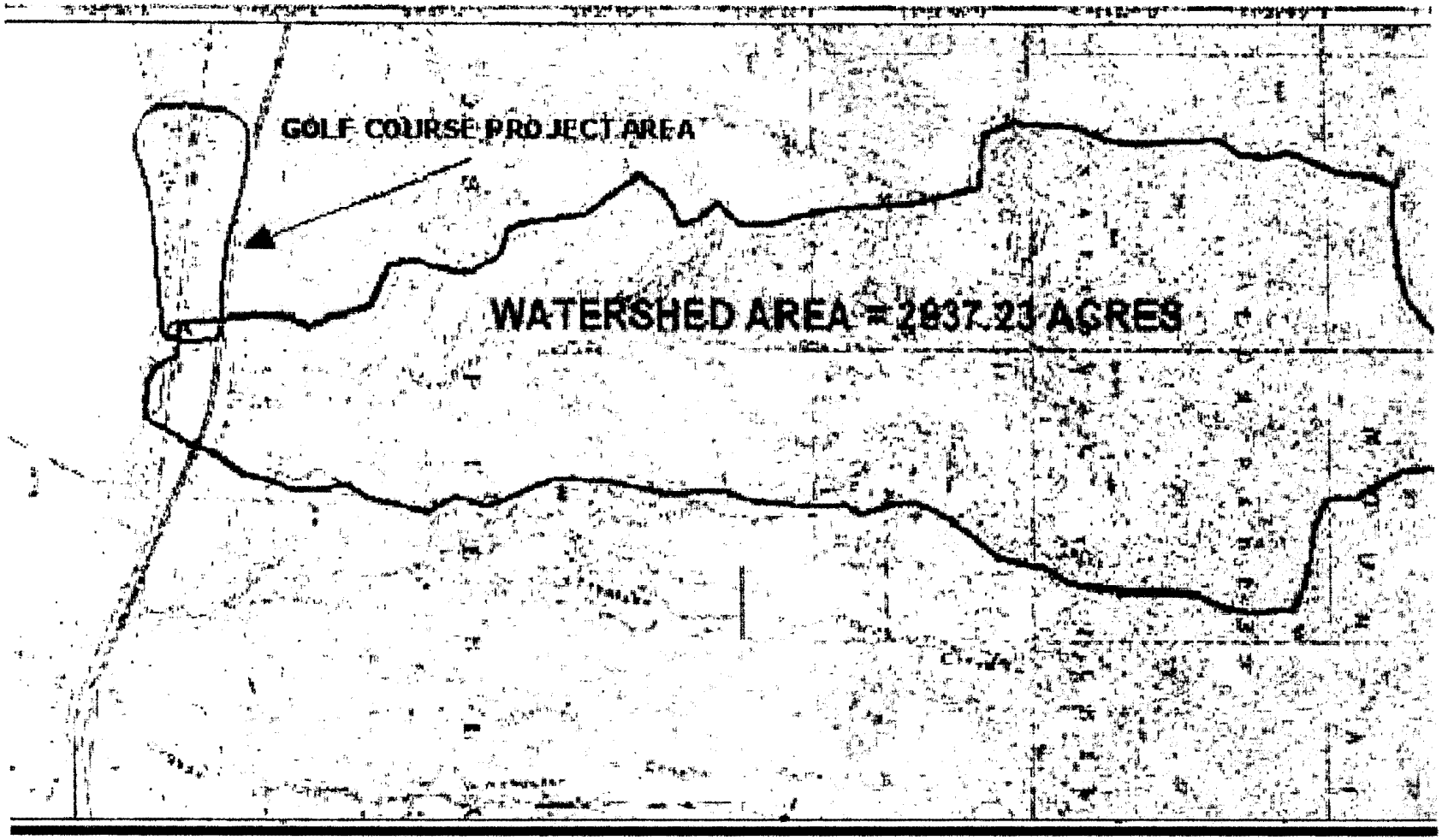
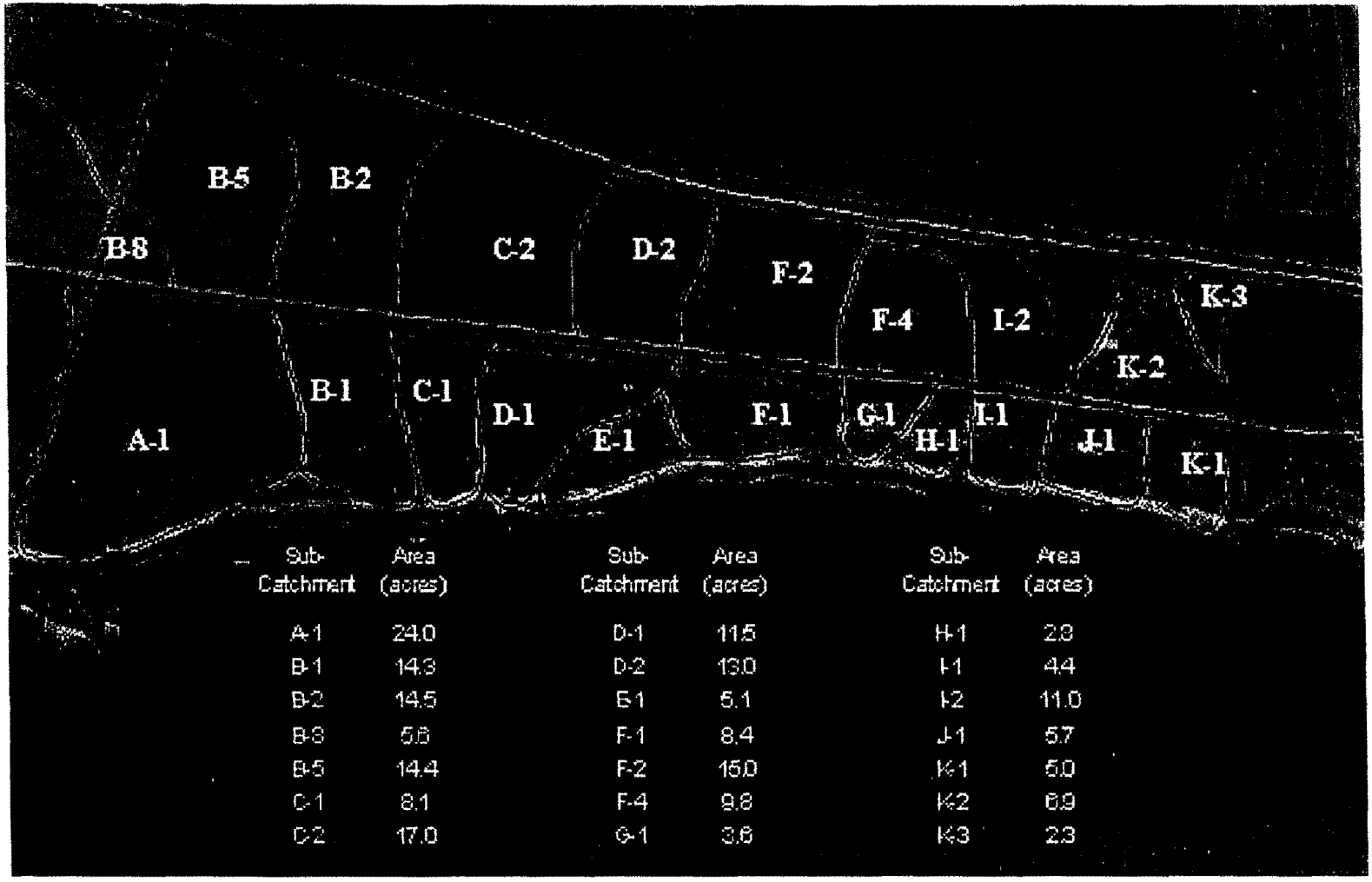


Figure 2: Eagle Creek Drainage



Sub-Catchment	Area (acres)	Sub-Catchment	Area (acres)	Sub-Catchment	Area (acres)
A-1	24.0	D-1	11.5	H-1	2.8
B-1	14.3	D-2	13.0	I-1	4.4
B-2	14.5	E-1	5.1	I-2	11.0
B-8	5.6	F-1	8.4	J-1	5.7
B-5	14.4	F-2	15.0	K-1	5.0
C-1	8.1	F-4	9.8	K-2	6.9
C-2	17.0	G-1	3.6	K-3	2.3

Figure 3: Dos Pueblos Golf Links Project Area On-Site Drainages

WATER QUALITY ISSUES

Development can potentially impact surface waters by changing the volume of runoff generated during a storm event and/or the quality of that runoff.

Significant increases in the volumes of runoff generated during storm events could potentially increase erosion and alter the morphology of the receiving streams. Mobilization of chemicals and sediments by stormwater could potentially result in harm to the biological components of the receiving waters.

RUNOFF VOLUME

On the watershed scale, the project is unlikely to significantly affect the quantity of stormwater runoff generated during a storm event because the imperviousness of pre- and post-development site conditions will be similar. Additionally, runoff from the upstream offsite watershed areas will tend dominate the total runoff volume during most storm events, especially in Eagle Canyon.

GENERAL WATER QUALITY

Water quality impacts associated with this type of development are difficult to estimate using standard computerized water quality models. This is because very little baseline information about pollutant concentrations in runoff is available for either the pre- or post-development conditions associated with this project. There are however, several environmentally-based design and maintenance guidelines for golf courses developed by regulatory agencies throughout the country which can be used to assess the proposed project's water quality impacts based on its conformance with these guidelines.

Baltimore County, Maryland was among the first to establish specific guidelines for golf courses in 1990 (revised in 2001). In 1996, the Colorado Nonpoint Source Task Force assembled guidelines for water quality enhancement at golf courses through the use of structural and nonstructural BMPs. More recently, and perhaps more relevant to this project, environmental design guidelines and standard development requirements were developed by Santa Clara County, California. Both the Baltimore and Santa Clara documents are similar in their recommendations for surface water protection from golf course runoff. The Colorado guidelines include some additional guidelines the other two documents do not contain and lack several guidelines they do contain. There are currently no such guidelines for Santa Barbara County. A discussion of the Santa Clara and Colorado guidelines are presented below. The water quality enhancement efforts and design features included in the Dos Pueblos Golf Links project is discussed and compared to the Santa Clara and Colorado guidelines in the following section.

ENDANGERED SPECIES

As part of the US Fish and Wildlife Incidental Take Permit (issued January 16, 2002) process, some commentors have expressed concerns over the impacts that chemical fertilizers, pesticides, herbicides, and fungicides may have on aquatic biota in waters that would receive runoff from the proposed golf course. Their primary interests are the two species (Tidewater Goby and Red-Legged Frog) listed as endangered that have been identified in a lagoon near the mouth of the Eagle Canyon watershed. The on-site sub-catchment areas that could potentially contribute

runoff to Eagle Canyon are K-3, K-2, and K-1 as delineated on Figure 3. A low flow diversion is planned for the project to divert runoff from small to moderate sized rainfall events to a biofiltration treatment system prior to release to this environmentally sensitive area. The diversion system includes a swale to collect, treat, and transport runoff to an enhanced biofiltration buffer area where it will be further treated before being released.

GOLF COURSE WATER QUALITY ENHANCEMENT GUIDELINES

The options available for water quality enhancement can be divided into the four primary phases of any development project: planning, design, construction, and maintenance. The actions taken in each one of these phases can substantially reduce the impact the quality of stormwater runoff and the receiving water bodies.

PLANNING

Two of the pre-design activities that may have a bearing on water quality design features that could potentially be incorporated into the layouts of golf courses include natural resource considerations in site selection and professional and stakeholder involvement.

The Santa Clara guidelines recommend choosing a site that would involve minimum alterations to the existing natural terrain and vegetation. Sites with dense forest cover (greater than 60%) should be avoided. A certified professional arborist, botanist, or forester should be consulted to evaluate the status of trees and related habitats on site. Slopes no greater than 20% are recommended for the playable regions of the golf course. Slopes greater than 30% or highly erodible soils should not be disturbed. Historic flood zones, landslide areas, and archeological sites should be identified for design considerations.

The Colorado guidelines recommend completing a water and natural resources inventory and evaluation to assess the potential impacts on existing flora and fauna of the selected site. This recommendation is also a requirement of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Once potential impacts are assessed, source control measures should be identified to mitigate those impacts. The proposed golf course superintendent or manager should be included in the planning phase to provide recommendations on golf course design. Concerned environmental organizations should be consulted to reduce conflicts of interest and raise public recognition. Easements could be established to allow conservation groups to maintain and monitor existing natural and sensitive areas.

Existing surface and groundwater quality should be assessed and a state-licensed pest control advisor certified in groundwater protection should be consulted for site selection and design recommendations in regards to infiltration issues. In addition, a water source depletion analysis should be conducted in areas where surface or groundwater supplies are low.

DESIGN

The design of a golf course can greatly affect the runoff volume and quality of stormwater. Some of the water quality related issues to consider in the design phase of a golf course development project include drainage, natural resources, surface water treatment facilities, and water demand.

Drainage Considerations

If groundwater quality may be adversely impacted by infiltration practices, the Santa Clara guidelines suggest including an underdrain system to convey percolated irrigation and stormwater to treatment facilities.

Paved areas should be minimized to reduce the transport potential of vehicle-related pollutants. Cart paths and roadways should be graded away from streams. Flow velocity and quantity controls may need to be incorporated into the design to maintain pre-development flow conditions if they are required for erosion control or stream protection.

When groundwater impacts are not a concern, the Colorado guidelines recommend maximizing infiltration. "Natural" drainage practices (i.e., avoiding concrete ditches and pipes) should be used to convey surface water flows. As with the Santa Clara recommendations, reverse grading and offsite velocity controls should be employed to reduce adverse impacts to existing water bodies.

Natural Resources Considerations

Both guidelines recommend minimizing impacts to riparian corridors and habitats by selecting disease and pest resistant turf grass species, designing low impact or wide spanning bridges, minimizing the number of stream crossings, and using setbacks or barriers to protect sensitive areas. The Colorado guidelines recommend incorporating wildlife habitat as project design features and the Santa Clara guidelines recommend leaving or enhancing existing vegetation between fairways. As mentioned above, the Colorado guidelines recommend conservation easements to be established, while the Santa Clara guidelines recommend permanent open space easements to protect ecologically, archeologically, or geologically significant areas.

Surface Water Treatment Facilities (BMPs)

Several surface water treatment best management practices (BMPs) can be incorporated into golf course design. The Santa Clara guidelines give recommendations for areas that have groundwater impact concerns. These recommendations include using underdrain leachate peat-sand filters in areas of permeable soils to ensure adequate treatment before infiltrating flows to groundwater and using impervious liners in irrigation or retention/detention surface water treatment ponds for treating runoff. Other recommendations include the use of oil separators, grease traps, and buffer strips in parking and golf cart maintenance areas. The Colorado guidelines also recommend the use buffer strips and retention/detention ponds. In addition, they recommend utilizing grass-lined swales and man-made wetlands for further enhancement of surface water quality.

Water Demand Considerations

Both guidelines suggest designing advanced, or "state-of-the-art" irrigation systems. A system capable of monitoring meteorological activity is proposed in the Santa Clara guidelines. Both recommend using non-potable or treated wastewater if possible. Flow reuse and stormwater reuse is proposed in the Colorado guidelines. Additional water demand considerations recommended in the Santa Clara document include selecting drought resistant turf grasses and landscape vegetation as well as using low-flow fixtures on ancillary facilities for water

conservation. The water source depletion analysis conducted during the planning phase should be reviewed to determine onsite storage requirements for non-potable water and/or stormwater if needed.

CONSTRUCTION

During the construction phase of any project the potential for impacts to wildlife habitat and water quality is high. Sensitive natural areas may be greatly affected by the disruption of compacted soil and the removal of existing vegetation. The primary water quality issues to consider during the construction phase of a golf course development includes erosion and sedimentation and impacted natural resources.

For site selection, the Santa Clara guidelines recommend not grading areas with slopes greater than 30% or containing highly erodible soils. Siltation or sediment barriers should be used to contain disturbed soils and prevent their offsite migration. Temporary construction fencing should be installed around all ecologically sensitive areas. Removal of trees should be minimized; however, if trees are to be removed during construction, native species should be replanted at a minimum of 3:1 ratio. Only hand compaction methods should be employed for cart paths going under the driplines of trees to avoid damage to their root system.

The Colorado guidelines recommend developing a surface protection strategy including careful scheduling and timing of all soil disturbing activities. To preserve topsoil during subgrade installations it should be stockpiled and covered. Any temporary seed mix used for soil stabilization should be compatible with the final mix design. As with the Santa Clara guidelines, native habitat and species should be protected using barrier fencing.

Additional water quality enhancement techniques that could be employed during the construction phase not mentioned in the two guidelines include:

- Limiting the areas of disturbance or exposed soil at any one time,
- Constructing sediment traps and basins before land-disturbing activities begin, and
- Testing soil for types and levels of existing nutrients to aid in fertilizer application rates.

MAINTENANCE

As with any water quality enhancement effort, maintenance is a key factor in continued water quality protection. The heavy chemical application often associated with golf course maintenance has the potential of posing serious threats to sensitive plant and animal species. As the guidelines recommend, environmental impacts associated with the operational phase of the golf course can be minimized with the development of conservative irrigation, fertilization, pest control, and other management plans, along with consistent monitoring efforts.

The Santa Clara guidelines suggest developing an Integrated Pest Management Plan (IPMP). The IPMP should describe how slow-release, less soluble, and least mobile pesticides, herbicides, and fertilizers should be applied at the lowest possible rates to achieve the desired results. Chemical storage facilities should be covered, secured, and well ventilated. The plan should include a control element to address invasive and exotic plants so that quick and efficient eradication methods can be employed. In the event of the detection of water quality degradation,

a contingency plan should be available for rapid response.

An IPMP is also recommended in the Colorado guidelines. The key components of the plan outlined in the document include: "prescriptive" pest control on a "management unit" basis, establishing natural pest enemies, maintaining balanced turf grass ecosystems, and using traps, attractants, and careful irrigation and fertilization techniques. Some of the other management plans mentioned are a landscape and vegetation management plan, a turf management plan, a golf course lake management plan, a spill prevention control and countermeasures plan, and a BMP maintenance plan.

Many maintenance activities not specifically mentioned in the documents would be addressed in the management plans. However, it is important to stress that water quality impairment due to chemical application can be limited by:

- Using a mulcher-type lawn mower to leave grass clippings on the turf where practical and to compost clippings if they are bagged. Every 100 pounds of dried grass clipping contains about 4 pounds of nitrogen, 0.5 pounds of phosphorus, and 2 pounds of potassium that can be recycled on-site to feed turf and landscape vegetation. Test the soil every 1 to 2 years and base fertilizer application rates on the test results.
- Minimize fertilization rates on slopes and compacted soils to decrease potential for runoff. Frequent aeration and limiting traffic on wet turf can decrease compaction problems.
- Use only slow-release fertilizers on sandy soils. Follow an application schedule using fewer quantities more often.
- Only use pesticides that have low leaching potential.

DOS PUEBLOS GOLF LINKS SURFACE WATER QUALITY PROTECTION APPROACH

RUNOFF VOLUME

Several documents and exhibits that contain information relating to the sub-drainage areas on-site were reviewed and relevant data was compiled for comparison and analysis. These documents include:

1. *Final Environmental Impact Report for the Arco Dos Pueblos Golf Links Project 92-EIR-16*, March 1993
2. *Dos Pueblos Golf Links Final Drainage Report*, Penfield & Smith, October 1998.
3. *Dos Pueblos Golf Links Site Plan* (exhibit), Dudek & Associates, June 12, 2001.
4. *Habitat Conservation Plan, Dos Pueblos Golf Links*, County of Santa Barbara, Dudek & Associates, July, 2001.

The sub-drainage, land use information, and drainage patterns presented in each of the documents were reviewed. As is typical for planning level documents, the sub-drainage areas were generally similar between the documents but were not in precise agreement. Discrepancies between the presented information were reconciled by performing "manual take-offs" (hand measurements) of areas from the drawings and estimating imperviousness from high-resolution aerial photographs. The result was delineation and description of the sub-drainage areas on the project site that closely agrees with the planning documents and contains sufficient information to assess stormwater runoff volumes from the site.

As previously mentioned, Penfield and Smith's drainage report indicates there are twenty-one sub-drainage areas that generate most of the surface runoff from the site. These drainages flow north to south but are not continuous as the Union Pacific Railroad bisects the entire site from east to west. Table 1 summarizes pre-remediation sub-drainage area and site conditions. Figure 3 shows these sub-drainage areas superimposed on an aerial photograph taken just prior to the beginning of site remediation (1992).

Table 1: Summary of Pre-Remediation Sub-Drainage Areas and Descriptions

Sub-Drainage	Area (acres)	Estimated Acres Impervious (1992)	Estimated % Impervious
A-1	24.0	2.25	9%
B-1	14.3	3.75	26%
B-2	14.5	0.29	2%
B-8	5.6	0.11	2%
B-5	14.4	0.29	2%

Table 1: Summary of Pre-Remediation Sub-Drainage Areas and Descriptions

Sub-Drainage	Area (acres)	Estimated Acres Impervious (1992)	Estimated % Impervious
C-1	8.1	2.00	25%
C-2	17.0	0.34	2%
D-1	11.5	3.50	30%
D-2	13.0	0.26	2%
E-1	5.1	0.10	2%
F-1	8.4	2.75	33%
F-2	15.0	0.30	2%
F-4	9.8	0.20	2%
G-1	3.6	0.07	2%
H-1	2.8	1.00	36%
I-1	4.4	1.00	23%
I-2	11.0	2.00	18%
J-1	5.7	1.50	26%
K-1	5.0	0.75	15%
K-2	6.9	2.25	33%
K-3	2.3	0.05	2%
Total	202.4	24.8	12%

Table 2 summarizes planned post-development conditions of the same sub-drainage areas presented in Table 1.

Table 2: Summary of Post-Development Sub-Drainage Areas and Descriptions

Sub-Drainage	Area (acres)	Estimated % Impervious	Estimated Acres Impervious	Conveyance (acres)		Estimated Acres Developed	Estimated Acres Undeveloped
				Natural [1]	Collected [2]		
A-1	24.0	2%	0.48	21.3	2.69	20.4	3.6
B-1	14.3	2%	0.29	12.6	1.75	3.6	10.7
B-2	14.5	2%	0.29	14.5		5.8	8.7
B-8	5.6	2%	0.11	5.6		1.4	4.2
B-5	14.4	2%	0.29	14.4		10.8	3.6
C-1	8.1	2%	0.16	6.0	2.14	2.0	6.1
C-2	17.0	2%	0.34	16.6	0.39	17.0	0.0

Table 2: Summary of Post-Development Sub-Drainage Areas and Descriptions

Sub-Drainage	Area (acres)	Estimated % Impervious	Estimated Acres Impervious	Conveyance (acres)		Estimated Acres Developed	Estimated Acres Undeveloped
				Natural (1)	Collected (2)		
D-1	11.5	2%	0.23	8.2	3.27	2.9	8.6
D-2	13.0	2%	0.26	13.0		13.0	0.0
E-1	5.1	2%	0.10	5.1		3.6	1.5
F-1	8.4	2%	0.17	6.2	2.24	4.2	4.2
F-2	15.0	2%	0.30	13.7	1.34	11.3	3.8
F-4	9.8	2%	0.20	9.8		9.8	0.0
G-1	3.6	2%	0.07	0.0	3.57	2.7	0.9
H-1	2.8	2%	0.06	0.1	2.68	2.1	0.7
I-1	4.4	2%	0.09	0.0	4.37	2.2	2.2
I-2	11.0	60%	6.60	0.0	11	11.0	0.0
J-1	5.7	2%	0.11	1.8	3.93	1.4	4.3
K-1	5.0	2%	0.10	4.2	0.76	5.0	0.0
K-2	6.9	10%	0.69	4.7	2.25	6.9	0.0
K-3	2.3	2%	0.05	0.1	2.2	2.3	0.0
Total	202.4	5%	11.0	158	45	139	63

(1) Natural conveyance indicates the number of acres that will be drained by natural channels or sheet flow.
(2) Collected conveyance indicates the number of acres that will be drained by piped systems.

The above analysis of pre- and post-development conditions indicates that the project as proposed will result in an overall reduction in impervious surface on the property from about 25 acres to 11 acres and therefore a decrease in total runoff volumes and total pollutants particularly during low to moderate sized storm events will occur.

ENDANGERED SPECIES

In response to stakeholder concerns as they relate to endangered species identified in Eagle Canyon, the Owner has agreed to implement measures to collect and treat all dry weather flows (not storm related), nuisance flows, and runoff from minor storm events (less than 0.3 inches/hour) before they are released to Eagle Canyon. These measures include collection of stormwater and conveyance via a bio-filtration swale to an enhanced buffer system for treatment. It is expected that the majority of the low flows will be absorbed, infiltrated, or evapotranspirated in the buffer area. The flows that do continue to Eagle Creek should be effectively treated prior to their release to the canyon. These measures should prevent any direct input of chemicals associated with golf course runoff to Eagle Canyon during periods when the waterbody is most sensitive to the chemicals. During larger events, the contribution of runoff from the 8 on-site

acres would not be significant as compared to the total runoff from the entire 2,900-acre watershed.

Aerial deposition of chemicals directly to the lagoon on Eagle Canyon is another route by which fertilizers and pesticides could enter the receiving water. The prevailing wind direction at the site is on-shore and would transport any over-spray of chemicals away from the lagoon. There are infrequent periods when the wind direction is offshore (Santa Ana Winds) and could possibly result in some aerial deposition of chemicals to the lagoon from golf course activities. The owner has agreed to limit aerial application of chemicals on the 9-hole golf course adjacent to Eagle Canyon to calm periods when the prevailing wind direction is on-shore.

WATER QUALITY

SOURCE CONTROLS

Perhaps the most effective measure to protect surface waters proposed by the Owner is the implementation of an integrated pest management plan (IPMP). The goal of the IPMP is to optimize pesticide, herbicide, and fertilizer usage to maintain the health of golf course vegetation and the quality of adjacent water bodies. This goal can be accomplished by targeting application of chemicals to specific areas in need of attention, selection of chemicals that quickly degrade and are the least toxic to species other than their primary target, managing application rates and schedules to maximize effectiveness of the chemicals while minimizing the amount used and the potential for off-site transport, and isolation of critical habitat areas from possible accidental application by use of vegetated buffers.

An acceptable threshold level for weeds and pests must be established, so judicious herbicide and pesticide application rates can be followed. Threshold levels, such as what types of weeds (if any) are to be allowed in the rough or how many insects are to be allowed per square foot, should be established for each section of the course and provided in written detail in the IPMP. The superintendent should be knowledgeable about the grasses being grown, the weeds and pests that are likely to cause problems, and the most environmentally friendly methods of their control. Weed and pest activity should be monitored and current records kept to assist in future planning and management.

The proposed Dos Pueblos Golf Links is not subject to specific requirements such as those in the Santa Clara County Environmental/Design Guidelines for Golf Course Development, and the conceptual design for the project was approved before those guidelines were developed. However, the project incorporates almost all of the requirements of the guidelines in its design and operations and maintenance plan including:

- development of an integrated pest management plan (IPMP) which details the types, scheduling, and application rates of chemicals for fertilization and pest control to maximize their effectiveness and minimize potential for off-site transport,
- use of less toxic, quickly degradable pesticides, herbicides, and fungicides,
- use robust turf grasses that are pest and drought resistant for fairways and roughs,
- installation of state of the art irrigation system to minimize irrigation and potential generation of nuisance flows, and
- ongoing education for golf course maintenance staff in chemical application.

STRUCTURAL BEST MANAGEMENT PRACTICES

Several options exist for structural control and treatment of stormwater runoff from the proposed golf course. As mentioned above, some of the common structural BMPs incorporated into the project design features of golf courses include retention and detention ponds, vegetated buffer strips and berms, and grass-lined swales. For the Dos Pueblos Golf Links, several water quality improvement features are currently included in the design, such as desiltation basins, native vegetation buffers near the bluff zones, and construction envelopes outside of the drainage areas and around vernal pools. In addition, landscaping BMPs incorporated into the drainage scheme would provide even more treatment, particularly in and around the parking areas. The original parking lot plan included concrete parking lot curbs, which may have a tendency to concentrate flows and associated pollutants. As a landscaping option, grass-lined or vegetated landscaped swales are recommended in the island areas between parking rows and at the edge of parking lots where the topography and other conditions will permit. Vegetated buffer strips are recommended at the edges of parking areas not suited for swales and in the other areas near ecologically sensitive areas. Both swales and buffer strips use biofiltration as their means of water treatment. Biofiltration includes the processes of sedimentation, infiltration, and plant uptake. Criteria for these two types of water treatment landscape designs are provided in the paragraphs below.

Biifiltration Swales

The most basic swale is a trapezoidal shaped ditch lined with vegetation, gravels, or mulches. To optimize treatment, prevent erosion, and maintain a healthy swale a few design criteria are listed below.

1. Swale Bottom: The bottom should be flat perpendicular to flow. Length should be no less than 100 feet. For grass-lined swales, the width should be between 2 to 10 feet to provide ease of mowing and prevent water forming low-flow channels.
2. Swale Banks: Non-reinforced side slopes should be no greater than 3H:1V.
3. Longitudinal slopes: Less than 6% to provide low enough velocities for treatment and high enough velocities to maintain overland flow.
4. Flowing water depths: No more than 2" under the water quality design flow conditions and no more than 6" under the 100-yr. flow conditions.
5. Liner soils: 2" of well-rotted compost or topsoil with organic content of 10% or greater tilled with 6" of native soil. Compost shall not have sawdust, straw, green, under-composted organic matter, or unsterilized manure. Clay content shall not exceed 10% in soil or sod. Gravels may be used with drought tolerant plants as a vegetation option.
6. Grass height (if grass is used): 4"-9" in height. A mixture of species (preferably native, otherwise noninvasive) that can tolerate wet and dry conditions and continue to grow through silt deposits. Operational density should be between 600-1600 blades/ft^2. Other options include the use of mulches and deep-rooted plants.
7. Aesthetics: curved swales are recommended, however bends should be gentle to prevent scouring. The trapezoidal shape is a guideline for side slope and should be modified to

have the shape of a natural channel.

The plan view of a typical grass-lined swale is shown below in Figure 4. This type of swale will be incorporated into the fairway drainage system along the surface flow path and will treat runoff from the playing surfaces. Appropriate vegetation, and maintenance practices will be applied to these areas so that they conform to the swale requirements mentioned above.

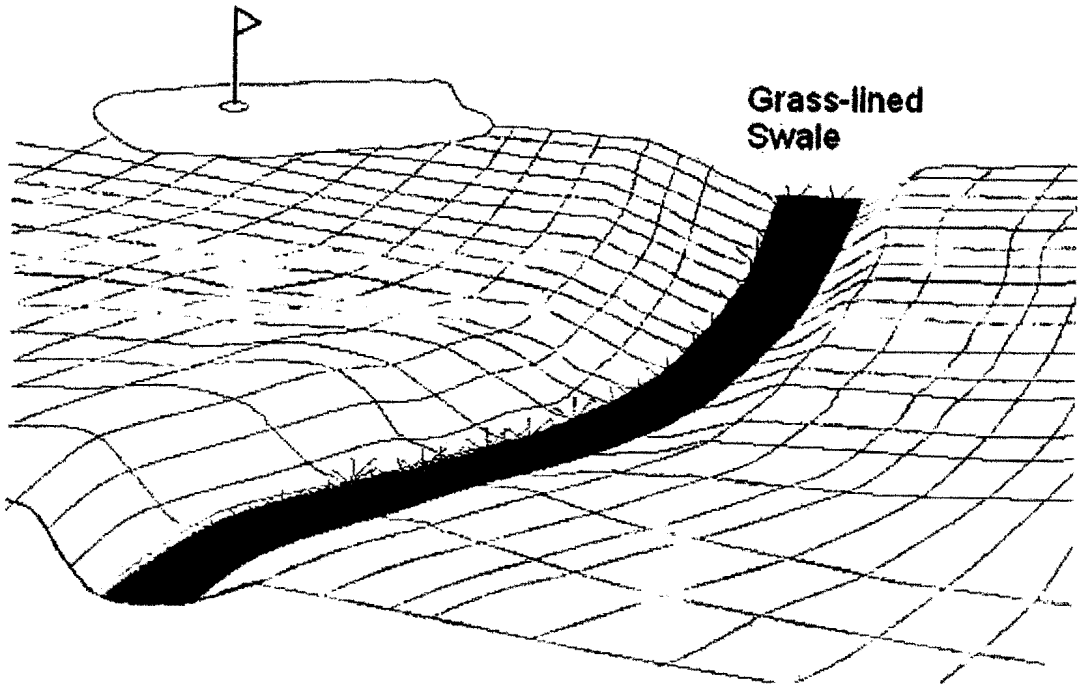


Figure 4: Typical Fairway Swale

The runoff from the club house, patio areas, and other impervious surfaces will be treated by a biofiltration swale. A typical biofilitration swale is illustrated in Figure 5.

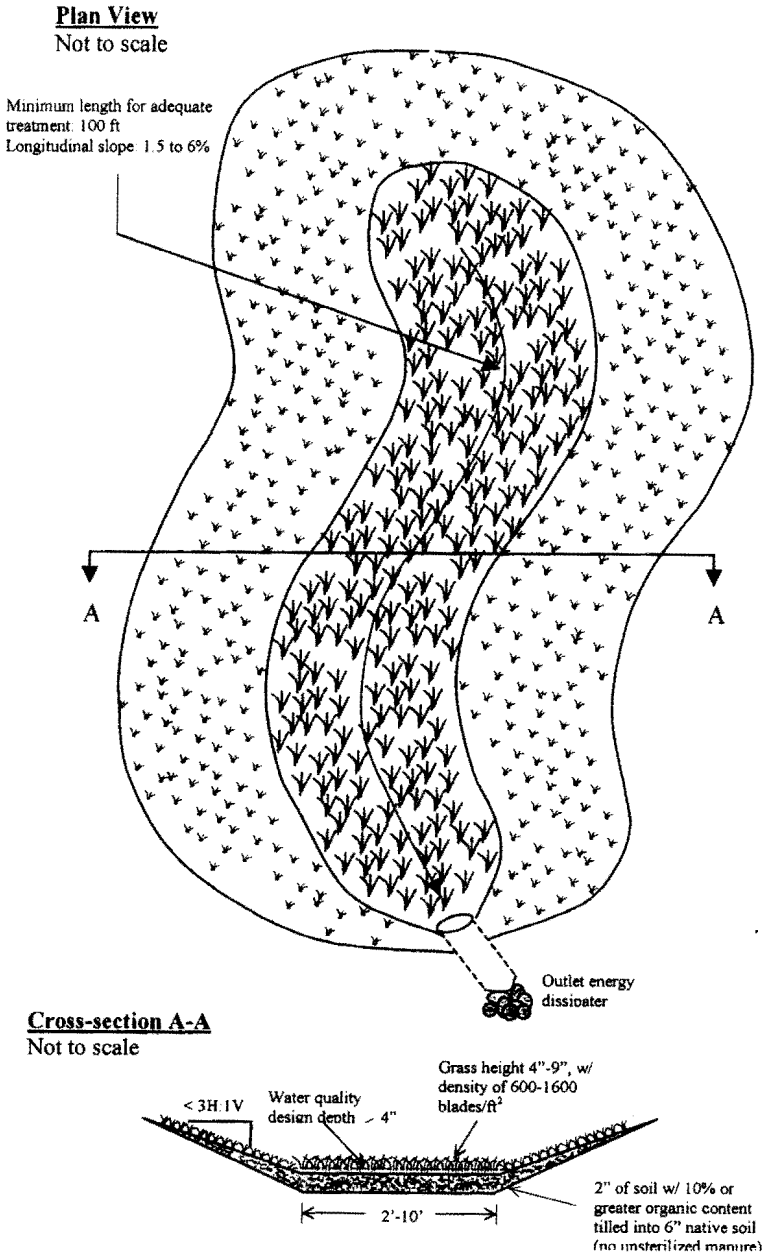


Figure 5: Typical Biofiltration Swale

Specialized swales will be incorporated into the parking lot median strips to treat runoff from the parking areas. The parking lot will be graded such that any runoff generated will drain into the median strips where treatment can occur through infiltration, sedimentation, adsorption, and biological uptake. A typical parking lot swale is illustrated in Figure 6.

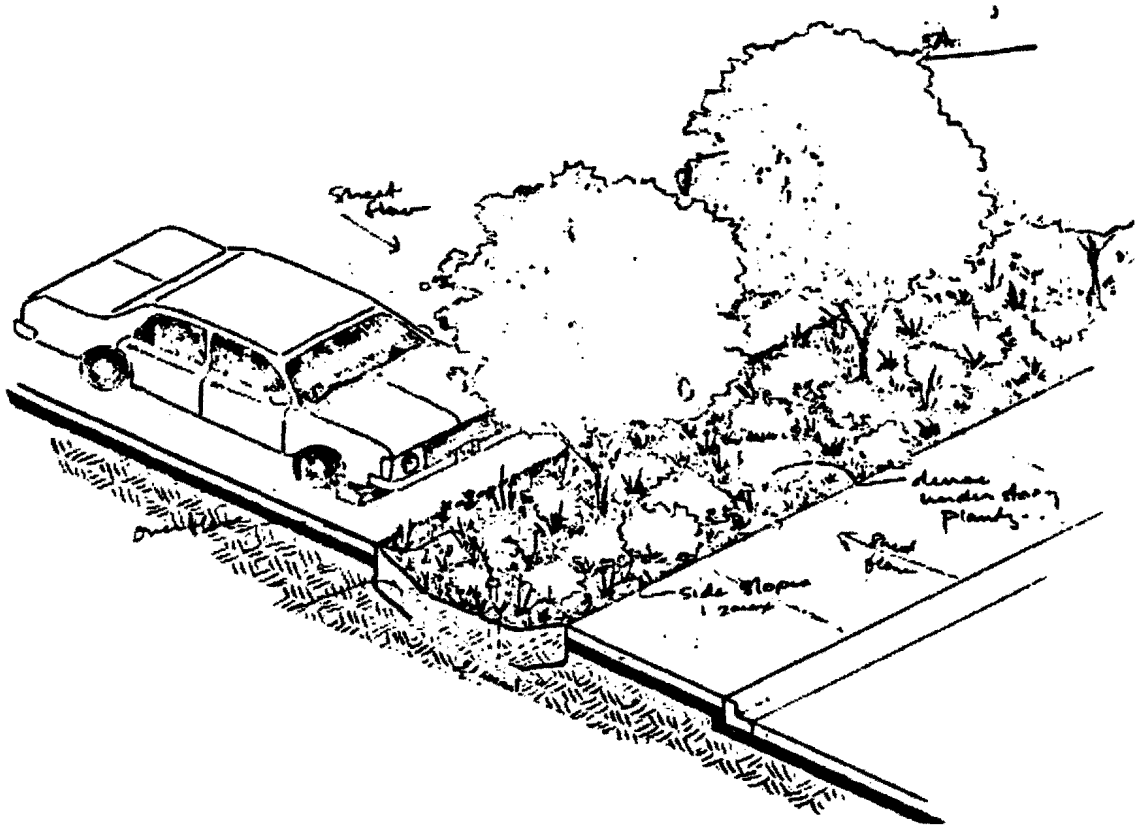


Figure 6: Typical Parking Lot Swale

Buffer Strips

A buffer strip is an unfertilized vegetated slope designed to treat surface runoff through the processes of biofiltration. They are usually located along roadways or water bodies. The design specifications of a typical buffer strip are listed below.

1. Contributing Area: should be uniformly distributed across the top of the buffer strip. If paved, the longitudinal slope should be no greater than 5% and energy dissipating or flow spreading mechanisms, such as a gravel lined trench, should be upslope of the buffer strip.
2. Buffer Strip Dimensions: the width (in the direction of flow) of a buffer strip should be no less than 4 feet and no greater than 150 feet.
3. Slopes: Lateral slopes no greater than 2%. Longitudinal slopes between 1-15%.
4. Soils: 2" of well-rotted compost or topsoil with organic content of 10% or greater tilled with 6" of native soil. Compost shall not have sawdust, straw, green, under composted organic matter, or unsterilized manure. Clay content shall not exceed 10% in soil or sod. Soils should be compacted and graded to prevent the development of rills and gullies.

5. Grass: As proposed in the projects' Biological Enhancement Plan, only native or noninvasive grass seed or sod should be planted. If sod is to be used, no gaps should appear between sod pieces.

The plan and profile of a typical buffer strip alongside of a riparian zone is shown below.

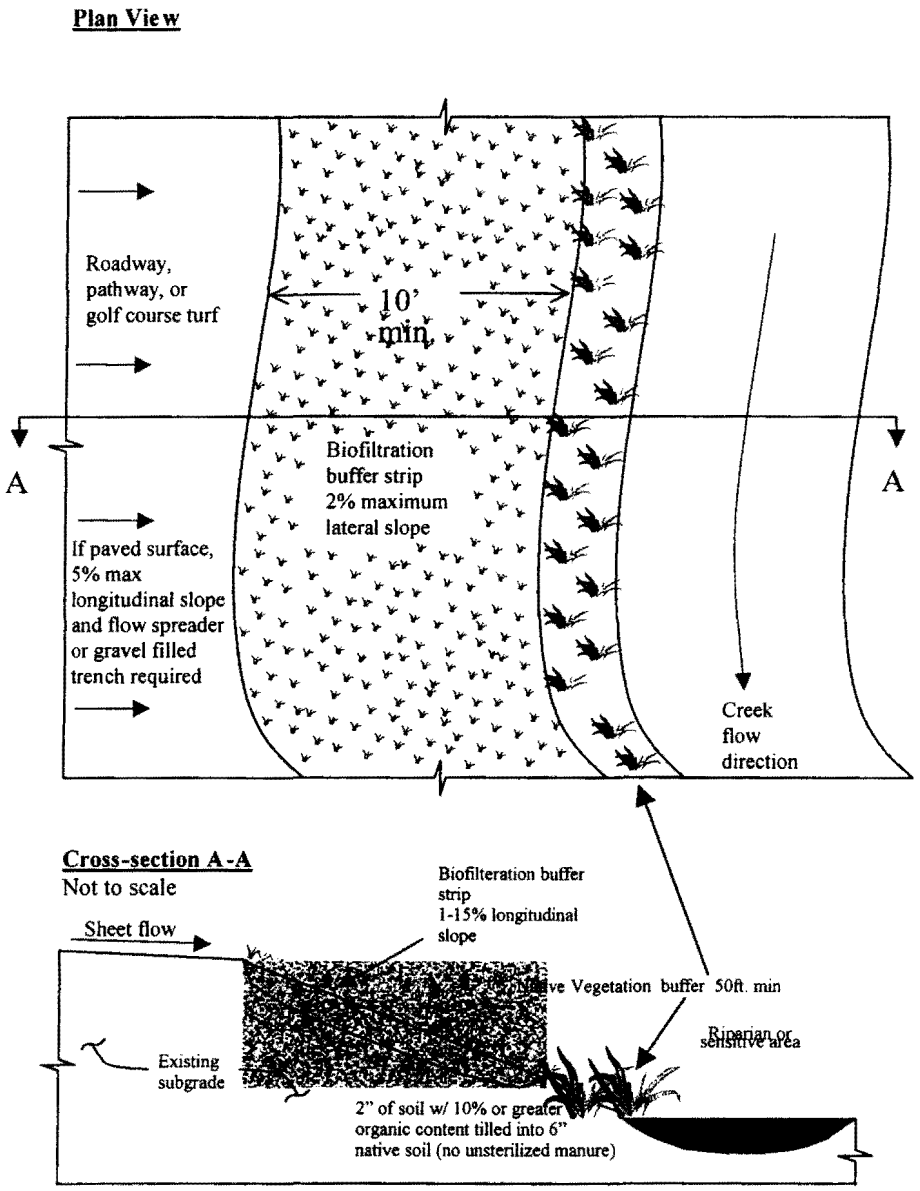


Figure 6: Typical Buffer Strip

Along Eagle Creek an enhanced biofiltration buffer strip will be employed. The enhanced buffer differs from the typical buffer in that it is wider (a minimum of 20 ft.) and includes an 8 foot wide compost filter along the upgradient margin of the buffer. The compost will absorb nuisance flows, encourage evapotranspiration, and provide media for organisms that can biologically

degrade chemicals that may be associated with runoff. The compost strip will be periodically augmented and tilled to maintain its depth and function.

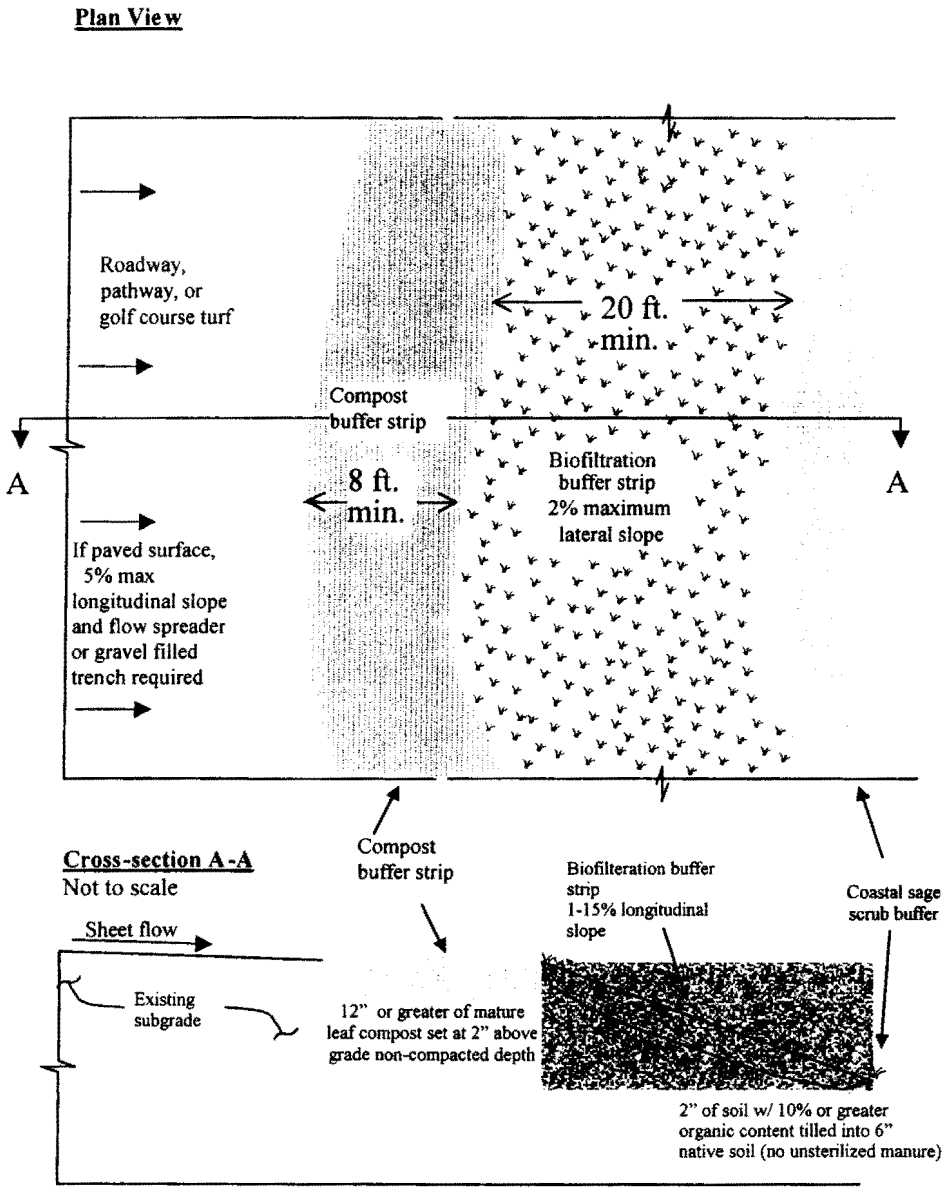


Figure 7: Enhanced Buffer Strip

COMPARISON OF DOS PUEBLOS WATER QUALITY PLAN TO PUBLISHED WATER QUALITY GUIDELINES

As mentioned previously, the County of Santa Barbara has yet to develop any surface water guidelines for surface water quality enhancement that are specific to golf course development. The proposed project design and operations and maintenance plans have however, included many of the recommendations suggested in the guidance documents reviewed. Table 3 provides a comparison between the water quality protection and enhancement measures incorporated into Dos Pueblos Golf Links design and O/M plans with those recommended by the Santa Clara County and Denver guidelines.

	Santa Clara County Guidelines	**Denver Guidelines**	**Dos Pueblos Golf Links**
Planning			
Site selection and natural resources considerations	• Avoid areas requiring substantial alteration of the existing terrain or vegetation • The selected site should not be heavily forested (with more than 60% tree canopy coverage) • Natural hazards such as flood zones and landslide areas should be identified for design considerations • Archeological and/or historic features should be identified for protection • Water source depletion analysis	• Water and natural resources inventory and evaluation • Identify source control measures to mitigate impacts	• Site selected was previously an oil production and storage facility, it is relatively flat, and well suited topographically for golf course development. • Natural hazards have been evaluated and mitigation developed where required. • Archeological sites have been identified and a cultural resources protection plan has been developed. • Project uses 100% reclaimed water and will not cause any water source depletion.
Professional/ stakeholder involvement	• Consult a state-licensed pest control advisor certified in groundwater protection • Consult a certified	• Involve the proposed golf course superintendent or manager in planning phase • Involve affected/	• Project was approved and permitted in 1993 after review of EIR by commentors. • Pest control advisors were consulted. • A professional Golf Course consultant has been involved

	Santa Clara County Guidelines	Denver Guidelines	Dos Pueblos Golf Links
	professional arborist, botanist, or forester to evaluate the status of trees and related habitats on site	concerned environmental organizations	throughout the process with the goal of minimizing chemical usage and maintaining a healthy playing surface developed the IPMP for the project. • An arborist and botanist have evaluated the trees and habitats.
Design			
Drainage considerations	• Underdrain system to minimize groundwater impacts • Limit paved areas • Flow velocity and quantity controls • Cart paths graded to drain away from streams	• "Natural" drainage practices • Maximize infiltration • Reverse grading • Offsite velocity controls	• The golf course was designed to use exiting contours where possible. • Grading disruption will be less than 100,000 cubic yards. • Extensive greens drainage systems to capture residual materials • The majority of the proposed impervious areas (club house, parking lot, etc.) are located in previously developed areas. • Overall the project will result in a net decrease in impervious surface. • Cart paths are designed to run generally perpendicular to streams with few crossings. • Reverse grading will be incorporated to divert runoff to treatment BMPs and away from natural channels where possible. • A minimum 50 ft buffer area will be maintained in areas where sheet flow will enter surface waters.
Natural resources considerations	• Pest and disease resistant grass species should be selected to minimize chemical application • Create and restore riparian habitat • Leave existing or enhance vegetation between fairways • Minimize stream crossings • Bridges should min-imize alterations to stream environment • 75-150 foot setbacks	• Pest-resistant turf grass cultivars should be used to minimized chemical application • Minimize riparian corridor disruption • Minimize stream crossings and/or impacts of stream crossings • Conservation easements • Incorporate wildlife habitat as design features	• A pesticide resistant grass species is being considered for fairways an roughs. This type of turf is very robust in coastal areas and requires less chemical input than typical golf course turf species. The greens are to be constructed using Poa, thus reducing chemical use. • Conservation easements, buffer areas, and riparian protection zones have all be incorporated into the facility design resulting in a net increase in riparian habitat. • A habitat conservation plan has

	Santa Clara County Guidelines	Denver Guidelines	Dos Pueblos Golf Links
	of structures, roadways, and parking lots from habitat and streams unless sufficient mitigations are possible • Barriers should be established to protect sensitive areas • Permanent open space easements		been developed to preserve sensitive areas and habitat for native species that may be present. • Approximately32% of the site will be untouched by the proposed development. The golf course itself (playing areas, parking, clubhouse, and ancillary facilities) will occupy about 40% of the site. About 35% of the site (70 acres) will be landscaped areas into which native vegetation species will be incorporated where possible. • There are no stream crossings. • Clear span bridges have been designed to avoid alterations of stream environments.
Surface water treatment Best Management Practices (BMPs)	• Underdrain leachate filters • Retention/detention ponds • Impervious liners • Buffer strips • Oil/grease traps • Parking area runoff treatment	• Retention/detention ponds • Buffer zones/strips (can be incorporated into the fairways and "near rough" areas) • Grass-lined swales • Man-made wetlands	• Tees and green will incorporate under drain systems collect leachate. • All low flows will be treated prior to release to Eagle Creek (the most biologically sensitive area) • Grass lined swales or surface sheet flow over vegetated areas will be used for surface transport of runoff where possible. • Parking lot runoff will be treated with in median strips with vegetated swales and then diverted to a sedimentation basin for further treatment. • Runoff from equipment maintenance and chemical storage will be colleted , temporarily stored, and disposed of off site, or treated onsite and discharged to the sanitary system.

	Santa Clara County Guidelines	Denver Guidelines	Dos Pueblos Golf Links
Water demand considerations	• State-of-the-art irrigation systems with site meteorological monitoring capability • Selection of drought resistant/tolerant turfgrass species and landscape vegetation • Use of low-flow fixtures in ancillary facilities • Use of non-potable water supply, with possible reclaimed wastewater	• Advanced irrigation design • Return flow reuse, stormwater reuse, and/or treated wastewater use	• State-of-the-art irrigation systems with site meteorological monitoring capability will be employed • Drought resistant/tolerant turfgrass species and landscape vegetation will be used where possible. • Use of low-flow fixtures in ancillary facilities • Facility will be irrigated with reclaimed wastewater
Construction			
Erosion/ sediment considerations	• Significant grading on steep slopes (30% or greater) or highly erodible soils should be avoided • Siltation barriers to reduce offsite sediment transport •	• Surface protection strategy • Scheduling and timing • Topsoil preservation • Seed mix used for temporary sediment stabilization should be compatible with final seeding needs	• A 30-ft setback from bluff slopes is specified in the grading plan. • Erosion controls will be implemented in accordance with County standards. • Topsoils will be preserved by stockpiling during grading and replacement after grading is complete. • Grading will be done incrementally and area stabilized before grading continues to next phase.
Natural resource considerations	• Construction fencing around sensitive areas • If trees are to be removed during construction, native species should be replanted at a minimum of 3:1 ratio • Hand compaction methods should be used for cart paths within the driplines of trees to be preserved	• Native habitat/species preservation • Habitat barrier system	• Access to sensitive areas will be restricted by fencing, signage, and dense vegetation. • Most existing trees will be preserved and many new native trees will be incorporated into landscaping plan. • A habitat conservation plan has been developed to minimize impacts of the project on existing species and to encourage habitation by species native to the area in newly landscaped areas.

	Santa Clara County Guidelines	Denver Guidelines	Dos Pueblos Golf Links
Maintenance			
Water quality monitoring	• Surface and ground water monitoring	• Monitoring and record keeping	• Periodic water quality monitoring will be conducted at Eagle Canyon and other drainages.
Chemical application and irrigation methods	• Integrated Pest Management (IPM) • Minimize use of pesticides, herbicides, and fertilizers. • Use of slow-release, less soluble, and least mobile chemical fertilizers, pesticides, and herbicides available • Adequate chemical storage facilities	• Integrated Pest Management (IPM) • Prescriptive pest control strategy on a "management unit" basis • Establish populations of natural enemies • Maintain balanced turf grass ecosystems • Use of competitive species • Use of traps, attractants, and/or biological treatments • Careful irrigation and fertilization • Prescriptive fertilization based on soil and vegetation tests	• Integrated Pest Management Plan (IPMP) is utilized. • Testing will be conducted to determine pesticide application and irrigation requirements. • Use of slow-release and organic fertilizers to reduce leaching. • Balance soils utilizing calcium/magnesium and organic matter. • Adequate chemical storage facilities will be provided.

Exhibit A illustrates the types and locations of some of structural water quality enhancement measures that are proposed for the Dos Pueblos Golf Links. In addition to these BMPs, there are several source control, planning, and design measures included in the project plans for water quality enhancement.

CONCLUSIONS

The overall project involves the conversion of what was formerly an oil production and storage facility and cattle grazing areas to a golf course and associated facilities. From the conversion and site remediation alone, it is likely that the project will results in fewer contaminants available onsite, thus reducing the potential for negative water quality impacts. The project will result in less impervious surface, which will reduce the quantity of runoff from the site. Golf courses and associated facilities do have some potentially significant sources of certain pollutants that have been addressed through careful planning and pollution control measures.

To ensure that ecologically sensitive areas in Eagle Canyon are not negatively impacted by the project, all runoff from small to moderate sized storm events, nuisance flows, and irrigation return flows will be diverted to an enhanced buffer area for treatment before release to the canyon. As will be discussed earlier, low flows and nuisance runoff from these 11 acres of onsite drainage will be collected and treated before being released to Eagle Creek as part of the proposed development. Water quality in this are will also be monitored regularly following any chemical application in areas tributary to Eagle Canyon to ensure that these measures are effective in protecting water quality in the creek.

The water quality protection and enhancement measures proposed for the Dos Pueblos Golf Links are very consistent with or exceed those recommended by the few agencies in the nation that have developed specific requirements or guidance for golf courses in protecting water surface and groundwater quality. We have recommended some additional water quality enhancement elements that have been incorporated into the project design, including:

1. The use of parking lot bio-swales.
2. Routing of building runoff and surrounding public areas to bioswales.
3. Containment and treatment of runoff from solid waste storage areas and compost piles.

Most of these additional water quality enhancement elements can be incorporated into the existing drainage plan by adding the appropriate vegetative cover along the current surface flow routing. However, some minor grading alteration may be required to maximize their performance.

With implementation of these measures together with the previously proposed water quality protection and enhancement measures, the Dos Pueblos Golf Course water quality program should prove to be highly protective of water quality and will likely serve as a model for future golf courses as a state of the art water quality design.

References

Santa Clara County Planning Office, Studies and Publications, Environmental/Design Guidelines for Golf Courses and Standard Development requirements,

Powell, R.O. and J.B. Jollie, Environmental Guidelines for the Design and Maintenance of Golf Courses, Baltimore County Department of Environmental Protection and Recourse Management

Colorado Nonpoint Source Task Force, Guidelines for Water Quality Enhancement at Golf Courses Through the Use of Structural and Nonstructural BMPs, 1996.

CALIFORNIA WILDLIFE ECOLOGY
3158 Bird Rock Road / Pebble Beach CA 93953

MEMORANDUM

10 September 2002

To: Andi Culbertson
From: Jeff Froke
Re: Dos Pueblos Recommendations

Andi --

These are my preliminary recommendations:

RECOMMENDATIONS:

1. That the 3-par golf course be retained and defended with the following conditions:

    a. Pesticides are restricted to bonafide emergency actions, i.e., outbreaks that would jeopardize tee and green complexes associated with the adjacent 18-hole course.

    b. Rodent removal is limited to trapping methods, exclusively.

2. That the 18-hole course be managed with the following guidelines:

    a. Rodent control is limited to trapping except where active incursions immediately threaten to invade tee and green complexes and in such circumstances chemical management would be limited to fumigation of burrows.

    b. All use of pesticides be tightly restricted to managed turf areas except for limited use of herbicides to manage nonnative plant infestations in either in-play or out-of-play roughs and natural habitat areas.

    c. Non-play areas that are distributed throughout the golf course environment and within the entire boundary of the Dos Pueblos property are cultivated and maintained with predominantly native grassland vegetation that, among other species of wildlife, will directly address the specific habitat requirements of White-tailed Kites.

3. That proposed and emerging designs for both the 9-hole and 18-hole golf courses be reviewed by a wildlife ecologist with respect to:

    a. Configuration and revegetation of non-turf areas including both in-play and out-of-play terrain;

    b. Habitat mitigation and management opportunities especially in regards to White-tailed Kites and other birds of prey.

4. That management of the golf courses substantially complies with the environmental principles for golf course management as have been developed by the Golf Course Superintendents' Association of America and other organizations comprising the Golf & Environment initiative (see http://www.gcsaa.org/resource/environ/principles.asp).

REQUEST:

May I get a copy of the current plans for both of the courses? Needed information includes (1) layout, (2) topographic, (3) course planting, (4) irrigation, (5) cart path, and (6) off-course

landscaping. Most useful would be a single sheet that encompasses the entire Dos Pueblos property boundary surrounding the proposed facilities. As a bonus, a .dxf file in addition to the printed plan would be very helpful.

Thank you, JBF

CALIFORNIA WILDLIFE ECOLOGY
3158 BIRD ROCK ROAD ▲ PEBBLE BEACH CA 93953

10 October 2002

COMMENT ON DESIGN & MANAGEMENT OF THE WATER STORAGE LAKE WITH RESPECT TO THE CALIFORNIA RED-LEGGED FROG AT THE DOS PUEBLOS GOLF LINKS PROPERTY, SANTA BARBARA COUNTY, CALIFORNIA

Prepared for

Andi Culbertson, Esq.
Culbertson, Adams & Associates
Aliso Viejo, California

Prepared by

Jeffrey B. Froke, Ph.D.
California Wildlife Ecology
Pebble Beach, California

INTRODUCTION

The following comments refer to California Red-legged Frogs (*Rana aurora draytonii*) at the site of the proposed Dos Pueblos Golf Links ("Dos Pueblos") in Santa Barbara County, California. In particular, these comments examine the possible relationship of frogs to the design and operation of an onsite water storage lake for the proposed golf course. I am familiar with both the frog species and proposed facility, having contributed to the pertinent discussions and drafting that led up to the project Habitat Conservation Plan. Additionally, I have quite a bit of direct experience planning and managing California Red-legged Frog resources in proposed and actual golf course environments throughout Central California.

For example and background,

Six recycled water storage reservoirs were constructed in occupied California Red-legged Frog habitat as part of The Preserve Golf Club at Santa Lucia Preserve in Monterey County, California. These reservoirs, which store treated wastewater from residential and golf course sources, are lined and open. Water level fluctuation in all of the ponds, both diurnally and seasonally, is comparable to that envisioned for the Dos Pueblos reservoir. The ponds are free of vegetation at all times and provide no cover for frogs' use. Frogs do not occupy the ponds.

Nearby, at Tehama Golf Club, a large storage reservoir has been constructed that functions more as a hybrid reservoir x vegetated pond; and its daily fluctuation is comparable to The Preserve and other local golf courses. The Tehama pond also was constructed in occupied California Red-legged Frog habitat. That pond was intentionally planted with shoreline emergent vegetation, and because of its size normal fluctuation are in the range of three to four feet. CRL Frogs have colonized the pond successfully.

And, as a third comparative example, the planned Happy Valley Golf Course (City of Pleasanton, California) will include a lined and open storage reservoir very much similar to that proposed for Dos Pueblos. Happy Valley also is California Red-legged Frog habitat; and the pond was studied and approved in light of the completed ESA section 7 Biological Opinion for the species and project. The objective at Happy Valley will be to exclude CRL Frogs from any more than incidental (in and out) access.

Items:

(1) Open or Closed?

Whether a storage pond is open or closed (covered) is not a main determinant of suitability or safety for frogs. The species is well-known to survive in (tertiary) treated wastewater and runoff from golf courses and agricultural fields. If open, i.e., if accessible to frogs, the important factors are the designed and evolved physical characteristics of the facility: Dr. Galen Rathbun's recommendation that the pond be constructed with a sloped

upper elevation is right-on. I agree to that the best open and sloped pond would have a 'brushed surface' that would give frogs and other wildlife a better foothold to escape the facility.

None of the ponds that I have built or restored with have vertical sides; and all are 'escapable' to wildlife that may fall in and need to crawl out of the respective pond. I have observed hundreds of California Red-legged Frogs that have found summer cover in tightly closed spring boxes and also under tightly sealed tarps, convincing me that they have dexterity and determination to crawl through very small openings. In this sense, I would be concerned about luring frogs into a covered basin that may be more difficult to escape from that an open basin. Finally, open reservoirs offer an important advantage for environmental management in that exposure to solar and wind energy promotes the breakdown of chlorines and nitrates in irrigation systems.

(2) Breeding Potential?

I completely agree with the consensus of experts that the programmed fluctuation of water level in the (open or closed) pond, combined with a smooth and non-vegetated lining will preclude frogs from breeding or attempting to breed in the water body. Frogs will pick-up right away that the pond is not at a stable level, that it has no vegetation for egg-attachment, and that it lacks a sediment or 'fluffy' bottom under which adults, tadpoles and juveniles need to dive for cover. During non-breeding seasons, the drastic drawdown and clarity of the water will deter frogs regular use, and then only by adults.

(3) Wetland Shelf?

Marginal and submerged shelves along the top edge of golf reservoirs provide aesthetic and/or habitat values; however, they have potential downsides as well. I caution against creating an aquatic setting that might be used by egg-laying frogs, and that if used for breeding could expose eggs and tadpoles to risks associated with the storage pond should they be washed into that portion of the facility. Referring to (1) above, frog biologists have confirmed that adult ranids have a wider tolerance to water conditions, such as temperature, salinity, toxicity and nitrification than do juveniles and more so eggs. Further, such a restricted area if to be used as frog breeding habitat would focus predation on tadpoles and juveniles by raccoons, foxes and herons and egrets. Secondly, the growth and accumulation of organic debris within the wetland site could affect the functions of the filtering and pumping facility, necessitating more frequent maintenance and repairs.

It would be more appropriate, in my opinion, to put the effort required to build a 'wetland shelf' instead to building and hydrating a small frog-worthy pond in the same vicinity but that is not directly tied to the storage pond facility.

In sum,

I believe that Dos Pueblos can most prudently manage for California Red-legged Frogs by building an open storage reservoir that has sloped (vs vertical) sides and that lacks a wetland shelf around the outer border of the facility. Such a reservoir would not pose a threat to wandering adult frogs; and if made to preclude egg-deposition would eliminate the primary risk of take of eggs and tadpoles.

Thank you for requesting my opinion and recommendation.

JBF

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October 17, 2002

M. Andriette Culbertson
President, Culbertson, Adams, and Associates
85 Argonaut, Suite 220
Aliso Viejo, CA 92656-4105

Re: Dos Pueblos Golf Links
A-4-STB-93-154-CC, and --A2 (Arco Dos Pueblos Golf Links)

Dear Ms. Culberston:

This letter responds to concerns expressed by Coastal Commission staff regarding the proposed removal of trees on the Dos Pueblos Golf Links project. Specifically, staff posed a question regarding the likelihood that removal of these trees could cause a change of wind patterns and/or microclimate at an autumnal aggregation site near Eagle Canyon. For our report, Monarch Butterfly Aggregations Associated with Eagle Canyon, revised version dated November 2001, we examined the proposed project plans, including tree removal plans for the site. We did not consider the proposed tree removals significant with respect to the aggregation sites, and made no recommendations regarding mitigation for the proposed removals. The only trees proposed for removal in the vicinity of the eucalyptus groves are a group of young Monterey cypress trees beginning approximately 170 feet northwest from the center of the autumnal aggregation site. The trees form a small grove that is approximately 75 feet long by 42 feet wide at the canopy edge, and are approximately 30 feet high. Removal of these trees will not affect butterfly aggregations for the following reasons:

1. The Monarch butterfly site on the Dos Pueblos Golf Links property is an autumnal site, occupied only through the middle of November (typically). Butterflies move from the autumnal site to protected locations in Eagle Canyon (or elsewhere) before windy conditions are common.
2. The canopy edge of the trees to be removed begins approximately 170 feet from the outer edge of the autumnal aggregation center. The trees are too distant and too small to significantly contribute to the highly localized temperature and humidity conditions in the aggregation trees. Considering the small profile of these trees in relation to the aggregation site, the trees are not

close enough to have a significant effect on blocking wind, changing wind direction, or altering light levels at the aggregation site.

3. The trees are located to the northwest of the aggregation site. Butterflies form clusters on the north side of the eucalyptus grove because protection is needed on the south, not the north, or northwest. Even during winter storms, wind protection is needed on the ocean side of the aggregations. That is one reason why winter aggregations occur on the north side of the railroad at this site. At this location winds typically blow from the south during storm events, since low-pressure centers usually cross the coast to the north as storms move east.
4. The Monterey cypress trees form a row, or grove that is at an angle to the aggregation site, and provide a very limited profile when viewed from the autumnal aggregation (see Figure below). It is not reasonable to expect that these trees significantly affect wind patterns, or microclimate at the butterfly site.

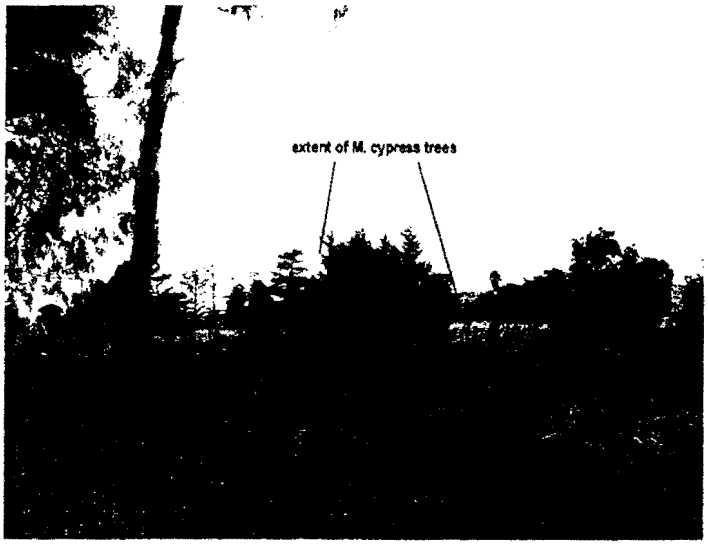

Figure. The group of trees in question as viewed from the center of the autumnal aggregation site. View is to the northwest. The camera view is with a normal (not wide-angle) lens.

Considering the above factors, the suggestion that removal of the cypress trees would have a significant effect on conditions in the aggregation sites is not supported. We examined tree removals in our initial review of the project and could not find a sufficient reason to project any detrimental wind or microclimate effect to the aggregation site. It is my opinion that the Monarch butterfly sites associated with Eagle Canyon will not be affected by the proposed tree removals at the Dos Pueblos Golf Links project.

Sincerely,

Daniel E. Meade

Daniel E. Meade, Ph.D.

CALIFORNIA WILDLIFE ECOLOGY
3158 BIRD ROCK ROAD PEBBLE BEACH CA 93953

CONSERVATION OF WHITE-TAILED KITES
AT DOS PUEBLOS GOLF LINKS
IN SANTA BARBARA COUNTY, CALIFORNIA

Prepared for

Andi Culbertson, Esq.
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Aliso Viejo, California

Prepared by

Jeffrey B. Froke, Ph.D.
California Wildlife Ecology
Pebble Beach, California

Submitted, 10 October 2002

PREFACE

Science is humanity's study of how Nature works. Successful natural resource conservation relies on both scientific understanding and creative input from non-scientific realms of Culture. As a technical and artistic endeavor, wildlife management derives much of its insight from science and simultaneously returns vital doses of feedback through inherent experimentation and constant observation of Nature.

Golf, as a wholly cultural (recreational and economic) pursuit, also has basic technical and scientific underpinnings; and when pressed to do so, the business of the game has more to offer wildlife conservation and management than many other areas of resource development.

This document has been prepared from the standpoint of wildlife management with support from a basic understanding of golf management. In this case, the purpose of management will be to conserve a persistent population of White-tailed Kites (ELANUS LEUCURUS) as one outcome of building and operating a golf course facility on portions of a ruderal landscape that presently is occupied by the species.

Therefore, the goal of this document is to establish – using scientific and artistic insight – whether long-term conservation of kites can reasonably be achieved in the course of golf development and if so, under what circumstances.

OBJECTIVE

This report responds to fundamental questions regarding the White-tailed Kite, golf courses as potential kite habitat, and the prospects for kites to continue occupying the Dos Pueblos Golf Links (hereinafter referred to as "Dos Pueblos") site after the proposed golf course project is completed and operational.

Q1 - Will/do kite populations successfully occupy golf course environments, and if so under what circumstances?

Q2 - Can two objectives, (1) protecting the Dos Pueblos kite population (including present and future birds), and (2) developing a championship golf program (18-hole facility) be made compatible?

BACKGROUND

Field biologists noted the presence of White-tailed Kites at Dos Pueblos as early as January 1999 (Dr. Rosemary Thompson, Science Applications International Corporation) and as recently as August 2002 (personal observation). Mr. John Storrer (Storrer Environmental Services) saw evidence of nesting on the property by a pair of kites on 10 March 2000. During 20-21 September 2001, Ms. Julie Vanderwier (Dudek & Associates) surveyed and described the non-reproductive activities of four adult kites. Subsequently, during May 2002, two groups of observers confirmed nesting and successful reproduction by a single pair of kites on the property and evidence of nesting by a second pair (Messrs. Mike Evans and Cornelius Bouscaren, Pacific Southwest Biological Services, Inc.; Messrs. Mark Holmgren and Morgan Ball, independent biologists). The findings and interpretations of these biologists, as well as an evaluation of their findings by senior CCC science staff (Dr. John Dixon) have been taken into consideration in making the present assessment.

To complement the available site-based data, this report examines two existing and reasonably analogous golf environments (comprising seven courses) that are persistently inhabited by breeding populations of White-tailed Kites. The comparable golf courses are located further up the California Central Coast in Monterey County, on or near the Monterey Peninsula.

Background for this report has been derived, in part, from reviewing the following project-related documents or sets of document:

- Grading & Drainage Plans (Coore & Crenshaw Inc. *et al.*, 16 April 1999);
- Habitat Enhancement Plan ... Associated with the Habitat Conservation Plan. (Dudek & Associates, January 2002);
- Dos Pueblos Golf Links Biological Landscape & Enhancement Plan and Southern Tarplant Materials (Katie O'Reilly Rogers, *et al.*, November 1998);
- Staff Report: Hearing on Changed Circumstances & Proposed Amendments (California Coastal Commission, 31 May 2002);
- Response to CCC Staff Report (Attachments A-I covered by letter from Steven H. Kaufmann to Sara Wan, dated 4 June 2002); and,
- White-tailed Kites at Dos Pueblos (an information packet with cover memo from Dr. John Dixon to Ms. Melanie Hale, California Coastal Commission, 7 June 2002; pp 43-243).

REFERENCE SITES

Figure 1 illustrates the locations of the following three study areas along the California Central Coast.

Dos Pueblos

From Dudek (2002) – 'The 208-acre Dos Pueblos project site is located south of U.S. Highway 101, approximately one mile west of Winchester Canyon Road, in the County of Santa Barbara, California. The project site lies immediately adjacent to the Pacific Ocean above the coastal bluffs. Much of the site has been previously disturbed or developed from oil drilling and gas development and production. The project site consists of a coastal terrace that slopes gently (less than 10 percent) towards the ocean and ends in a steep bluff that drops almost vertically to the beach. Soils onsite are dominated by Diablo clay that is characterized by slow permeability and high shrink-swell potential. Milpitas and Conception soils also occur (Soil Conservation Service 1981). The terrace is cut by a number of moderately to deeply-incised intermittent drainages.'

Pebble Beach (Del Monte Forest)

Six golf courses comprise much of the coastal strand of Pebble Beach, a community that is located at the southwestern (ocean-facing) portion of the Monterey Peninsula in Monterey County, California. Much of the area, which also is known as Del Monte Forest, was initially developed for residential, equestrian and golf uses during the mid-1920s; and subsequent in-fill and redevelopment has been more-or-less continuous from that period to the present. The six golf courses, which are under three different ownerships and management regimes, can be characterized as coastal links situated in dune, terrace grassland, rocky bluff, and forest and urban forest settings. Elevation range throughout the course complex is approximately sea-level to 300 ft ASL. The gently sloping area is cut by a series of permanent and seasonally intermittent drainages; and seasonal and permanent wetlands are present. The six coastal courses are:

- Cypress Point Club
- Pebble Beach Golf Links (Pebble Beach Company)
- Spyglass Hill Course (Pebble Beach Company)
- Links at Spanish Bay (Pebble Beach Company)
- The Shore Course (Monterey Peninsula Country Club)
- The Dunes Course (Monterey Peninsula Country Club)

Santa Lucia Preserve

The Preserve Golf Club encompasses approximately 400 acres that are situated inside the 20,000-acre Santa Lucia Preserve in coastal Monterey County, California. The Preserve is a former cattle ranch (Rancho San Carlos) that was converted to a mixed-use of natural resource restoration and management, and residential and recreational development in 1998. The golf portion of the landscape is situated in an area consisting of oak woodland, native grassland, and riparian woodland and seasonal wetlands. Elevation range of the golf course is approximately 1,400 to 1,600 ft ASL.

ECOLOGICAL INFORMATION

Species Profiles

White-tailed Kite

Much of the following species profile is adapted from Dr. Ralph Palmer's "Handbook of North American Birds" (1988).

White-tailed Kites are recognizable when far away as they appear wholly white at a distance. This simple fact – combined with its relatively 'tolerance' of humans – probably had contributed to the species' historic demise

in California, as it was an easy and excessively sought target among ranchers and farmers during the late 19th and early 20th centuries. Ironically, the ensuing success of the species over much of its earlier ranges is in part a response to improved habitat conditions brought about by settlement: dry-land irrigation, pasture fencing, and even introduction of nonnative prey species, i.e., the House Mouse (MUS MUSCULUS) may have ameliorated some of the negative effects of wetland draining, cropping and landscape conversion for agriculture.

Movements

White-tailed Kites in California are non-migratory; however, the species is well-known as a wanderer, especially seasonally. Wandering, or nomadism – as an incipient form of migration – allows the birds to depart habitats that may have a seasonal or drastic paucity of rodent prey; and to search for and exploit sites where prey are more abundant, e.g., irrigated pastures, seasonally flooded wetlands, and sites affected by cultural and/or natural sources of precipitation. The singular movement patterns of kites in California probably are emigratory and serve to facilitate the dispersal of young birds to emerging new ranges. Moreover, the species is successful because of its propensity to 'move about' in search of prey abundance, and once energy resources are secured, to adaptively pioneer a breeding territory and produce young at a rate that matches food availability.

Nesting & Reproduction

White-tailed Kites typically nest in the crown of a tree, usually 20-50 feet above ground. The single nest tree or grove may be on a slope, on flat terrain or even in a marsh or swamp. In general, kites build a new nest for each clutch; and a past year's nest is rarely refurbished and used again. Nest construction can take as long as 2-4 weeks, but many nests are built in only 7-10 days. According to Mr. Peter Bloom, kites are vigilant to protect their nests against corvids and other raptor species, yet they will build their nests within ¼ mile of nesting buteos and eagles; and nests may be successful even though their nests are plainly obvious even to humans.

Dr. Ralph Palmer reported that kites in California will nest as early as February and late as mid-July; and as with so many aspects of their lifestyle, timing of nesting is responsive to abundance of prey. A 'typical' kite clutch consists of four eggs, and most if not all incubation is performed by the female parent; and only the female broods the young. The male parent is kept busy hunting for both himself and his mate throughout all stages of nesting, and for the brood from hatching through fledging. Age-at-fledging appears to range from 30-40 days and perhaps longer.

White-tailed Kites are capable to produce two broods within a breeding season; and triple broods have been observed in southern California. When double-brooded, the two cycles may overlap (e.g., see Messrs. Holmgren & Ball, 6 June 2002). Pairs have been observed to copulate when still caring for nestlings; and construction (and defense) of a second nest has been reported for birds still feeding young.

Foraging & Prey Relationships

White-tailed Kites in California rely on the California Vole (MICROTUS CALIFORNICUS) for sustenance. Numerous other species of mammals plus birds, amphibians, reptiles and insects also are consumed by kites; but voles are their mainstay. A study of 26 nests in San Diego County (Wright 1978) revealed that the number of kite eggs per clutch was related to the density of active vole runways (an assay of prey density) in the kites' hunting areas. Further the number of successful nests and number of young fledged was linked to the percentage of voles in the kites' diet (based on 2,579 kite pellets).

Reported territory sizes for kites in California run from roughly 42 to over 198 acres per pair; and Dr. Lee Waian's data from 1973 indicate that kites in Santa Barbara County have maintained territories ranging from 44 to 126 acres per pair. Annual variation in territory size for kite pairs inhabiting Humboldt Bay farmlands has been related to weather conditions such as seasonally heavy precipitation, i.e., as rainfall that leads to bottomland flooding and diminishment of local vole densities and productivity (Dr. James R. Koplin, pers. comm.; also personal observations).

California Vole

California Voles are abundant and widespread throughout grassland and wet meadow habitats in California. Voles feed mainly on leafy parts of grasses and forbs, forming a network of runways linking to burrows and grazing sites. Voles seek cover in dense grass, beneath plant residue, in brush piles and underground burrows. Voles drink free water if available, but can rely on obtaining water from green vegetation.

The California Vole is active year-round and is non-migratory; and the species is weakly territorial, if at all. The species' home range in coastal California has been reported to vary from 0.25 to 2.50 acres; and individual voles are active within a radial distance of 16 - 110 ft.

California Voles breed throughout the year, reaching peaks whenever food and cover are abundant. In round numbers, females gestate young for 21 days and produce two to five litters per annum, each with an average of four young. Voles wean at +/- 21 days, and females attain sexual maturity at 29 days on average.

Botta's Pocket-Gopher

The Botta's Pocket-Gopher (THOMOMYS BOTTAE) is an abundant and yearlong resident throughout much of California. Optimal habitats are perennial meadows, grasslands, savanna and early seral stages of woodlands, especially those that are adjacent to grasslands. The species is herbivorous, feeding mainly on roots, tubers, bulbs, stems, and leaves of forbs and grasses. In annual pastures (especially sites dominated by wild oats, AVENA FATUA), pocket-gophers also are gramnivorous. Pocket-gophers forage underground from tunnels and on ground surface. Entrances to pocket-gopher tunnels are plugged with loose dirt to deny intruders and to stabilize interior temperature and humidity.

Botta's Pocket-Gophers breed year-round, nesting in burrows with deep chambers in friable soils. Evidently, individuals remain in the same burrow system for life, but also are adept to re-colonize new areas in the event of burrow damage. Territory and home range are coincidental in this species; documented male home ranges vary from 2,700 to 4,800 sqft, and females range in an area about half the size as males. These animals are solitary except to breed. Mating and parturition may occur throughout the year. Females gestate for 18 days; and 1-3 litters per annum average five young each.

Western Harvest Mouse

The Western Harvest Mouse (REITHRODONTOMYS MEGALOTIS) is widely distributed in California and is most common in open shrublands and both annual and perennial grasslands. The species is omnivorous, eating insects, seeds, fruits and shoots from the ground surface. Harvest mice prefer thick grass or scattered shrub cover for foraging and nesting. Super-typical habitat for harvest mice, and that are persistently occupied by kites, occurs at the Santa Lucia Preserve in relict grasslands dominated by California Oatgrass (DANTHONIA CALIFORNICA). Mouse nests made of woven dried grass leaves are built in thick grass, at the base of shrubs and in debris piles. Although the species can adapt to near water-less conditions, it appears to prosper best near free water or in areas with seasonally-perennially green vegetation. Harvest mice typically use runways created by California Voles, and observers have reported that the two species co-occupy the grass tunnels with no attempt at avoidance.

Harvest mice are both nocturnal and crepuscular, the latter being the phase of day that they are vulnerable to kites. Home ranges are reported to vary from 0.30 to 1.40 acres; and density is known to fluctuate widely with up to 50 animals per acre. Reproduction occurs year-round at coastal elevations, with spring and summer peaks. Polyestrous females reach sexual maturity at four months, and will produce an average of four young per litter with multiple litters per annum.

House Mouse

The introduced House Mouse, originally from Eurasia, is common throughout California near human habitation in urban and rural settings, and less common in a variety of natural and ruderal communities. These mice are found in buildings, fields and croplands, and disturbed herbaceous habitats. House mice forage on the ground, usually beneath or near cover, on a wide variety of foods, including grains, fruits, seeds, vegetables, fleshy roots, meat, arthropods, glue, paste, soap, and other household articles.

House Mouse populations may be regulated through behavioral interaction with California Voles; and the inverse relationship suggests that 'peaks' in mouse numbers that overlap 'valleys' of vole numbers may help compensate for fluctuations in the latter as prey for raptors. Outdoor home ranges are reported to vary from 1,500 sqft in an area of high vole density to 3,925 sqft in an area of low vole density. A population density of 82,000 house mice per acre was observed during a "House Mouse explosion" in the Central Valley in 1926-27; then another such population explosion occurred in 1941-42, also in the Central Valley.

The species' nests are made of shredded plant matter or virtually any soft material. Nests are constructed in burrows, or in protected spots in structures or woodpiles. House mice breed year-round, with peaks in early spring and late summer. Mice nest in-solitary or communally, with as many as 50 young reported from a single nest. Females gestate for +/- 20 days, producing an average of five young per litter. Females, which are sexually mature at eight weeks, are capable to produce 5-8 litters per year.

ECOLOGICAL ASSESSMENT

Kites @ Dos Pueblos

The recent nesting activities of White-tailed Kites at Dos Pueblos were ascertained by two groups of observers working from both onsite and offsite locations during the spring of 2002. Working independently, Messrs. Evans and Bouscaren and Messrs. Holmgren and Ball carefully recorded the nesting activities and rearing of young by a single pair of kites ('western pair'), while noting the apparent nesting (but unconfirmed reproduction) by a second pair ('eastern pair'). At maximum, during June 2002 there may have been as many as nine White-tailed Kites present on the property, including four adults and the five nestlings produced by the western pair. By mid-August, during a 5-hour midday visit to the site, I observed only two adults (apparently the parental pair) and four juveniles (apparently siblings) in the general area that had previously had been occupied by the 'western pair' (marked trees 100-117; see Figure 2).

While it is not clear if kites have persistently occupied Dos Pueblos, i.e., whether to date the same birds have consistently inhabited the site for more than three years, it is clear that the site has successfully been used by at least one pair for reproduction and that it is providing at least some level of energetic resources for two pairs and the progeny of one. However, the site-use by these kites and ecological relationship of adjoining private properties (N-W-E) to the whole kite landscape has not been studied or otherwise reported.

Golf Environments as Kite Habitat

Terms and Definitions

To better understand and discuss whether White-tailed Kites (or any other wildlife species) can occupy and 'use' golf courses, several common terms and definitions about the golf environment may be helpful. The need for a common basis of discussion and description is highlighted by, for example, the recent email exchange gathered by Mr. Mike Evans (Pacific Southwest Biological Services, 05 June 2002) and submitted to Ms. Andi Culbertson (Culbertson, Adams & Associates; *Results of electronic mail survey of observations of White-tailed Kites using golf courses and similar parklands for proposed Dos Pueblos Golf Links, Santa Barbara County, California*). In my view, the email methodology was fundamentally flawed, and in large part because it lacked any definitions for golf courses as potential habitat.

Herein, "golf course" refers to the interconnected complex of tees, fairways and greens (collectively the turf area), plus the sand and grass bunkers, roughs, in-play water features, cart paths and ancillary facilities that are built or installed specifically for the purposes of golf. "Golf environment" has a broader meaning that takes in

the course-proper and any variety of landscape elements that immediately adjoin the particular golf course in question. The entire golf course is encompassed by the golf environment. Surrounding (and interstitial) landscape elements include cultural, natural or managed-natural terrain that may or may not be in-play for golfers, but that are not specifically intended for routine or regular maintenance and player access. For present purposes, whether parts of a particular golf environment may be used by a wild animal depends on the species' foraging, reproductive and/or secretive cover needs and the extent to which such resources are sufficiently and safely available in the subject area.

In the above sense, White-tailed Kites positively are known to habitually use various elements of golf environments, including operational parts (i.e., rodent-occupied roughs) of the golf course. Kites feed comprehensively on burrowing and grass-tunneling rodents that inhabit areas running alongside areas of maintained turf. Unlike larger raptors and insectivorous bird species, kites generally do not seek turf-dwelling prey. On the other hand, kites commonly will hover directly over turfed areas while searching (at an angle) for prey in adjoining habitat, much like they hover over roadways and coastal bluffs when hunting. Kites do not hover over wooded and forested areas adjacent to golf courses, nor do they forage on rodents that occupy open ground under forested golf edges. Functionally, golf fairways provide airspace that kites can use when hunting, especially when actual prey habitat is confined to narrow patches. In other words, turf that underlies airspace represents an incidental or facultative habitat for hovering kites.

Roughs as Habitat

White-tailed Kites forage for rodent prey in 'roughs' that are maintained at a mowing-frequency low enough to allow rodent communities and their infrastructure to develop and persist, or if destroyed, to recover rapidly. Outer roughs (playable tall grass and forbs) and especially transition areas (usually not playable, or if so, severely punitive to the golfer) can be densely settled by rodent species and provide substantial amount of a kite's prey base. Roughs and transition areas demand and receive lesser amounts of irrigation than cropped turf, and depending on sprinkler apparatus and soil conditions, the meso-xeric boundary may be stark or gradual leading away from the golf area.

Ecologically, consistent patterns of irrigation that are necessary to maintain turf tracts – and that spill over or seep onto adjoining transition areas – are equivalent to annually and seasonally reliable amounts of rainfall on natural terrain. From what is known about the response of rodent populations, and especially of voles, to rainfall abundance, i.e., consequent food and cover abundance, it is reasonable to assume and can be demonstrated that rodent communities are relatively prosperous inside golf environments.

Referring to a modern high-end 'links-style' golf course, Figure 3 illustrates a typical transition from fairway (close cropped turfgrass) into a playable rough (native grass or turf-native blend), including evidence of rodent activity. The next photograph (Figure 4) shows a more informal, or incidental, relationship of turf to rough conditions. The latter example highlights how a low-maintenance rough/outer rough setting that is dominated by invasive ice-plant is heavy populated by voles. Both examples are from sites that are routinely hunted by White-tailed Kites. The message is that burrowing rodents normally do not venture onto (or into) well-maintained turf when rougher habitat with sufficiently more friable soils and greater amounts of plant biomass (as stems, leaves and roots) are available in off-course habitats. The rough and transition areas are the optimal habitats and the turf is marginal, at best.

Kites Attracted to a New Golf Course

The Preserve Golf Club was constructed in 1998 and opened for play in 1999 after an 8-month grow-in period. Construction amounted to stripping native vegetation and topsoil from nearly 200 acres and grading 350,000 cubic yards of earth to build the course and related infrastructure. Top soils and native ground covers were scraped and stockpiled for the duration of earthwork, and several hundred oak trees were either removed or relocated as part of the landscape project. Approximately 12 large trees that could not be salvaged were cut and 'relocated' to locations along the periphery of the course for the purpose of creating (mitigating) large oak snags for wildlife. (The resulting habitat areas were dubbed Froke's Snaghenge by the golf construction crews). The resulting golf course is approximately 105 acres including 80 acres of irrigated turf. The balance of the +/- 200-acre construction area was re-vegetated with 100 percent native grass species

and is an effective transition between the course and adjacent wildlands. White-tailed Kites had occupied the Preserve since at least 1990, but were not known to breed on site: However, the first year that the course was completed and irrigated (1999), a kite pair established a territory in the golf environment and successfully nested and fledged young. The pair consistently hunts along the margins of the golf course and in wet meadows that were established or restored in its vicinity.

Kites Attracted to an Established Golf Environment

The only known reproductive pair (or sequence of un-banded pairs) of White-tailed Kites on the Monterey Peninsula has nested for at least three years (2000-2002) at the centrum of a multi-course golf complex in Pebble Beach. Figure 5 summarizes the geographic position of the foraging and nesting habitats used by this pair(s). Of the 135 golf holes that exist inside the Del Monte Forest (Pebble Beach), +/- 60 are coastally-oriented golf holes and are regularly frequented by the nesting pair. Non-nesting kites move through the coastal complex, especially during winter, but only one pair appears to be resident year-round.

Pebble Beach kites daily forage over 125-200 acres of the total 500-acre coastal environment. Figure 6 zooms in to represent the specific area that kites use for foraging and day-long perching. Natural habitat, whether of native or exotic species composition, amounts to approximately 60 percent of the total 180-acre golf area represented by the diagram, and virtually all of the 108 non-golf acres (vegetated dunes, verges, and roughs) are utilized by kites.

The Pebble Beach kites have nested in a mixed Coast Live Oak - Monterey Pine woodland that is situated between two golf courses and adjacent to other recreational and residential facilities. The nest sites are separated from foraging habitat, or potential foraging habitat, by approximately 300-600 feet of woodland and dunes, and in one direction by a riparian corridor. The kites can fly to foraging habitat within a few seconds, but nesting and foraging habitat are not contiguous.

Kites' Response to Humans on Golf Courses

Golf courses are distinguishable from other recreational environments in ways that can profoundly affect wildlife populations and management of wildlife habitat. Human activities essentially are limited to routine maintenance (mowing, irrigation adjustments and scouting), occasional chemical applications, and play. All activities including in particular play are guided by specific rules, regulations and protocol that result in a familiar pattern and pace of activities on the ground, even to the obvious point that all activities flow in a constant direction. Golf groups typically number 4-6 players at a pass; and on moderate to low round courses (i.e., The Preserve Club, four of the Pebble Beach courses, and the proposed Dos Pueblos links) the gap between groups moving through may last thirty minutes to several hours. All activity is diurnal with sudden diminishment in the early-late afternoon. Golf activities are relatively quiet, and with the exception of (early morning) maintenance equipment, produce few mechanical sounds or emissions. Trespass and vandalism cannot be tolerated on golf courses or even in interstitial habitat areas, and untoward and disruptive human activities are vigilantly denied.

Native wildlife including several raptor species readily habituate to the routine of golf and golfers. Notable examples in coastal California are the Red-shouldered Hawk (BUTEO LINEATUS), American Kestrel (FALCO SPARVERIUS), and White-tailed Kite. All three species tolerate close-approach by golfers on the Pebble Beach courses, especially those with lower rounds played (Cypress Point, Monterey Peninsula, and Spanish Bay), and at The Preserve. Non-golfer walkers, where permitted by course regulations and limited to established cart pathways, also are tolerated by kites to a remarkable degree (consistently flushing from perches @ 30-50 feet); and hunting birds will continue to hover when people are walking directly beneath them. On the other hand, off-course walkers (tourists) who approach wildlife on the coastal courses by a trajectory that is perpendicular to the direction of play are much less tolerable to most species. Tourists as would-be wildlife photographers move directly and intently towards the animals (raptors, geese, deer), typically after pulling their automobiles abruptly to the side of the road nearest the subject bird or mammal.

Basic Dos Pueblos Assertions

(1) Voles and secondary prey species will positively respond to development of the golf course, including management of open space habitats and enhancement of roughs and transitional habitats. Given appropriate management, prey populations will exceed their present densities and availability to predators. There will be sufficient linkage and connection among eventual rodent habitat areas to convey genetic distribution; and the RR Tracks will continue to be the primary (partial) barrier to this natural objective.

(2) Prey populations will be available to kites at a level that will be comparable to or better than is demonstrated on the Monterey Peninsula. Dos Pueblos will not be dissected by roadways, and tourism and residential infrastructure will not be developed as is the case throughout Pebble Beach. Dos Pueblos (208 acres) will be dedicated exclusively to golf and natural or recovered natural habitat at an approximate 50:50 ratio.

(3) Provided appropriate management, the landscape pattern proposed for Dos Pueblos and constituent prey resources, will continuously attract wandering and pioneering kites and will be sufficient to sustain at least one resident pair.

(4) As a high-end, low-round (+/- 20,000 per annum) facility, the golf course will be professionally managed and regulated by the rules and protocol for human activities (maintenance and play) in a manner that is consistent with courses identified in this report and that are proven to support resident kites.

(5) The total turfed area that is planned for Dos Pueblos (including the 27 holes, turf farm and practice facilities) amounts to +/- 88 acres, or 42 percent of the total property. The 18-hole course is planned at +/- 72 acres. In general, new golf courses that occupy fewer than 90-100 acres are considered environmental achievements for balancing land use and wildlife requirements. This is especially true in view of the property's recent use-history as a petroleum production facility.

Discussion of Findings

(1) As others have stated, kites do not characteristically occupy 'homogenous' turf areas of golf courses. Nonetheless, the species is capable and predisposed to exploit prey resources that are associated with golf course roughs, transitional areas and adjoining natural habitats.

(2) Otherwise (physically) appropriate trees in golf environments may also be ecologically suitable for nesting, provided sufficient distance and buffering from disruptive human activities. Sufficiency of separation or buffering cannot be measured or projected by distance, *per se*, but must consider the type of surrounding habitat, activity and resulting security for nesting birds. Nesting birds reasonably can be expected to tolerate low-frequency and non-disruptive activities to within 150-200 feet of their nest tree (or better, small grove).

(3) Kite nest trees and foraging habitat should be in proximity, but need not be contiguous or adjoining to meet the needs of the birds. Visual surveillance by both mated birds of the greater nesting-foraging environment, however, is important and possibly essential.

(4) Dos Pueblos, at 200 acres with approximately 40-50 percent available as foraging habitat may be sufficiently sized to support 1-2 territorial pairs; but, there appears to be a misconception that the site in its current condition is sufficient for the same purpose: (a) only one of two pairs that attempted to breed onsite in 2002 was confirmed to successfully produce and fledge young; and (b) there has been no evidence or assertion that any of the present or recent birds have limited their range to within the property. Because this is about a project, the natural bias has been to focus attention on kite resources within the legal boundaries of the subject property. The type of bias is common in planning and impact evaluation, but also is unrealistic from the common viewpoint of ecology.

(5) Dos Pueblos kites have not yet demonstrated persistency of use (three to five) years, although that is a good management goal.

(6) I completely agree with Holmgren & Ball's assertion that for Dos Pueblos Golf Links to effectively support kites over the long haul, design and management of the project will need to:

(a) Provide a range of nesting opportunities onsite (kites try something new each year, and should be offered attractive options);

(b) Sustain plentiful refugia for small mammals (essential during and after construction; also may include coastal sage scrub as rodent habitat);

(c) Maintain sufficient and unobstructed foraging spaces (plenty of native grasslands); and,

(d) Provide spatially contiguous and connected rodent habitats.

ADDITIONAL COMMENTS & RECOMMENDATIONS

(1) Layout (Championship Course) - The layout of the 18-hole course is sufficiently 'open' to create a turf/habitat matrix that will support wildlife, and given the following considerations, the area and configuration of turf (tees, fairways, greens) will not require additional modifications to accommodate kite management objectives.

(2) Layout (3-Par Course) - The fundamental difference with the layout of the 3-par is that the fairways located north of the RR Tracks are contiguous and lack interstitial roughs or transition areas, i.e., for foraging kites. On the other hand, these six golf holes are well-compressed and together amount to the size of a single larger fairway on the 18-hole golf course. Further, it is appropriate from a wildlife management standpoint that the 3-Par is positioned immediately adjacent to the more densely developed part of the total golf complex (parking, clubhouse, maintenance yard).

(3) Setbacks - If properly planted with a sufficient number, distribution and size-range of trees, or tree groupings, the existing layout of the 18-hole golf course will result in adequate setback distances to provide nesting options for kites (see other re-vegetation comments, below). Specific setbacks for mowing and ancillary landscaping should be field fit during grow-in of the golf course, rather than arbitrarily designated on paper.

(4) Human Awareness - Golfer and staff education must continuously emphasize the importance of 'local rules' that will be designated to protect unnecessary encroachment into kites' more protective and secreted habitats, i.e., nesting areas. Out-of-bounds areas that permanently or seasonally abut protected sites must be signed to notify that ball-retrieval (or other access) is not allowed. This is increasingly common on golf courses (e.g., Spanish Bay, Squaw Creek), and sophisticated or traveled golfers are predisposed to understand and abide by such regulations. Such education messages are especially appropriate pursuant to the 3-Par course in view of expected use by junior golfers and students.

(5) Landscape Elements - The roughs as indicated by the site plan represent a potentially critical feature in determining the overall suitability of this links course as wildlife habitat, especially as foraging habitat for kites. To assure the best prospects for kites, as well as for other diurnal and nocturnal predators, the roughs should be planted with native perennial grasses, or a mix of natives and appropriate turf varieties such as fescue breeds. Valuable and popular native species for denser roughs - and that are proven as quality habitat for voles & company - include California Hair-grass (DESCHAMPSIA CAESPITOSA and/or HOLCIFORMIS), California Fescue (FESTUCA CALIFORNICA), and June-grass (KOELERIA CRISTATA - MACRANTHA), among others. All of the named native species can be summer cut (5-8 inches) and raked for maintenance purposes without damaging the plants or

their usefulness to burrowing wildlife. LEYMUS TRITICOIDES is particularly useful as a fringe grass that can be banded along the outer edge of the roughs, especially near drainages.

(6) Habitat Revegetation Treatments

(a) *Erosion Control Seeding* (Transition Areas) - The seeding mix that was specified by Rogers and Dudek in 1998 (BELP Table A) and Dudek in 2002 (HEP Table 2) is substantially out-dated and should (must) be revised for both kite/wildlife and golf management purposes. Since 1998, the availability and cost for native grass seeds has improved significantly, and particularly for species that are broadly and successfully integrated into both play and out-of-play areas of 'better' golf courses. Further, the following species that are included in the BELP and HEP, all of which are nonnative, are potentially detrimental to ecological and golf objectives:

BROMUS HORDEACEUS and BROMUS MADRITENSIS: Both Soft Chess and Foxtail Chess are rapidly growing and invasive annual grasses that provide little and only short-term forage value to native wildlife. Both species produce a glabrous seed head that can catch in the eyes of foraging raptors, although not to the same severity as BROMUS DIANDRUS - a species that was removed from the BELP in an earlier revision. As 'flashy' annuals, these bromes require frequent mowing to minimize build-up of accumulated dry materials and pose substantial fire hazards. On the other hand, the native California Brome, BROMUS CARINATUS var. MARITMUS is very well suited for erosion control purposes, is colorful and attractive and is readily sown by hand or hydro-mulching.

LOLIUM MULTIFLORUM: Italian Ryegrass is widely considered to be one of the most aggressive and noxious 'weed species' in California grasslands, an especially in golf-turf environments. This is the species that Julius Caesar planted in his enemies farmlands as a form of agricultural warfare (cultural weakening) in advance of actual battle. The entire genus is nonnative and should be disregarded for erosion and golf management purposes. In addition to being invasive into turfed areas, LOLIUM is attractive to golf insect pests including, e.g., cutworms and armyworms. Being a relatively stiff grass, fields dominated with Lolium are less accessible to foraging raptors as compared to, for instance, softer NASELLA PULCHRA, KOELERIA CRISTATA, HORDEUM BRACHYANTHERUM, and DESCHAMPSIA CAESPITOSA, all of which are readily available through local seed producers. Eradication of existing onsite Lolium stands is not as important as avoiding importation and development of new stands. Typically, Lolium that would encroach into the turf and rough environments will be managed by routine mowing (to prevent seeding) and mechanical removal of offending patches.

Finally, TRIFOLIUM HIRTIUM is an exotic clover species that is *passé* in modern erosion mixes and can be successfully substituted with native or hybrid fescues such as RUBRA, CALIFORNICA and/or IDAHOENSIS, as well as other species of perennial forbs.

(b) *Transition Areas as Kite Habitat* - Without diminishing erosion control objectives of the transition plantings; these areas represent crucial cover linkages throughout the golf course and should be optimized for grassland wildlife (rodents and kites). Species selection changes, as recommended above, will serve to accomplish this objective. Except where necessary, as on steeper slopes, hydro-seeding should be minimized or carefully 'cranked-down' to avoid caking the soil surface and thereby inhibiting microhabitat development by and for burrowing, grass-tunneling and grazing rodents.

(7) Nest & Perch Site Creation

It looks as though there is a sufficient amount of open space distributed among six locations across the 18-hole course where kite nesting and/or perching options could be developed. None of the sites would require adjustments to the golf course; but modification to the habitat enhancement plan (Dudek 2002; see forthcoming mark-up) would be required. Specifically, the following relatively large open areas (providing circular diameters of 250-300 feet in out-of-play ground) appear to be available for exploration:

(a) Center of grouping 6-8-9;
(b) Center of grouping 4-5-turf farm (*could the farm be relocated?*);
(c) NW corner above 7 tees;
(d) SW corner below 5 dog-leg;
(e) The large area noted as "disturbed wetland" between holes 16 & 17; and
(f) On the narrow terrace bluff behind 17 back-tee.

Trees for these purposes could be relocated from other parts of the project area; and several large cut trees should be 'transplanted' to 'replant' as snags in the vicinity of live-planted trees.

(8) Project Staging and Monitoring of Ice-plant Eradication

Notwithstanding the previous admonitions about the selection and use of nonnative grasses for erosion plantings, the proposed removal of existing ice-plant stands should be thoughtfully executed and monitored to avoid unnecessary disruption of rodent prey populations. Expansive stands of ice-plant (sea-fig) represent important foraging cover for kites in Monterey County; and although removal and replacement at Dos Pueblos is appropriate, it should be done in stages to maintain construction-phase refugia for the onsite rodent fauna. Details for staging the removal of ice-plant cover can be worked-out in concert with the golf course architect and construction contractor during the normal course of planning the grading and construction phases. A cover removal plan should be developed that will not hinder the normal and economical construction project, rather it can be planned to capitalize on construction staging. Total ice-plant removal can be accomplished after construction grading and planting has been completed and grassland habitats as well as turf are in advanced stages of grow-in.

(9) Course Management and Operations

(a) *Rodent Tolerance and Management*

Course management should set a relatively high threat-threshold for rodents. Normally, treatment of burrowing rodents (pocket-gophers, moles, voles, ground-squirrels) in turf areas should be limited to trapping. However, in emergency situations, e.g., when burrowing rodents definitely are encroaching towards or into greens complexes, management other than trapping should emphasize use of fumigants such as phosphine gas. Presently, fumigation is the most practical and ecologically sound method for controlling burrowing rodents within greens complexes. The professional golf course superintendent should be relied on to determine whether a rodent problem constitutes an bona fide emergency (real threat to greens) and thereby be the one to decide when non-trapping methods such as fumigation should be employed. Poison baits should not be used for removing rodents. Finally, under no circumstances should rodent management by any means be conducted in non-turf environments, such as transitional and natural areas.

(b) *Mowing and Irrigation*

Cultivating native grasses and peripheral wildlife habitat in the roughs, especially first-cut roughs, will not preclude occasional mowing and irrigation to sustain desired play conditions. Nothing suggested herein is intended to suggest otherwise. Included photographs of fairway-rough-transition conditions at The Preserve Golf Club best

illustrate a maintenance regime that mutually offers premium-level championship play and proven successful kite foraging habitat.

WRITER'S QUALIFICATIONS

Jeff Froke has studied, restored and managed wildlife resources in coastal and cismontane environments of California for 30 years. His expertise is in understanding how vertebrates and their habitats respond to land-use and ecological change, particularly in ranchland, golf-resort, nature preserve, and urban-wildland interface settings. Jeff's education includes a B.S. (natural resource management) and M.S. (ornithology & wildlife ecology), both from Humboldt State University, and a Ph.D. (biogeography) from UCLA. He also undertook postgraduate studies in deep-ocean ecology at UC Scripps Institute of Oceanography, and Pacific Island studies at University of Hawaii. Jeff is a lifetime Loeb Fellow in Advanced Environmental Studies (landscape ecology) at Harvard University (1987-present) and former officer of Harvard College. Career-wise, and in addition to consulting, Jeff has worked as a ranger for the California State Parks, biologist/inspector for US Fish and Wildlife Service, manager and associate director of wildlife sanctuaries for National Audubon Society (11 years), president of the Roger Tory Peterson Institute of Natural History (three years), and president of the Santa Lucia Conservancy, which owns and manages 18,000 acres of Santa Lucia Preserve (12 years). For roughly 25 years including the present, Jeff has lived no more than a half-mile from nesting and foraging White-tailed Kites.

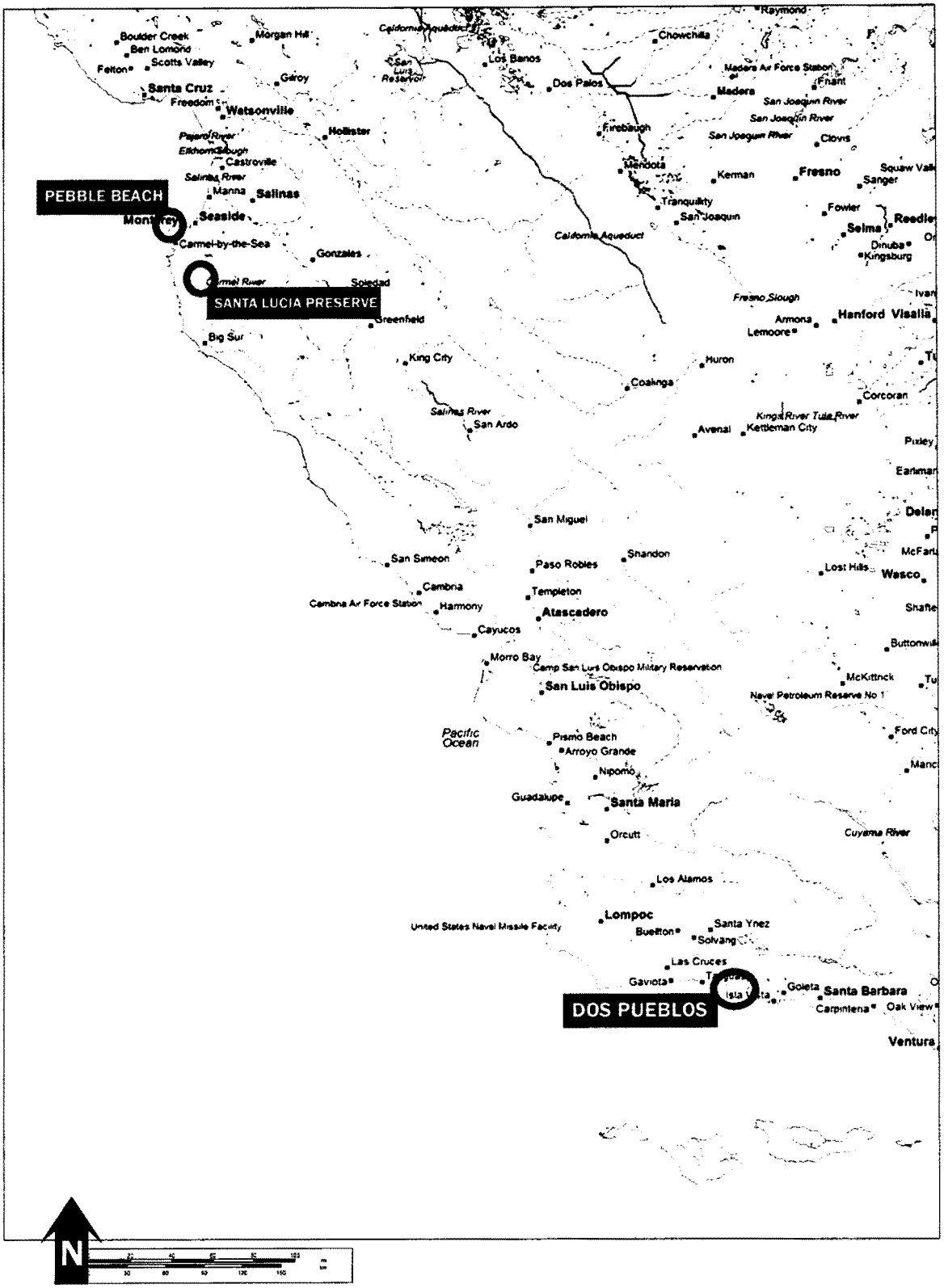

Figure 1. CALIFORNIA CENTRAL COAST Regional Map showing the locations of the proposed Dos Pueblos Golf Links, The Preserve Golf Club, and the Pebble Beach golf complex that includes six contiguous courses. Presently, all three locations are inhabited by breeding populations of White-tailed Kite (*August 2002*).

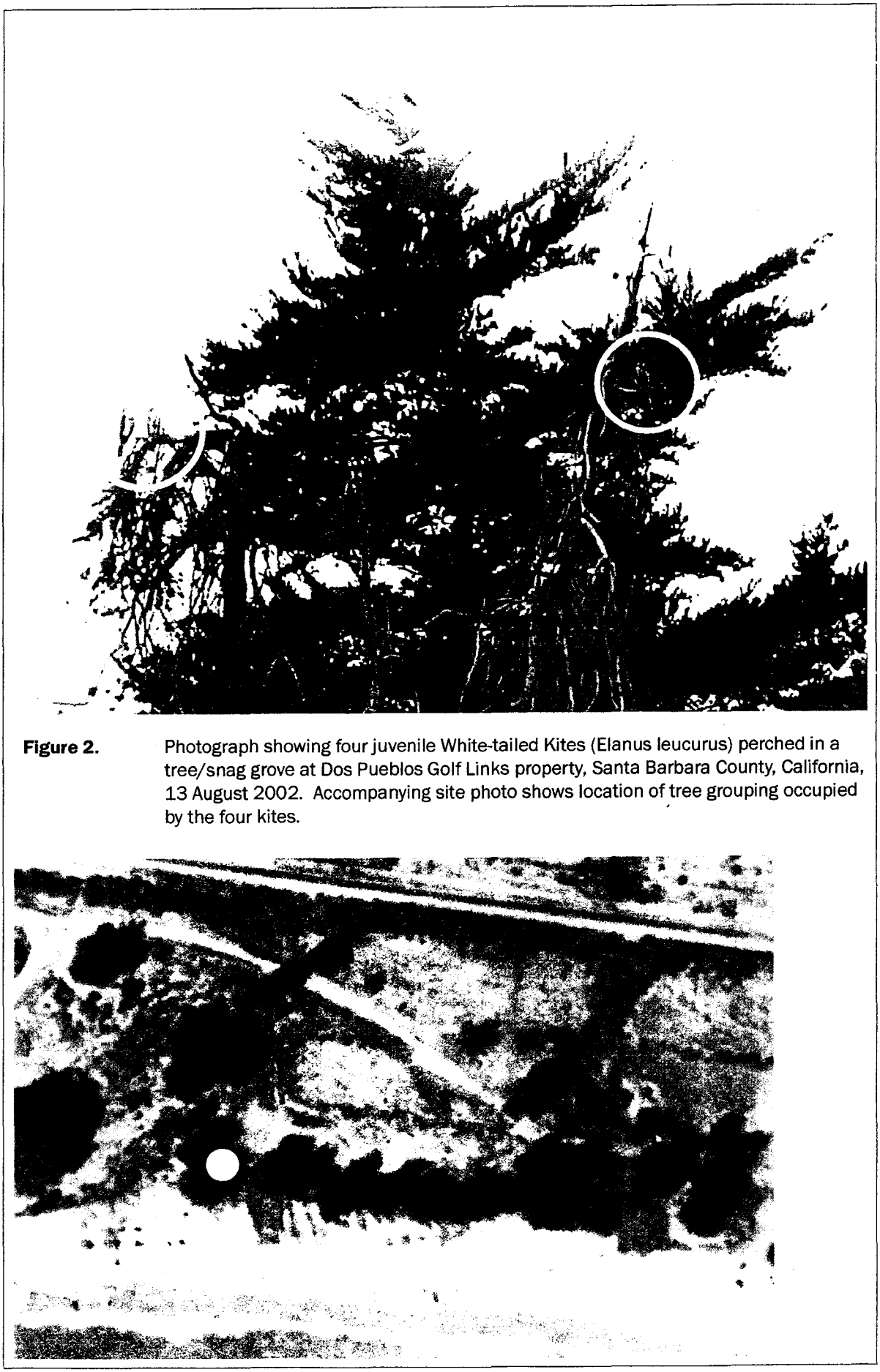

Figure 2. Photograph showing four juvenile White-tailed Kites (Elanus leucurus) perched in a tree/snag grove at Dos Pueblos Golf Links property, Santa Barbara County, California, 13 August 2002. Accompanying site photo shows location of tree grouping occupied by the four kites.

Figure 3. Photographs showing transition from fairway to first cut rough to native rough, including evidence of vole and pocket-gopher communities, Hole 13, The Preserve Golf Club, Monterey County, California (August 2002).

Figure 4. Photograph showing transition from fairway to outer rough, including evidence of pocket-gopher and vole communities, The Shore Course, Monterey Peninsula Country Club, Pebble Beach, CA (July 2002).

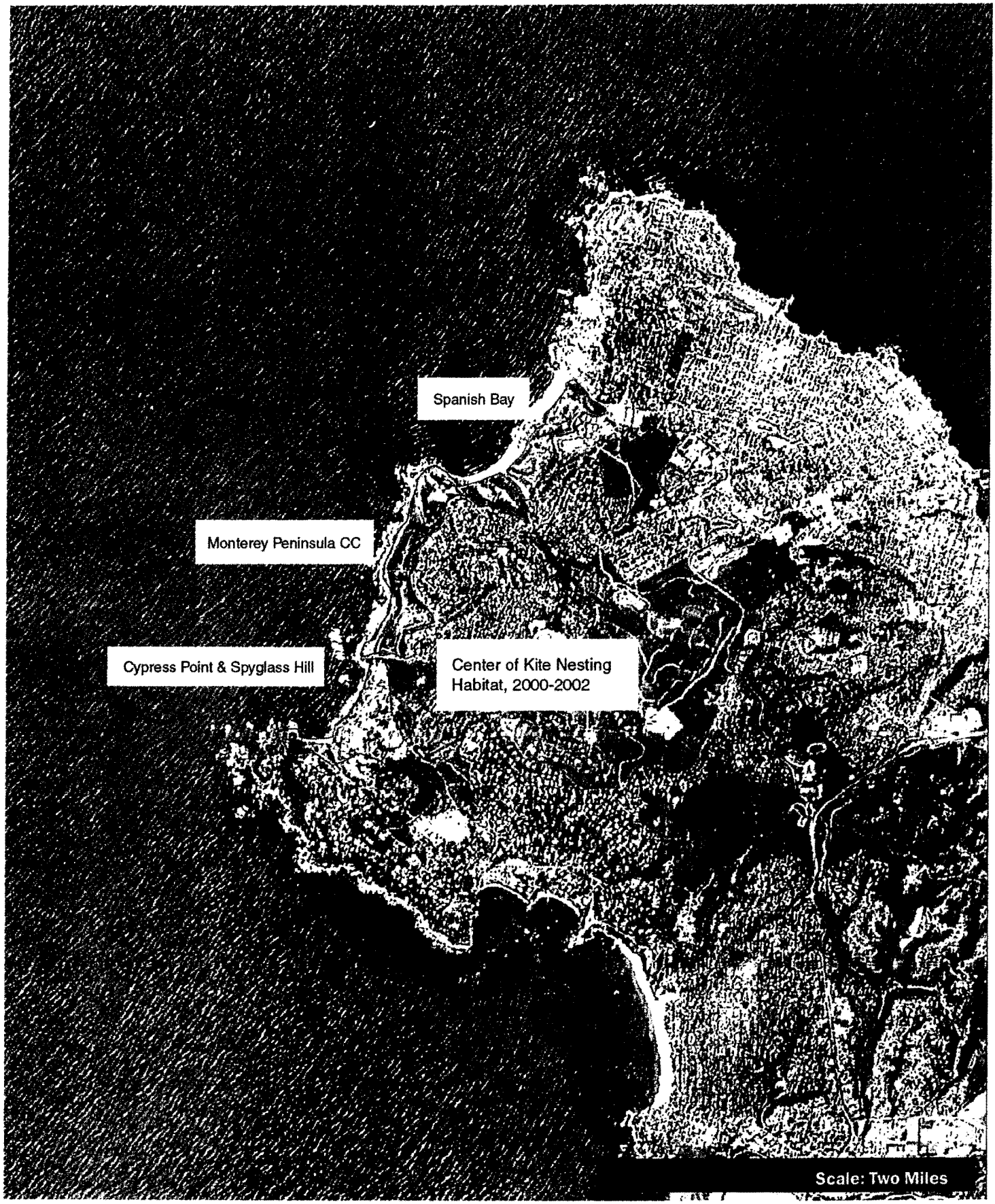

Figure 5. MONTEREY PENINSULA Local Map showing location of White-tailed Kite foraging and nesting areas. Shaded area represents overall site use including turf and non-turf (hunting) areas. Total shaded area = +/- 475 acres; actual foraging habitat = +/- 125 acres. Kite nests (2000-2002) were located in Monterey Pines in forest setting.

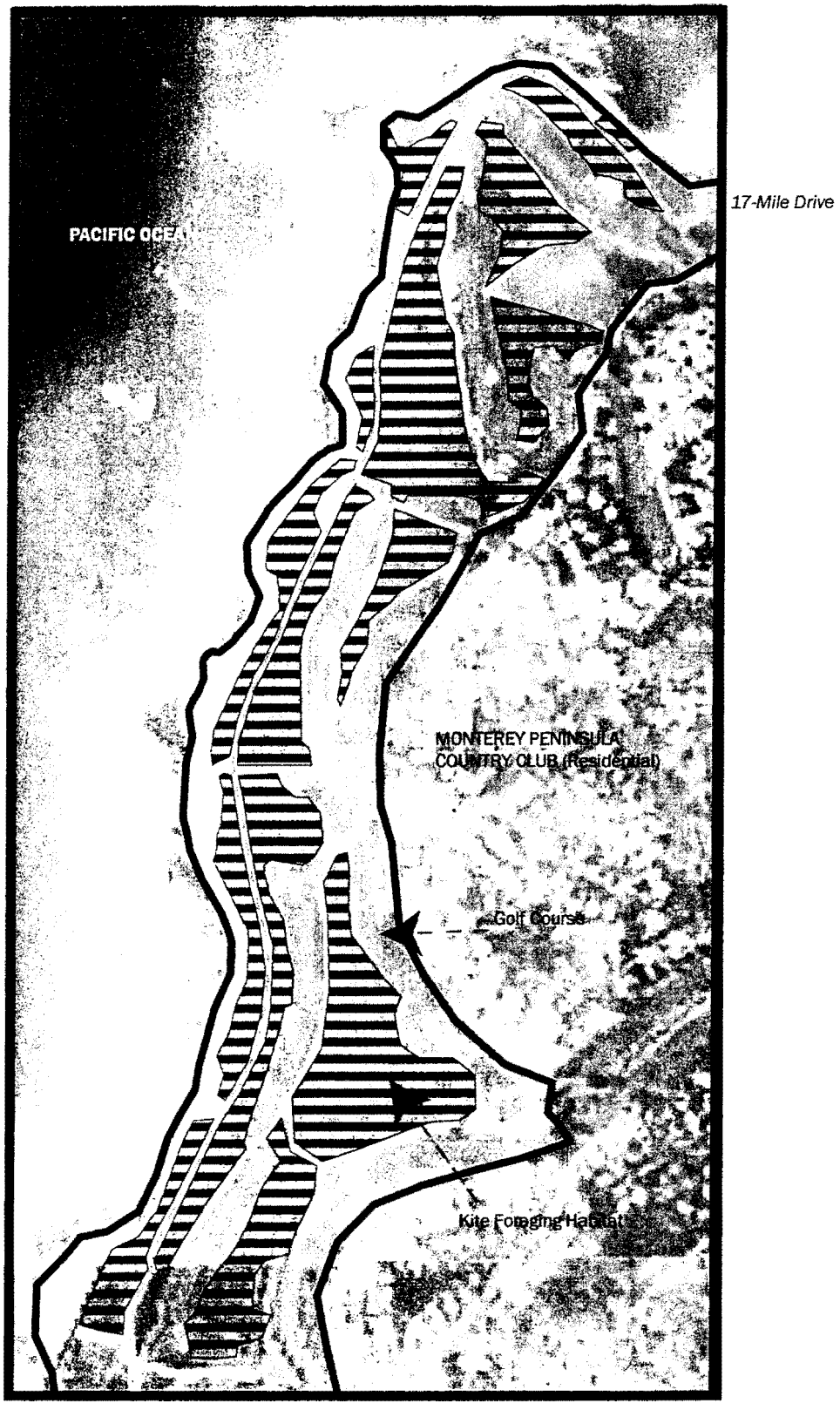

Figure 6. Graphic representation of White-tailed Kite foraging habitat (striped polygons) that is distributed amidst 15 coastal golf holes of the 36-hole Monterey Peninsula Country Club, Pebble Beach, Monterey County, California. Habitat west (left) of 17-Mile Drive is coastal terrace grassland and dune; habitat east (right) of roadway is golf rough and both ruderal and natural grassland, wet meadow and fields of ice-plant and insular patches of low shrubs and trees.. The combined golf and habitat areas shown total approximately 180 acres of which 60 percent (108 acres) is kite foraging habitat. Area of total rectanglular diagram is 480 acres.

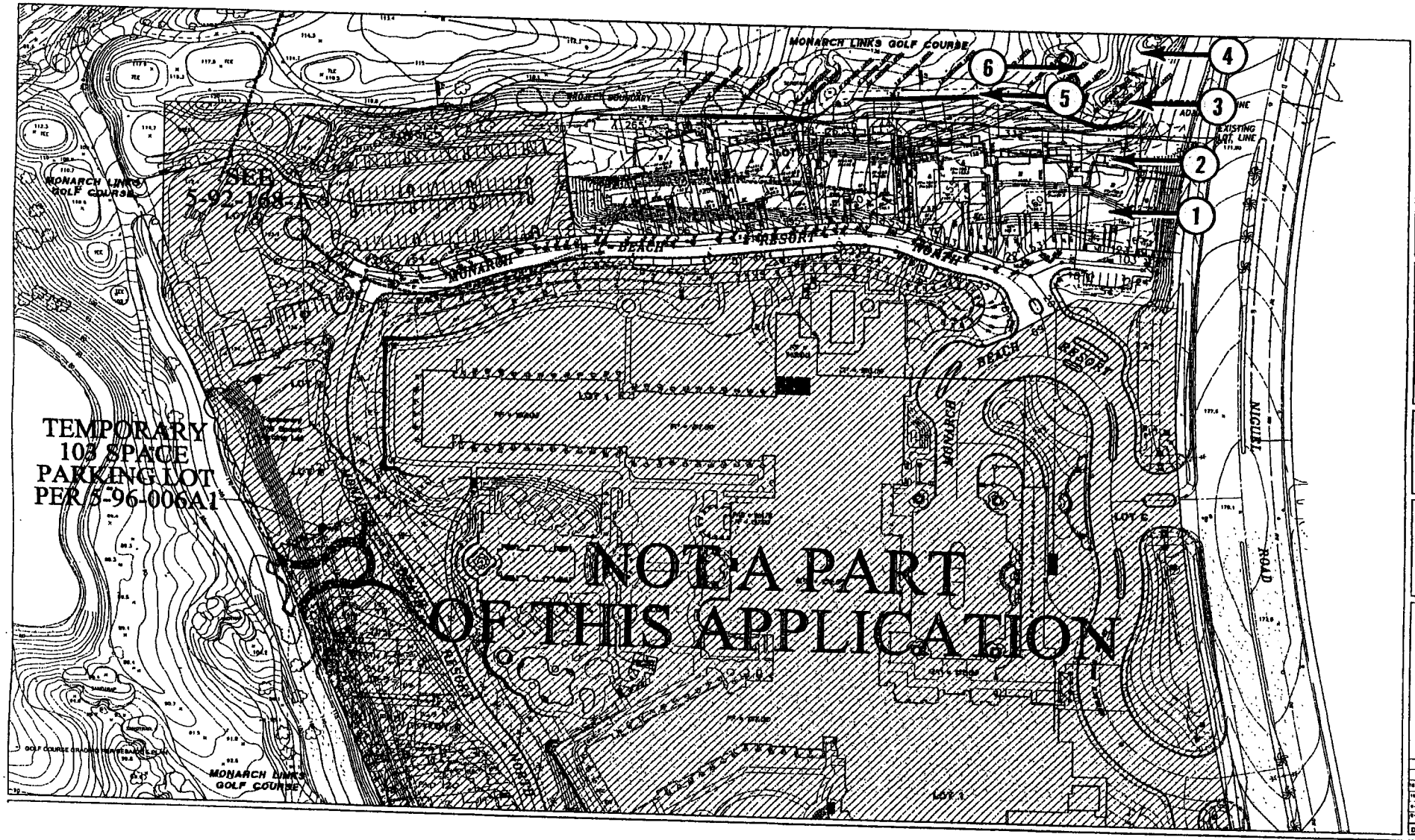

Photo Key

MONARCH BEACH RESORT
Dana Point, California

MAKALLON RESORTS I L.L.C.
4100 MacARTHUR BLVD., #1
NEWPORT BEACH, CA 9266
(949) 258-1100

H&A

SITE
DEVELOPMEN
PERMIT

NORTH
HOTEL VILLAGE
ENGINEERED
SITE PLAN

DATE	REVISION
10-10-01	STAFF COMMENTS
10-7-02	Provide Some 103 Parking Spaces
4-16-02	Revision Entry Gate
5-24-02	Revise Temp. Par. Lot Layout & Parking Ct. Lights, Remove

LOCATION MAP

SCALE	DATE	SHEET NO.
1" = 50'	5/6/02	H-2
DRAWN BY	PROJECT NO.	
RMS	90445	