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STAFF RECOMMENDATION

ON CONSISTENCY DETERMINATION

Consistency Determination No.	CD-048-07
Staff:	LJS-SF
File Date:	8/10/2007
60th Day:	10/9/2007
75th Day:	10/24/2007
Commission Meeting:	9/7/2007

FEDERAL AGENCY: **National Park Service**

PROJECT LOCATION: Point Reyes National Seashore and Golden Gate National Recreation Area, Point Reyes Station, Marin County (**Exhibits 1-3**)

PROJECT DESCRIPTION: Giacomini Wetland Restoration Project (**Exhibit 7**)

SUBSTANTIVE FILE DOCUMENTS: See Page 39

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EXECUTIVE SUMMARY

The Coastal Commission received a consistency determination from the National Park Service (NPS) for wetland restoration at the 550-acre Giacomini Ranch, located in Point Reyes Station at the head of Tomales Bay in Marin County. In February 2000 the NPS purchased the property for the purpose of restoring the historic salt marsh, which was diked and drained for agricultural purposes in the mid-1940s. The NPS incorporated the property into the Golden Gate National Recreation Area's North District, which is managed by the Point Reyes National Seashore. The proposed restoration project also includes restoration of the 63-acre Olema Marsh, located immediately south of the Giacomini Ranch, and which is owned in part by the NPS and Audubon Canyon Ranch. The restoration project is scheduled to commence in the late summer of 2007 and extend over a two- to three-year period.

The proposed wetland restoration project involves complete removal of levees in both the West and East Pastures of the Giacomni Ranch. It incorporates removal of agricultural infrastructure, tidal channel and freshwater marsh creation, grading to restore more stable creek banks and heavily disturbed areas, excavation to lower higher elevation areas to active floodplain and intertidal marshplain elevations, and active revegetation in areas where natural colonization by native plant species is expected to be low or possibly out-competed by fast-establishing, non-native or even invasive species. The Bear Valley Creek channel that flows through the Olema Marsh would be excavated to allow for better passage of salmon and other fish species, with possible future replacement of the Levee Road and/or Bear Valley Road culverts should initial restoration efforts not achieve the desired degree of hydrologic connectivity between Olema Marsh and Lagunitas Creek. Public access components include improving the existing southern perimeter spur trail system in the East Pasture and extending the Tomales Bay Trail directly northeast of the Giacomini Ranch through creation of a small spur trail on the former railroad grade that borders the ranch on the east.

Proposed restoration actions would reintroduce daily tidal action to the now diked wetlands and allow creeks to flood onto their floodplains during storm events. In addition, the discontinuation of agricultural management practices such as ditching and dredging and removal or modification of infrastructure such as levees, tidegates, and culverts would increase the integrity of geomorphic processes on the property. Within this very dynamic transitional zone of the Tomales Bay estuary, characterized by freshwater conditions in the winter and saline conditions in the summer, reintroduction of natural hydrologic processes would convert monotypic, non-native-species-dominated pasturelands into a complex mosaic of vegetation communities and potential wildlife habitats that would include salt marsh, freshwater marsh, wet meadows, mesic and dry grasslands, and riparian habitat. Most importantly, reestablishment of natural hydrologic processes would strongly increase functionality of these wetlands, potentially having dramatic effects on reduction of flooding to adjacent properties, quality of waters flowing into Tomales Bay, and habitat and food chain support of wildlife species.

The proposed restoration project is an allowable use, is the least environmentally damaging feasible alternative, and includes feasible mitigation measures to minimize temporary but adverse environmental effects on wetland habitats from restoration activities. The project would

significantly restore and enhance wetland habitats on the Giacomini Ranch and in Olema Marsh, largely due to the complete removal of both the East Pasture and West Pasture levees, the discontinuation of intensive agricultural management practices, elimination of grazing, removal of agricultural infrastructure, and adaptive restoration actions to lower surface water levels and eliminate invasive plant species in Olema Marsh. The project is consistent with the wetland fill and marine resource protection policies of the California Coastal Management Program (CCMP) (Coastal Act Sections 30230 and 30233).

The proposed project will restore and enhance estuarine, salt marsh, and freshwater marsh habitats within the footprint of the historical area of tidal wetlands at the head of Tomales Bay. The project is an allowable use under Coastal Act Section 30240. In addition, the project will restore and enhance riparian upland habitats that border the wetlands habitats on the Giacomini Ranch. The overall effect of the project will be beneficial and will significantly increase the health, abundance, and diversity of wetland and other environmentally sensitive habitats and their constituent species in the Giacomini Ranch and Olema Marsh project areas. In addition, the project includes a detailed, long-term biological monitoring program. The project is consistent with the environmentally sensitive habitat policies of the CCMP (Coastal Act Section 30240).

The proposed wetland restoration project will itself lead to improved water quality in the Giacomini Ranch and Olema Marsh project areas, and in Tomales Bay. The project includes mitigation measures and best management practices to protect water quality during the multi-year construction period. With the proposed restoration elements and mitigation measures, the proposed project is consistent with the water quality protection policies of the CCMP (Coastal Act Section 30231).

The proposed project will create adverse effects on existing public access along the perimeter of the project area during the construction period, but those effects are temporary and not significantly adverse. The project would eliminate the existing, informal accessway along the north levee in the West Pasture but includes construction of a replacement viewing overlook at the edge of the West Pasture along Sir Francis Drake Boulevard. The project also includes other public access and recreation elements that will allow the public to view the restored wetland areas from the perimeter of the project area, and the NPS will also work with the County of Marin to study potential future public access and recreation projects in the project area. The proposed project will provide public access and recreation benefits in a manner that will not adversely affect the restoration and protection of wetlands and other environmentally sensitive habitat areas, and is consistent with the public access and recreation policies of the CCMP (Coastal Act Sections 30210, 30212, 30214, and 30220).

The proposed wetland restoration project would not generate increased flood or seismic hazards in the project area. The project is expected to alleviate some of the flooding that currently occurs along Levee Road, and does not include construction of the types of structures that would be at risk or place the public at risk in the event of a seismic event or subsequent liquefaction. The project is consistent with the hazards policy of the CCMP (Coastal Act Section 30253). The project will not adversely affect cultural resources known to exist in the project area, and work will stop and consultation procedures implemented should any cultural resources be discovered

during project construction. The project is consistent with the cultural resource policy of the CCMP (Coastal Act Section 30244).

The NPS purchased the Giacomini Ranch from a willing seller for the express purpose of restoring wetland habitats and functions to the subject property after approximately sixty years of agricultural operations on what previously were tidal wetlands at the head of Tomales Bay. Continued agricultural use was determined to be infeasible due to the scope and intensity of management actions that were required to maintain these lands as a functioning and productive dairy operation. The conversion of the Giacomini Ranch to wetlands and open space would not adversely affect the viability of other agricultural lands within the National Seashore and the GGNRA, or privately-owned agricultural lands within the coastal zone in Marin County, and it is not feasible to continue agricultural use on the subject lands. The proposed wetland restoration project is consistent with the agricultural land protection policies of the CCMP (Coastal Act Sections 30241 and 30242).

STAFF SUMMARY AND RECOMMENDATION

I. STAFF SUMMARY.

A. Project Background.

1. Site Location and Description.

In February 2000, the National Park Service (NPS) purchased the 550-acre Giacomini Ranch in Point Reyes Station (Marin County) for the purposes of restoring the historic coastal marsh at the head of Tomales Bay, a 6,800-acre, 12-mile-long, approximately 1-mile-wide estuarine embayment that runs along Point Reyes National Seashore's northeastern perimeter (**Exhibits 1-4**). The towns of Point Reyes Station and Inverness Park border the project area to the east and west, respectively. The project area lies at the confluence of Lagunitas, Olema, and Bear Valley creeks with Tomales Bay. Lagunitas Creek, the largest subwatershed within Tomales Bay, bisects the Giacomini Ranch into the East and West Pastures, both of which are leveed. Olema Marsh is located directly south of the Giacomini Ranch at the downstream end of Bear Valley Creek before its confluence with Lagunitas Creek (**Exhibit 5**).

The 200-acre West Pasture is bordered by the town of Inverness Park and Sir Francis Drake Boulevard. Several creeks and drainages, including Fish Hatchery Creek, drain off the Inverness Ridge and into the West Pasture, many of which flow through or close to private properties. Notable features within the West Pasture include the extensive freshwater marsh in the northern portion of the pasture, Fish Hatchery Creek, and the north levee, which is currently used as an informal public path. The 350-acre East Pasture is bordered by the town of Point Reyes Station and the outlying residential community north of the town on the Point Reyes Mesa. The lowest elevation portion of the mesa near the downtown portion of Point Reyes Station houses the Giacomini Dairy facility, including milking barns, loafing barns, hay barns, and corrals, as well as several small houses.

Tomasini Creek, the primary drainage to the East Pasture, was leveed by the Giacomini Ranch in the 1960s to parallel the Mesa and historic railroad grade until its confluence with Lagunitas Creek and Tomales Bay near Railroad Point. Railroad Point is the terminus of the Golden Gate National Recreation Area's (GGNRA) Tomales Bay Trail that originates off State Route 1. This trail winds through GGNRA lands that are currently leased to the Martinelli family for beef cattle grazing.

North of the Giacomini Ranch is undiked marshland owned by the California State Lands Commission (CSLC). Several hundred acres of marsh extend outward into the southern portion of Tomales Bay before reaching largely unvegetated subtidal and intertidal lands. CSLC also owns the diked and undiked portions of Lagunitas Creek. From Railroad Point, the historic railroad grade extends northeastward towards State Route 1, creating a diked area that is largely intertidal mudflat.

South of the Giacomini Ranch is the Levee Road area, a section of Sir Francis Drake Boulevard that was built through construction of a levee during the late 1800s. The northeastern half of Levee Road is residential, with more than 15 homes directly adjacent to Lagunitas Creek and across the creek from the East Pasture. The northwestern half of the southern bank of Lagunitas Creek is owned by the state Wildlife Conservation Board (WCB) and leased and managed by the County of Marin Parks and Open Space District. This area is commonly referred to as the White House Pool County Park. The County also leases another WCB parcel directly south of the Giacomini Ranch dairy facility downstream of the Green Bridge, which is referred to as the Green Bridge County Park.

The southwestern half of Levee Road borders Olema Marsh, a 63-acre marsh jointly owned by Point Reyes National Seashore and Audubon Canyon Ranch. Bear Valley Creek currently flows on the eastern perimeter of the marsh through culverts underneath Levee Road to its confluence with Lagunitas Creek near the location of the old summer dam. The marsh is bordered on the west and south by Bear Valley Road, which is also culverted to allow passage of flows from the upstream end of Bear Valley Creek into the marsh.

Over time, informal public access spur trails have developed on the then privately-owned Giacomini Ranch, notably on the southern perimeter of the East Pasture levee and the northern perimeter of the West Pasture levee. Access to the existing informal path on the East Pasture levee is either from trails in the adjacent Green Bridge County Park to the south or from 3rd and C Streets in the town of Point Reyes Station. Most of the use of this trail is for walking or dog walking. Access to the informal path of the West Pasture's northern levee is from a pullout along Sir Francis Drake Boulevard in Inverness Park.

2. <u>Site History</u>.

Commercial, residential, and agricultural development has caused loss of more than ninety percent of California's historic coastal wetlands. While development has not affected Tomales Bay to the extent it has other watersheds in California, a large percentage of the coastal tidal wetlands once present in Tomales Bay have been lost or substantially altered through diking or

construction of levees for roads, railroads, livestock ponds, and duck clubs. In the late 1800s, excessive sedimentation from logging and agricultural development resulted in large-scale conversion of subtidal and unvegetated intertidal aquatic habitats in Tomales Bay to vegetated intertidal marsh (**Exhibit 6**). The NPS reports that wetland acreage in the bay nearly doubled from 584 acres in 1863 to 944 acres in 2001. On the eastern side of Tomales Bay, many tidal marshes that fringed the bay were diked for construction of the North Pacific Coast Railroad line to the Russian River in Sonoma County or roads such as State Route 1. At the turn of the 20th century, the 63-acre Olema Marsh and the downstream portions of Bear Valley Creek were substantially altered by construction of two roads—Bear Valley Road and Levee Road (i.e., southeastern portion of Sir Francis Drake Boulevard between Highway 1 and Bear Valley Road) – either along its perimeter or across the marsh's mouth to Lagunitas Creek. Bear Valley Creek and Olema Marsh were further altered by dams used to impound the creek for operation of a duck club.

The Final Environmental Impact Statement/Report (FEIS) states that:

> *The largest impact to the Tomales Bay watershed, however, came in 1946 with diking and draining of approximately 550 acres of historic tidal marsh at the southern end of Tomales Bay for operation of the Giacomini Ranch, a large-scale dairy operation. The former marsh represented approximately 58 percent of the historic wetlands once present in Tomales Bay and was once an integrated tidal wetland complex with Olema Marsh. Since the 1860s, levees have almost completely disconnected Giacomini Ranch and Olema Marsh hydrologically from Lagunitas Creek. Disconnection of Olema Marsh from Lagunitas Creek has been exacerbated by undersized or poorly functioning culverts. Levees have also eliminated connectivity between Giacomini Ranch and Tomasini Creek, which was completely moved out of its historic channel alignment to increase the extent of pastures. Tidegates and culverts have dramatically reduced, if not entirely precluded, tidal influence from Tomales Bay in both the Giacomini Ranch and Olema Marsh. Fill or sediment disposal has either eliminated historic wetlands, such as in the White House Pool and Green Bridge County Parks directly south of the Giacomini Ranch, or caused impoundment of waters such as in Olema Marsh. In addition, the former marshes in Giacomini Ranch and Olema Marsh have been ditched to encourage drainage. Forage conditions for dairy cattle at the Giacomini Ranch were enhanced not only through improved drainage, but through seeding of pasture grasses and forbs and irrigation during the summer. Giacomini Ranch pastures have also been subject to varying degrees of manure spreading and mowing, as well as grazing.*

The project area has been altered by ranch maintenance and operations. Levees on Lagunitas Creek within the Giacomini Ranch have been reinforced through rip-rapping. Tomasini Creek, which once flowed through the East Pasture, has been moved and leveed to run adjacent to the Point Reyes Mesa, while Bear Valley Creek has been realigned to run along the eastern perimeter of Olema Marsh. Tides have been excluded by tidegates and other structures. Upstream Lagunitas Creek waters have been pumped to the Giacomini Ranch to irrigate pastures. Former tidal creeks have been straightened and new channels, dug to serve as ditches for irrigation waters, with ditches frequently maintained through dredging. Wetlands have been

filled, leveled, and, in the case of the Giacomini Ranch, subject to varying degrees of manure spreading. Vegetation has been altered through removal of riparian vegetation, as well as introduction of non-native herbs and forbs to increase forage for approximately 500-800 head of grazing dairy cattle. In some cases, lack of maintenance can be the problem in highly altered systems such as Olema Marsh, as attested to by steadily increasing water levels during recent years within the marsh due to lack of culvert maintenance.

3. <u>Federal Land Purchase/Mitigation Requirement/Previous Federal Consistency Review</u>.

In February 2000, the Park Service purchased the Giacomini Ranch in Point Reyes Station for the purpose of restoring the historic coastal marsh. The Giacomini Ranch is located within the North District boundary of the Golden Gate National Recreation Area (GGNRA); the North District is administered by Point Reyes National Seashore. The Seashore also owns approximately fifty percent of Olema Marsh; Audubon Canyon Ranch, a project partner, owns the other half. The Giacomini Ranch dairy and adjoining areas were incorporated into the GGNRA boundary when it expanded in 1980, although the ranch and many other lands remained in private ownership at that time. During the 1980s, the Park Service held discussions with the Giacomini family about possibly acquiring the project area for wetland restoration.

Purchase of the ranch did not become feasible, however, until the NPS secured the necessary funding from Caltrans and congressional appropriations. In 1991, as a condition to Coastal Development Permit No. 1-90-109 (Caltrans), the Coastal Commission required Caltrans to mitigate for impacts to natural aquatic habitat resources associated with repair of State Route 1 in the vicinity of Lone Tree Creek in Marin County after landslide damage in early 1990. Caltrans decided to look for opportunities to transfer mitigation obligations rather than performing mitigation in-house and considered several projects along the Marin coastline. The FEIS states that:

> *During this period, the GGNRA contracted with an independent hydrologist to assess the feasibility of restoring natural wetland conditions to the Giacomini Ranch lands. The hydrologists concluded that restoration of the ranch was, indeed, feasible, and developed some preliminary restoration concepts (Philip Williams Associates (PWA) et al. 1993). This information provided support for selection of the Giacomini Ranch as the Caltrans-funded mitigation site. In August 1997, the NPS signed a Memorandum of Understanding (MOU) with Caltrans and the Coastal Commission, allowing the NPS to assume Caltrans' mitigation obligations for the Lone Tree Creek project.*

In this agreement, the NPS assumed responsibility for 3.6 acres of mitigation obligations with the understanding that monies would be used for purchasing the Giacomini Ranch for inclusion into the national park system and planning and implementation of a wetland restoration project. The NPS also secured monies from congressional appropriations to help purchase the ranch. While the legal agreement between Caltrans and the park only obliges the park to mitigate 3.6 acres, all agencies agreed that more fully restoring lands on the acquired property was the ultimate goal, and the MOU called for restoration of a "significant portion" of the historic marsh.

The FEIS states that:

> *Transfer of the mitigation money to the NPS was approved by the Coastal Commission on the condition that the NPS "…would accomplish all requirements of the mitigation plan." These requirements included the items below:*
>
> > *1) Creation of subtidal and intertidal habitat comparable in character to the area that was impacted by the road repair on State Route 1 near Lone Tree Creek; OR*
> >
> > *2) Restoration of previously degraded or filled marine or the removal of historic fill, improvement of water circulation, and such other steps as will create or improve habitat for fish, water birds, and other marine or marine-related species.*
> >
> > *3) A qualified biologist must prepare a marine mitigation plan that includes a five-year monitoring program and definition of "success" such that density of flora and fauna is comparable with that in surrounding or nearby habitat areas of the same type.*

The NPS states that it is acting as the lead NEPA agency and principal project proponent and manager, as it owns approximately 550 acres of the Giacomini Ranch. The portion of Lagunitas Creek in between the Giacomini Ranch's East and West Pastures and the undiked or unleveed tidal lands north of the Giacomini Ranch are owned by the CSLC and have the potential to be affected by the proposed project. CSLC has agreed to participate as the lead under CEQA. The NPS also owns approximately fifty percent of Olema Marsh. The proposed project involves restoration of the 63-acre Olema Marsh, which is also partially owned by the non-profit organization, Audubon Canyon Ranch. Audubon Canyon Ranch is actively working with the Park Service and CSLC on the proposed project. The Park Service and CSLC have also been working collaboratively with the County of Marin Public Works department and the County of Marin Parks and Open Space district, as well as the Gulf of the Farallones National Marine Sanctuary, whose jurisdiction extends into the southern portion of Tomales Bay.

The Commission has previously concurred with one consistency and two negative determinations on the project site:

CD-060-03: Giacomini Ranch emergency levee and culvert repair on Fish Hatchery Creek where it flows from the West Pasture into Tomales Bay. This work was necessary in order to protect existing habitat from increased salinity should the levee fail, and to avoid interfering with existing NPS habitat restoration planning efforts for the Giacomini Ranch.

ND-064-06: Giacomini Ranch habitat improvements, including expansion of a freshwater marsh, creation of high tide wildlife refugia, installation of temporary fencing to keep livestock out of wetland habitat, and revegetation of selected areas in the West Pasture with native wetland, riparian, and upland species.

ND-045-07: Giacomini Ranch upland restoration activities, including demolition of dairy ranch buildings and structures, removal of agricultural infrastructure from pastures, filling of

manure storage ponds using materials from excavation of the manure spreading pasture, scraping of portions of the East Pasture to remove non-native plants and to prepare for wetland restoration, and removal or sectional breeching of the south levee in the East Pasture.

4. <u>Project Purpose and Objectives</u>.

The NPS states that the primary purpose of the proposed project is to restore natural hydrologic processes within a significant portion of the Giacomini Ranch project area, thereby promoting restoration of ecological processes and functions across this historic wetland area. The project objectives are threefold:

- Restore natural, self-sustaining tidal, fluvial (streamflow), and groundwater hydrologic processes in a significant portion of the project area, thereby enabling reestablishment of some of the ecological processes and functions associated with wetland and riparian areas, such as water quality improvement, floodwater storage, food chain support, and wildlife habitat.

- Pursue a watershed-based approach to restoration in that restoration planning for the project area will emphasize opportunities to improve ecological conditions within the entire Tomales Bay watershed, not just in the Project Area itself.

- To the extent possible, incorporate opportunities for the public to experience and enjoy the restoration process as long as opportunities do not conflict with the project's purpose or with Park Service, CSLC, or other agency legislation or policies.

The FEIS states that:

One of the critical assumptions – and principal benefits – in developing alternatives that are based on restoring process and function is that it increases sustainability or resiliency of the proposed project by allowing for a considerable amount of change in future conditions without requiring maintenance, intervention, or remediation. By definition, natural processes are extremely dynamic ecosystem components that result in change either on seasonal, annual, decadal, or other long-term time scales. In transitional zones such as the upper portion of the Tomales Bay watershed, where freshwater and saltwater environments mix, the dynamism can be even greater than in other aquatic ecosystems. Given this dynamism, the Park Service and CSLC recognized that its task was to remove impediments to natural process, not engage in an endless – and probably futile – battle to create and maintain ecological status quo through dictating the types of habitats, specific acreages and locations of habitats, and creek alignments. This approach increases the sustainability and resiliency of the proposed project not only to current ecosystem processes, but to factors that may affect it in the future such as sea level rise. While certain restoration tasks within alternatives may focus on creating creeks or realigning creeks into historic channels as a way of removing impediments to natural process, the Park Service and CSLC acknowledge that it is possible, because of the nature of natural fluvial or creek processes, particularly in

deltaic systems, that the creek could change course or meander out of the constructed course in the future or fill in with sediment and cease to function as a channel. The Park Service and CSLC recognize this type of change or ecological evolution as inherent to the proposed project and not cause for maintenance or remedial action. In addition, should natural process result in change that affects public access infrastructure, the Park Service and CSLC would focus on adaptively managing public access to fit the changed environment rather than adapting the environment to fit public access. The only factors that would trigger future maintenance or intervention would be if 1) the project somehow did not successfully remove impediments to natural process or function or 2) if special status species habitat enhancement and creation efforts were not fully successful.

5. Public Involvement.

Prior to submittal of the subject consistency determination, the NPS developed and oversaw an extensive public process in the development of the Final EIS/R for the proposed wetland restoration project, including a number of notices, scoping meetings and public workshops, environmental documents, and public comment periods between September 2002 and August 2007.

B. Project Description.

1. Overview.

The proposed wetland restoration project involves complete removal of levees in both the West and East Pastures of the Giacomni Ranch (**Exhibit 7**). It incorporates removal of agricultural infrastructure, tidal channel and freshwater marsh creation, grading to restore more stable creek banks and heavily disturbed areas, excavation to lower higher elevation areas to active floodplain and intertidal marshplain elevations, and active revegetation in areas where natural colonization by native plant species is expected to be low or possibly out-competed by fast-establishing, non-native or even invasive species. In addition, the proposed project includes restoration actions at Olema Marsh, which is located south of the Giacomini Ranch and White House Pool, and is owned by Audobon Canyon Ranch and the NPS. Under this project, the Bear Valley creek channel that flows through the Olema Marsh would be excavated to allow for better passage of salmon and other fish species, with possible future replacement of the Levee Road and/or Bear Valley Road culverts should initial restoration efforts not achieve the desired degree of hydrologic connectivity between Olema Marsh and Lagunitas Creek. Public access components include improving the existing southern perimeter spur trail system in the East Pasture and extending the Tomales Bay Trail directly northeast of the Giacomini Ranch through creation of a small spur trail on the former railroad grade that borders the ranch on the east (**Exhibit 8**).

2. Project Elements.

The NPS lists the following elements of the proposed Giacomini Ranch wetland restoration project:

(a) East Pasture Restoration:

- Remove agricultural infrastructure
- Complete removal of levee in East Pasture
- Lagunitas Creek bank graded to more stable profile and revegetated
- Remove riprap along Lagunitas Creek bank in southern portion of East Pasture
- Remove portion of Tomasini Creek berm and reconnect the creek to historic channel alignment
- Create freshwater marsh and highwater refugia in Tomasini Triangle
- Deepen historic slough and create new tidal channels
- Create new Lagunitas Creek tidal channel
- Excavate southwestern portion of East Pasture to marshplain/floodplain elevations
- Scrape southern portion of East Pasture wetlands to remove non-native species
- Install fencing on GGNRA/Martinelli Ranch lands to limit cattle access

(b) West Pasture Restoration:

- Remove agricultural infrastructure
- Complete removal of levee in West Pasture and filling of borrow ditch
- Create new tidal channels

(c) Olema Marsh Restoration:

- Implement adaptive restoration
- Construct Olema Marsh – Olema Creek Red-Legged Frog Habitat
- Excavate vegetated earthen berm and create more defined flow path for Bear Valley Creek
- Replace Levee Road and/or Bear Valley culvert

(d) Revegetation and Invasive Plant Removal:

- Remove invasive species (pampas grass, cape ivy, English ivy, Himalayan blackberry, non-native cordgrass, eucalyptus) from project area

- Revegetate selected portions of the East and West pastures with riparian tree and shrub species, high marsh and upland ecotone species, coastal scrub species, freshwater marsh species, high salt marsh and upper intertidal zone species

(e) Implement management actions to recover the Tomales Bay Tidewater Goby.

(f) Land Management:

- Dedicate Lagunitas Creek appropriative water right to in-stream flow uses
- Lease subtidal and intertidal portions of Lagunitas Creek within project area from CSLC
- Minimal maintenance using existing access points

- Maintenance removal of excess sediment from 1906 Drainage and Fish Hatchery Creek in the West Pasture
- Maintain tidegates on Tomasini Creek to protect restored freshwater marsh area

(g) Public Access:

- Create southern perimeter spur trail (including a fence between the path and restoration areas in the East Pasture) from Point Reyes Station to location of former Summer Dam, and study potential future linkage of trail to south side of Lagunitas Creek in collaboration with Marin County.

- Study potential future extension of southern perimeter trail to Inverness Park in collaboration with Marin County.

- ADA-compliant access trail and viewing platform between White House Pool County Park parking lot to Lagunitas Creek.

- Creation of eastern perimeter spur trail through extension of Tomales Bay Trail along historic railroad grade.

- Construction of viewing areas, overlooks, and interpretive exhibits at the edge of Dairy Mesa along the southern perimeter trail, along the Tomales Bay Trail at the top of Railroad Point, along Sir Francis Drake Boulevard near the entrance to the to-be-removed West Pasture Levee, and at White House Pool County Park.

The FEIS states that:

> *The aforementioned proposed restoration actions would reintroduce daily tidal action to the now diked wetlands and allow creeks to flood onto their floodplains during storm events. In addition, the discontinuation of agricultural management practices such as ditching and dredging and removal or modification of infrastructure such as levees, tidegates, and culverts would increase the integrity of geomorphic processes within creeks or fluvial systems such as active channel movement, creation of instream habitat features (e.g., pools), and deposition and transport of sediment. Within this very dynamic transitional zone of the Tomales Bay estuary, characterized by freshwater conditions in the winter and saline conditions in the summer, reintroduction of natural hydrologic processes would convert monotypic, non-native-species-dominated pasturelands into a complex mosaic of vegetation communities and potential wildlife habitats that would include salt marsh, freshwater marsh, wet meadows, mesic and dry grasslands, and riparian habitat. Most importantly, reestablishment of natural hydrologic processes would strongly increase functionality of these wetlands, potentially having dramatic effects on reduction of flooding to adjacent properties, quality of waters flowing into Tomales Bay, and habitat and food chain support of wildlife species.*

3. <u>On-Site and Off-Site Disposal of Excavated Material</u>.

To decrease impacts and costs associated with off-site disposal, the NPS and CSLC have tried to maximize the amount of on-site disposal without negatively impacting the potential for restoration. On-site disposal includes both direct fill activities such as filling of drainage ditches and regrading of dairy roads, as well as loose spreading on non-weedy excavated material throughout certain portions of the project area. On-site disposal and off-site disposal total approximately 50,000 and 156,000 cu.yds., respectively. In addition, excavated non-soil materials totaling more than 1,000 cu.yds. would also be recycled or disposed off-site.

The NPS states that:

> *Soils removed off-site would be hauled to several defunct quarries in the Tomales Point portion of the Seashore that the NPS is actively trying to restore. Most of these materials hauled off-site would be weedy or manure materials that would be buried at the bottom of the quarries and overlain with clean fill materials to minimize potential environmental impacts to adjacent ranch and natural areas. A separate document is being prepared by the Seashore detailing specific restoration plans for these quarries. Completion of this document is not required for the proposed project to proceed. Excavated sediment would be used to restore the Grossi, Evans, Evans-Abbott, McClure DG, and McClure Flat quarries. Sediments would be hauled to these quarries using local connector roadways and state highways such as Mesa Road, State Route 1, Levee Road, Sir Francis Drake Boulevard, and Pierce Point Road. From Pierce Point Road, trucks would use existing unpaved ranch roads to reach quarries. Non-soil materials would be disposed of at a municipal landfill approximately 40 miles away in Petaluma, California.*

4. <u>Construction Schedule</u>.

Wetland restoration within the project area would be conducted in two construction years. Most of the Phase I activities, located in upland areas of the Giacomini Ranch, were reviewed by the Commission under negative determination ND-045-07 and will be completed prior to October 31, 2007. Phase II activities would be conducted during an approximately 210-day period from April 1 through October 31, 2008. During the second construction year, construction would be staggered such that components in the southern end of the project area would be initiated first to ensure that construction activities do not disturb special status rail populations that occur in the undiked marsh north of the Giacomini Ranch. The FEIS states that Endangered Species Act regulations prohibit construction or other disturbances within 100 feet of rail habitat between February 15 and August 1 of each year, and there are regulations prohibiting timing of construction between March 1 and August 15 and proximity of construction to active nests during the breeding season for other birds, as well.

Depending on when funding is obtained, public access alignments and infrastructure would be constructed either during or after the restoration component. The NPS anticipates that construction of public access components would take an additional one to two construction years. Construction hours would be 7:00 a.m. to 6:00 p.m. Monday through Friday, with

weekends permissible only under authorization by the Seashore and CSLC. In areas identified in the FEIS/EIR as sensitive construction zones due to the proximity of construction to sensitive receptors such as private residences, a number of mitigation measures would be implemented to reduce impacts, including delaying start of construction until 8 a.m.

5. Long-Term Management and Monitoring.

The NPS has developed a comprehensive long-term monitoring program to assess whether the proposed restoration is successful, and published its *Long-Term Monitoring Program, Part 1 Monitoring Framework* document for the proposed project in May 2005. The document outlines the proposed framework and general methodologies for the monitoring program and states that more detailed monitoring protocols, including specific sampling locations and periods, will be included in a second monitoring document to be released in 2008. The NPS reports that certain elements of the monitoring program commenced several years ago, including monitoring vegetation, benthic invertebrates, zooplankton, fish, and sedimentation. The monitoring program defines criteria by which the progress of the restoration project towards meeting the purpose and goals is specifically set out.

As noted previously in this report, in August 1997, the NPS signed a Memorandum of Understanding (MOU) with Caltrans and the Coastal Commission allowing the NPS to assume Caltrans' mitigation obligations required under its CDP No. 1-90-109 for the Lone Tree Creek project and its impacts to aquatic resources. The NPS states in its monitoring program that it specifically took into account what its mitigation requirements were for the Caltrans coastal development permit, and that "the proposed restoration project and monitoring program will more than adequately address the Commission's requirements."

The Table of Contents, Executive Summary, Proposed Monitoring Methodologies, and Proposed Statistical Analysis Methodologies for the *Monitoring Program* are provided in **Exhibit 9**. In addition, the NPS provided as a part of its consistency determination a *Mitigation Monitoring Program Report* (May 2007) which describes project mitigation and protection measures that will be implemented to avoid and/or reduce construction impacts to resources at and adjacent to the project area. The *Report* also includes a discussion of enforcement responsibility, compliance responsibility, and general monitoring procedures to be used during project construction (**Exhibit 10**).

C. Federal Agency's Consistency Determination. The National Park Service has determined the project consistent to the maximum extent practicable with the California Coastal Management Program.

II. STAFF RECOMMENDATION.

The staff recommends that the Commission adopt the following motion:

MOTION: I move that the Commission **concur** with consistency determination CD-048-07 that the project described therein is fully consistent, and thus is consistent to the

maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).

Staff Recommendation:

The staff recommends a **YES** vote on the motion. Passage of this motion will result in an agreement with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

Resolution to Concur with Consistency Determination:

The Commission hereby **concurs** with the consistency determination by the National Park Service, on the grounds that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

III. Findings and Declarations:

The Commission finds and declares as follows:

A. Wetlands. The Coastal Act provides the following:

Section 30230. *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30233.

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no les feasible environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

. . .

(6) Restoration purposes . . . .

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary . . .

The FEIS provides a useful introduction to wetland resources and functions in the Giacomini Ranch area:

> *The complexity of geologic and hydrologic resources within the Project Area is associated with an extremely high diversity of vegetation communities and plant species. Most of the vegetation communities present in the Project Area have remained wetland or riparian in nature despite diking and disturbances from other land management activities. However, the type of wetland has changed greatly, with salt and brackish marsh being converted in both the Giacomini Ranch and Olema Marsh to freshwater wetlands such as Wet Pasture and Freshwater Marsh. The extent of riparian habitat has been reduced dramatically by land management practices such as levee and culvert maintenance, as well as by grazing on the Giacomini Ranch and possibly increases in water levels in Olema Marsh. Wetland and riparian habitats are integral components of many wetland functions, such as reducing the erosive power and height of flood flows, filtering pollutants out of water, providing food and habitats for both resident and non-resident wildlife species, including endangered or threatened wildlife species. The Project Area supports several plant species that are of federal, state, and local concern. By reestablishing natural tidal and freshwater hydrologic processes, the proposed project has the potential to change the type and quality of habitats that are present, including the quality and potentially the extent of wetlands and habitat for special status plant species and non-native invasive species. In addition, construction also has the potential to cause a temporary or short-term change in existing conditions for vegetation, wetlands, and special status plant species.*

Exhibits 11-13 illustrate existing vegetation communities, native and non-native vegetation communities, and the acreages of the most dominant vegetation communities, respectively, in the project area.

The FEIS also states that approximately forty percent of the Giacomini Ranch is comprised of Wet Pasture, which is dominated by grass and clover species. Pasture areas that have subsided and/or are influenced more by saline groundwater or surface water flows have evolved into Salt Marsh Pasture – a combination of salt marsh and pasture species - and even Diked Salt Marsh. The predominance of communities such as Wet Pasture, Salt Marsh Pasture, Ruderal, and Disturbed strongly reflects the agricultural nature of the project area, although the NPS notes that "diversity even within these highly managed habitat types is apparent in names such as "Wet" Pasture and "Salt Marsh" Pasture." Areas along the perimeter of the Giacomini Ranch and Olema Marsh where seeps and slow-moving reaches of freshwater creeks are present support Forested and Scrub Shrub Riparian, Freshwater Marsh, Vernal Marsh, Wet Meadow, and Moist Meadow vegetation communities. The FEIS reports that the following vegetation communities are present in the project area:

- Freshwater Vegetation Communities:
  - Wet Pasture
  - Freshwater Marsh
  - Wet Meadow
  - Scrub-Shrub and Forested Riparian

- Brackish Vegetation Communities:
  - Tidal Brackish Marsh
  - Diked Brackish Marsh
  - Diked Brackish Marsh: Mudflat/Panne

- Saltwater Vegetation Communities:
  - Salt Marsh Pasture
  - Tidal Salt Marsh – Low, Mid, High, and High Marsh/Upland Ecotone

- Other
  - Mesic Coastal Scrub
  - Ruderal

The NPS also submitted to the Commission a copy of its March 2005 *Delineation of Wetlands and Deepwater Habitats, Giacomini Wetland Restoration Project, Marin County, CA*, which describes the methods and results of a delineation of wetlands potentially subject to oversight by the Coastal Commission and NPS for the Giacomini Wetland Restoration Project. The report concludes that:

> *Wetlands potentially subject to oversight by the CCC under the Coastal Act were delineated using the modified Cowardin wetland delineation approach developed by CDFG. This methodology relies on the presence of only one of three criteria – hydrophytic vegetation, wetland hydrology, and hydric soils – to classify areas as wetlands. Because hydrophytic vegetation is prevalent within the Seashore and coastal Marin County, this wetland delineation was conducted as part of the vegetation mapping and Cowardin wetland classification effort that created and classified polygons with similar vegetation communities or plant associations larger than 10 square meters. For this reason, areas that supported hydrophytic vegetation, but did not necessarily appear to have wetland hydrology, are incorporated into the CCC wetlands map, but are absent from the map of wetlands potentially subject to jurisdiction by the Corps (Parsons 2005) or management and oversight by the Park Service. These drier "wetland" areas are largely represented by Riparian System code in Figures 7-12. Based on our survey, approximately 673.1 acres of wetlands potentially subject to oversight by the CCC exist in the Delineation Study Area. The Giacomini Ranch, adjacent undiked marsh, and County of Marin park areas near White House Pool and the Green Bridge account for 593.4 acres, with Olema Marsh and the downstream portion of Bear Valley creek (79.7 acres) comprise the remainder.*

Exhibit 14 illustrates the extent of wetlands within the project area delineated according to NPS and Coastal Commission methodologies.

As the proposed project includes fill and excavation in coastal waters and wetlands, the project must pass the three-part test of Coastal Act Section 30233(a): it must be an allowable use, it must be the least environmentally damaging feasible alternative, and it must include mitigation measures to minimize environmental effects. The purpose of the project is to restore and

enhance wetland condition and function within the Giacomini Wetland project area (i.e., Giacomini Ranch and Olema Marsh). The project is therefore an allowable use under Section 30233(a)(6). **Exhibit 15** presents a summary of excavation and fill activities proposed by the NPS.

The consistency determination next examines the type of fill and excavation that would occur within the project area to support the wetland restoration project:

> *There would be two types of permanent fill activities proposed: 1) those that would convert the type, but not the extent, of existing wetland and 2) those that would convert the existing wetland to upland. Conversion of wetland to upland would total 0.94 acre and would represent primarily creation of the high tide refugia for special status rail (bird) species at the northeastern end of the West Pasture levee (0.07 acre) and the low berm constructed to minimize intrusion of tides into the Tomasini Triangle freshwater marsh (0.83 acre). In addition, the public access component would include 0.04 acre of construction of viewing platforms in areas that are potentially subject to oversight as wetlands by the CCC. Fill activities that would convert wetland type, but not decrease acreage, total 3.86 acres and are comprised primarily of filling of manmade ditches, either the irrigation ditches in the East Pasture (3.37 acres) or the borrow ditch in the undiked marsh that was used to create the West Pasture north levee (0.46 acre). There would also be a small amount of fill (<0.001 acre) associated with regrading and stabilization of the riprapped and eroded sections of creek bank along Lagunitas Creek at the southeastern end of the East Pasture. Fill associated with public access components would total 0.04 acre and would primarily involve construction of viewing areas at the West Pasture north levee entrance and at White House Pool County park. Temporary fill may occur due to temporary stockpiling and staging of materials, but temporary fill would not be expected to exceed 0.5 acre and would be required to be removed completely at the end of construction. Contractors would be encouraged to stockpile and stage from upland areas to the extent practicable. There would be no fill (or excavation) of wetlands or water areas associated with hauling or disposal of excavated soils to the quarries.*
>
> *The acreage of excavation exceeds that of fill, because the Giacomini Ranch Project Area, unlike many restoration areas in San Francisco Bay, has actually increased in elevation, at least in some areas, since diking due to sediment deposition during floods and filling and land leveling as part of agricultural management. Excavation would total approximately 75.1 acres, with most of the excavation (>85 percent) involving shallow grading or scraping (≤1.5 feet in depth). Approximately 83 percent of this excavation would involve lowering topographically elevated areas in the southwestern portion of the East Pasture to intertidal or floodplain elevations or scraping the surficial weedy layer from high elevation areas in order to increase the potential for and success of native grass and herb revegetation efforts.*
>
> *Areas where excavation would exceed 1.5 feet would be the creation of tidal channels in the East Pasture (1.06 acre), the creation of the Tomasini Triangle freshwater marsh (approximately 3- 4 acres of the 5.2-acre marsh), and the Olema Creek Frog Ponds (0.73 acre). Most of the excavation described would occur in vegetated, diked wetland areas, but some excavation would occur in diked open water areas where hydraulic connectivity would be improved through shallow excavation and sidecasting of sediment and vegetation.*

Acreages for work in open water areas would total 4.28 acres in the East Pasture Old Slough and 0.81 acre in Bear Valley Creek. Excavation would not result in loss of any wetland or water areas and would result in only a small amount of conversion of vegetated wetland to unvegetated waters, primarily where tidal creeks would be created (1.18 acre) and ponded portions of created freshwater marshes.

Losses of wetlands from fill (0.94 acre) would be offset through gains in wetland acreage from the restoration. While most of the Project Area is already wetland, wetlands would still be created from some of the restoration activities such as removal of almost 3.25 mile of levees and ripping and decompaction of ranch roads. These areas would be opened up to tidal action, thereby meeting the conditions of Section 30607.1 of the Coastal Act. These activities would generate approximately 31.0 acres of wetlands, resulting in a net gain of 30.06 acres of areas potentially subject to oversight by the CCC. Therefore, the proposed project would be considered self-mitigating, with a 33:1 ratio of wetland gain to loss.

The FEIS documented a wide range of project alternatives that were considered by the NPS and the five alternatives that received a greater level of detailed analysis:

- No Action
- Alternative A: Limited restoration of the Giacomini Ranch East Pasture only with expanded public access, including culverted earthen fill trail on eastern perimeter
- Alternative B: Moderate restoration of the Giacomini Ranch East Pasture and limited restoration of the West Pasture, with expanded public access including boardwalk trail on eastern perimeter
- Alternative C: Full restoration of the Giacomini Ranch East and West Pastures and restoration of Olema Marsh, with moderate public access
- Alternative D (proposed project): Extensive restoration of the Giacomini Ranch East Pasture, full restoration of the West Pasture, restoration of Olema Marsh, with limited public access

The NPS states in the consistency determination that while practicable alternatives exist that are less damaging to the aquatic environment in terms of temporary direct or immediate construction-related impacts, they offer far less long-term benefits to the project area and the surrounding watershed. The consistency determination states that:

Implementing the No Action alternative to these elements would significantly reduce the potential benefits of the proposed project to restoring natural hydrologic and ecological processes and functions. Those alternatives to the actions proposed that involve less construction-related excavation or fill would also result in less benefit in terms of improvement in wetland condition and functionality.

Exhibit 16 provides a summary and comparison of wetland restoration alternatives considered by the NPS in the development of the proposed project.

The FEIS for the project examines the best management practices to protect wetland resources that would be incorporated into construction documents for the proposed restoration project. They include, but are not be limited to, the following:

- Where possible, construction access and staging shall occur in uplands and non-riparian habitat.

- If construction access or staging must occur in wetlands and riparian habitat, access within these areas shall be kept to the minimum road width and acreage possible. Contractors would work with Park Service personnel to minimize impacts to wetlands and riparian habitat.

- Construction access routes would be flagged to ensure that construction equipment does not detour from authorized entry points and access routes.

- Where possible, construction equipment would work from upland locations to minimize impacts to wetlands and riparian habitats.

- Any temporary "fill" or staging material placed in wetlands would be removed to upland locations at the earliest possible date.

- Construction equipment would be cleaned prior to construction start to ensure that no seeds or vegetative fragments of invasive, non-native species are introduced into the Project Areas.

As noted previously in this report, Appendix B of the consistency determination provides the *Mitigation and Monitoring Program Report* to be implemented for the restoration project (**Exhibit 10**).

The consistency determination also examines the proposed disposal locations for materials excavated during restoration activities:

> *All excavated materials would either be re-used on-site or transported to a quarry within the Seashore targeted for restoration. On-site disposal would include soils used to eliminate drainage and borrow ditches; create berms for special status species habitat and high tide refugia; recreate natural mesa/terrace topography adjacent to and at the Dairy Facility adjacent to Point Reyes Station; fill Manure Ponds at the Dairy Facility; recontour and stabilize steeply sloped or eroded creek banks; and enhance or construct public access facilities such as trails and viewing overlooks. Some of the excess may be spread loosely through the pasture in a layer no thicker than 0.25 foot using a manure-type spreader. Off-site disposal would involve hauling of materials to abandoned quarries on Tomales Point that are scheduled to be restored. The materials would be used to build up the base of the slope, with native surrounding materials used to "cap" and recontour the natural slope togography. With the exception of material used to recontour and stabilize eroded creek banks, no material would be disposed of in an open waterway, stream, bay, or intertidal wetland.*

In conclusion, and based on the information and analysis contained in the FEIS and consistency determination, the Commission finds that the proposed project is an allowable use, is the least environmentally damaging feasible alternative, and includes feasible mitigation measures to minimize temporary but adverse environmental effects on wetland habitats from restoration activities. The project would significantly restore and enhance wetland habitats on the Giacomini Ranch and in Olema Marsh, largely due to the complete removal of both the East Pasture and West Pasture levees, the discontinuation of intensive agricultural management practices, elimination of grazing, removal of agricultural infrastructure, and adaptive restoration actions to lower surface water levels and eliminate invasive plant species in Olema Marsh. The Commission therefore finds that the proposed restoration project is consistent with the wetland fill and marine resource protection policies of the California Coastal Management Program (Coastal Act Sections 30230 and 30233).

B. <u>Environmentally Sensitive Habitat</u>. Section 30240 of the Coastal Act provides that:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those 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 those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Regarding environmentally sensitive habitat and species in the project area, the FEIS states that:

> *While moderate to intensive development and management of the Giacomini Ranch and Olema Marsh may have caused wildlife resources to decline relative to historic conditions, the Project Area nevertheless supports a diverse array of animal species, a large proportion of which are special status because their populations are considered at risk (ARA et al. 2002) . . . In general most of this habitat diversity occurs on the perimeter or "edge" of the Giacomini Ranch and, to some extent, Olema Marsh. Within the Giacomini Ranch, the perimeter or edge represents not only the dynamic interface between groundwater, freshwater, and, to some extent, saltwater, but is also less heavily managed for agricultural purposes. In addition, it offers proximity of some very different types of habitat such as coniferous forest or Woodland and Coastal Scrub to the Project Area also act to promote the diversity of wildlife species observed (ARA et al. 2002).*(**Exhibit 17**)

The FEIS reviewed the federal and state listed endangered and threatened species found within and adjacent to the project area (**Exhibit 18**):

> *As of 2005 . . . at least five federally endangered and two federally threatened [species] have historically or recently been found in the Project Area – four bird species, two fish species, and one amphibian species . . .*

The five federally endangered species observed during baseline studies or documented historically included the tidewater goby, central coast coho salmon, California clapper rail, California brown pelican (Pelecanus occidentalis californicus), and Least Bell's vireo (Vireo bellii pusillus; FE; SE). The California brown pelican irregularly visits the Project Area in small numbers, typically foraging along Lagunitas Creek shoreline (ARA et al. 2002). As of 2003, the California clapper rail had occurred in four of the last six winters in the undiked tidal marsh north of the West Pasture, however, it has not been sighted since (ARA et al. 2002, J. Evens, ARA, pers. comm.). The tidewater goby had not been sighted since 1953, when it was found in Tomasini Creek in 2002 (Fong 2003). Lagunitas Creek supports one of the largest remaining central coast coho salmon populations, and this species migrates through the Project Area during winter, spring, and early summer.

Federally threatened species in the Project Area include the California redlegged frog and central coast steelhead salmon. Some of the largest remaining populations of the federally threatened California red-legged frog (Rana aurora draytonii) occur on the Point Reyes peninsula and adjacent areas. This species was first found in the Giacomini Ranch during the Feasibility Study (PWA et al. 1993). Since 2001, surveys have documented small to moderate breeding populations in the freshwater marsh and Fish Hatchery Creek in the West Pasture (Fellers and Guscio 2002; G. Fellers and P. Kleeman, unpub. data). In addition, the frog occurs in the Olema Marsh (G. Fellers, pers. comm.). As with coho, Point Reyes and the Lagunitas Creek watershed represent another important stronghold for steelhead, which has been listed as threatened within the central coast ESU (Evolutionarily Significant Unit). Another federally threatened species, chinook salmon, is also present in the Project Area: this anadromous species spawns in the Lagunitas and San Geronimo Creek watersheds, although in much lower numbers than coho or chinook (MMWD 2005).

State-listed endangered and threatened species totaled at least six, many of which were also federally listed. State-endangered species included American peregrine falcon (FD), California brown pelican (FE), California clapper rail (FE), and Least Bell's vireo. Least Bell's vireo occasionally visit riparian corridor along the southern portion of Lagunitas Creek, but they do not nest here (ARA et al. 2002). State-threatened species consisted of California black rail, bank swallow (Riparia riparia), and sandhill crane (Grus canadensis tabida). Potential breeding California black rail has been consistently present in undiked marsh north of Giacomini Ranch and, during surveys, in freshwater marsh in West Pasture (ARA et al. 2002). Sandhill crane is a very rare visitor to the flooded pastures in the Giacomini Ranch, and bank swallows also represent rare transients to the Giacomini Ranch, especially in fall (ARA et al. 2002).

The Giacomini Wetland Restoration Project will remove more than three miles of levee from the estuarine portions of Lagunitas Creek. As well, the project will remove barriers and restore natural channel process to Tomasini Creek, Fish Hatchery Creek, and Bear Valley Creek in the Olema Marsh. The consistency determination reports on the restoration activities to be implemented at various geographical locations within the project area and the anticipated benefits to environmentally sensitive habitats and species that are expected to occur within these areas:

Tomasini Creek. *In the 1960s, the Giacomini family realigned Tomasini Creek through channel excavation and berming to run along the eastern perimeter of the East Pasture. The proposed project involves realigning most of the leveed portion of Tomasini Creek into one of its historic alignments. This action would change Tomasini Creek from being a muted tidal system, because of the flashboard dam and tidegate structure at its current outlet to Lagunitas Creek to a fully tidal system and would be expected to have substantial benefits for many aquatic organisms, including listed salmonid species. Juvenile coho (Oncorhynchus kisutch; FE) and steelhead (Oncorhynchus mykiss; FT) salmon have been sighted recently in the Giacomini Ranch portion of Tomasini Creek (NPS, unpub. data). Other wildlife that would be expected to benefit from the improvement in hydraulic connectivity and water quality conditions would be southwestern river otter, resident estuarine fish, and even shorebirds, who could forage on the intertidal mudflats on the channel sides during low tides. The existing channel of Tomasini Creek would be retained in its current muted tidal state as it currently provides habitat for tidewater goby (Eucyclogobius newberryi; FE). The existing channel would still continue to receive freshwater inflow to maintain brackish conditions for goby via flood overflow from Tomasini Creek during storms (via a lowered section of creek bank/levee) and groundwater inputs from the Point Reyes Mesa.*

Bear Valley Creek/Olema Marsh. *Some alteration is also proposed to the portion of Bear Valley Creek in Olema Marsh, however, these alterations would involve shallow excavation of the creek flow path, removal of sediment berms, and culvert replacement to improve hydraulic connectivity and natural hydrologic processes within this severely impounded system. Over the past 10 years, water levels within Olema Marsh have risen precipitously, because hydraulic connectivity has been severely reduced by a number of factors. First, sediment deposition during past storms completely blocked one of the two culverts that used to allow outflow from the marsh into Lagunitas Creek (KHE 2006). Secondly, disposal of sediments at some point in the past adjacent to Levee Road has severely reduced drainage through the creek's currently functioning eastern culvert, thereby reducing outflow even further. These factors have appeared to cause as much as 6-foot increase in water levels within the marsh since the early 1990s (KHE 2006), disrupting natural hydrologic processes and killing riparian vegetation on the fringe of the marsh. By removing the sediment disposal berm and shallowly excavating the creek, the Park Service and ACR hope to improve hydraulic connectivity and, thereby, improve the potential for salmonid passage. Bear Valley Creek is known to support Oncorhynchus mykiss (FT) and may have once supported coho salmon. In addition, the riparian habitat adjacent to Olema Marsh supports one of the largest coastal breeding populations of saltmarsh common yellowthroat (Geothlypis trichas sinuosa, CSC; ARA et al. 2002).*

Over the long-term, restoration of the Olema Marsh would lower water levels and cause a small portion of the marsh to become tidal brackish marsh, although freshwater marsh and potential California red-legged frog breeding (Rana aurora draytonii; FT) habitat would be expected to be retained on the western side of the marsh, which receives considerable freshwater inflow throughout the year from several small drainages and groundwater inflow. However, over the short-term, there could be impacts to water quality and habitat

condition associated with dewatering and associated subsidence of the marsh surface, including extensive die-off of marsh vegetation and temporary decreases in dissolved oxygen and pH. Construction of the Olema Creek Frog Ponds could occur in non-breeding migration or dispersal habitat for red-legged frog potentially moving between breeding units in Olema Marsh and the east side of Olema Creek, however, these ponds were sited in this area specifically to provide alternate breeding habitat areas for these frogs, particularly for frogs using Olema Marsh to buffer them from anticipated changes in Olema Marsh when water impoundment is reduced, and hydraulic connectivity with Lagunitas Creek is increased.

North Levee in West Pasture. *Removal of the north levee and filling in of the borrow ditch adjacent to the undiked marsh that supports California black rail (Laterallus jamaicensis coturniculus, ST) and occasionally California clapper rail (Rallus longirostris obsoletus; FE, SE) will increase contiguous marsh breeding and foraging habitat for rails. The Park Service also proposes to extend a portion of the West Pasture levee northward to connect to the existing alluvial levee and thereby retain high tide upland refugia habitat for rails. This effort would build upon that undertaken in 2006 as part of the Special Status Habitat Enhancement Project (ND-064-06).*

East Pasture. *Within the East Pasture, drainage ditches would be filled, and new channels would be created as tributaries to the realigned Tomasini Creek. Eventually, these channels -- which would be designed to retain some water even during low tides -- could provide some expansion habitat for goby. In addition, realignment of Tomasini Creek would improve passage potential for salmonids relative to the existed muted tidal Tomasini Creek channel: both coho and steelhead juveniles have recently been sighted on downstream portions of Tomasini Creek (NPS, unpub. data). In addition, creation or reconnection of existing channels would increase the amount of refugia and foraging habitat for juvenile salmonids that are migrating through Tomales Bay to the Pacific Ocean.*

Creeks and Ditches. *Restoration activities performed in creeks and ditches could affect several federally endangered and threatened fish species, as well as California red-legged frog. The fish species include central California coast coho salmon (Oncorhynchus kisutsch; FE), central California coastal steelhead (Oncorhynchus mykiss; FT), and tidewater goby (Eucyclogobius newberryi; FE). Tidewater goby, which had not been sighted in the Tomales Bay watershed since 1953, were found in 2002 in the leveed portion of Tomasini Creek in the Giacomini Ranch. Since then, it has also been observed in the West Pasture Old Slough and some of the diked sloughs and drainage ditches in the East Pasture. Because of the presence of the goby, while Tomasini Creek will be realigned, the existing channel and the malfunctioning tidegate/flashboard dam structure will remain intact, with the exception of a small berm at its upstream end at the point of realignment. This will enable the existing channel to remain as a backwater slough feature with muted tidal inflow and reduced flood scour from diversion of Tomasini Creek, although some flood flow would continue to spill into the old channel during moderate or larger storm events. Brackish conditions would be retained by the considerable amount of groundwater inflow that enters the channel adjacent to the Point Reyes Mesa.*

The purpose of the proposed project is to improve wetland functions, including habitat for threatened and endangered species. For this reason, construction must occur in threatened and endangered species habitat. This activity is allowed under Coastal Act Section 30240 because it is a use "dependent on the resources." The NPS states that it would implement a number of impact avoidance and mitigation measures during construction to minimize impacts to special status species. The consistency determination documents the proposed protective measures for environmentally sensitive habitats:

> *First, in areas where special status species have been recorded, construction would be timed to ensure that it occurred towards the end of or after the breeding season (after July 15). In compliance with USFWS regulations, no construction would be undertaken within 250 feet of rail habitat between February 1 and August 31 or within 100 feet of nesting or breeding habitat for migratory birds between March 1 and August 15. Species status species surveys would be conducted in all construction areas by qualified biologists no more than 1 week prior to start of construction in that area. Should special status species be located, construction activities would be delayed in this until towards the end of or after the breeding season (July 15), and/or a buffer zone would be established in consultation with USFWS. As noted above, the buffer zone for nesting or breeding migratory birds is typically 100 feet. After July 15 or the appropriate date established by regulatory agencies for certain species, should special status species be found, extensive trapping or seining would be conducted by qualified biologists to remove and relocate species such as red-legged frog, salmonids, northwestern pond turtle (Clemmys marmorata marmorata, former federal species of regional concern), as well as other aquatic organisms, to appropriate non-construction habitat approved by the USFWS or NMFS. Impacts to aquatic species would also be reduced through implementation of water quality-related measures such as installation of silt fencing or silt curtains, coffer dams, and other techniques to reduce turbidity associated with construction.*
>
> *During construction, a number of impact avoidance and mitigation measures would be implemented to ensure that impacts to water quality, vegetation, and wildlife are avoided or minimized. Realignment of Tomasini Creek would occur during the late summer-early fall when surface flow in the creek is typically absent. During shallow excavation of the Bear Valley Creek channel, siltation curtains would be installed on the perimeter of the work area to limit turbidity impacts to adjacent waters. Some impact of riparian vegetation would have to occur as part of Bear Valley Creek restoration -- <0.25 acres of arroyo willow (Salix lasiolepis) and red alder (Alnus rubra) forest -- but riparian vegetation is expected to rebound on the perimeter of the marsh following a decrease in impoundment conditions and improvement in hydraulic connectivity. The area where Tomasini Creek would be realigned largely supports only non-native, invasive shrub species such as Himalayan blackberry (Rubus discolor).*
>
> *No development of public access facilities would occur directly in the habitats or rare or endangered species or unique plant communities. Certain restoration actions would occur in habitats of special status species. The Park Service and CSLC are currently in formal Section 7 consultation under the Endangered Species Act with both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). In addition, the Park Service and CSLC will seek a consistency determination from California*

Department of Fish and Game (CDFG) with regards to federal species that are also state-listed, as well as consulting on species that are state-, but not federally, listed.

In conclusion, the proposed wetland restoration project will restore and enhance estuarine, salt marsh, and freshwater marsh habitats within the footprint of the historical area of tidal wetlands at the head of Tomales Bay. The project is an allowable use under Coastal Act Section 30240. In addition, the project will restore and enhance riparian upland habitats that border the wetlands habitats on the Giacomini Ranch. The overall effect of the project will be beneficial and will significantly increase the health, abundance, and diversity of wetland and other environmentally sensitive habitats and their constituent species in the Giacomini Ranch and Olema Marsh project areas. In addition, the project includes a detailed, long-term biological monitoring program. Therefore, the Commission finds that the proposed project is consistent with the environmentally sensitive habitat policies of the CCMP (Coastal Act Section 30240).

C. <u>WATER QUALITY</u>. Section 30231 of the Coastal Act provides that:

<u>Section 30231</u>. *The biological productivity 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, and minimizing alteration of natural streams.*

The FEIS examines water quality issues in the project area and states that:

Water quality within the Giacomini Ranch has been monitored for four years as part of the planning process. In general, between 2001 and spring 2006, waters within the Giacomini Ranch did not appear to be eutrophic (Parsons and Allen 2004a). With a few exceptions, parameters such as dissolved oxygen, pH, and nitrates only occasionally exceeded water quality objectives in the RWQCB San Francisco Basin Water Quality Control Plan or Basin Plan (RWQCB 1995a), which incorporates Tomales Bay as well as San Francisco Bay (Table 9). There were low to moderate concentrations of nutrients and chlorophyll a, even in drainage ditches, with the exception of seasonal pulses (Parsons, in prep.). Also, dissolved oxygen and chlorophyll a levels were not characteristic of either highly eutrophic or hypoxic systems, with the exception of some of the drainage ditches and sloughs in the eastern portion of the Project Area (Parsons, in prep.).

The consistency determination documents how the proposed project will improve water quality in the project area and in Tomales Bay:

Removal of levees and restoration of natural floodplain and estuarine process would reduce delivery of multiple pollutants, including sediment, nutrients, and pathogens, to Tomales Bay. The Seashore has been working actively with the Tomales Bay Watershed Council on

water quality issues, including identification of sources and corrective actions on park lands. The Seashore has a long-term water quality monitoring program and has been implementing corrective actions such as constructing loafing barns and riparian exclosure fencing for cattle. Perhaps, one of the largest efforts undertaken by the Park Service to improve water quality in Tomales Bay is the proposed project. One of the most important functions of hydrologically connected wetlands is water quality improvement through retention, assimilation, or transformation of pollutants by floodplain wetlands during overbank flooding events. Two-thirds of the freshwater inflow – and, therefore, potential contaminant source – to Tomales Bay flows through the Project Area, but is precluded from reaching floodplain wetlands by the Giacomini Ranch levees. Removal of the levees has been estimated to result in a potential decrease in downstream pollutant delivery to Tomales Bay by as much as 17 to 19 percent, depending on the specific pollutant (NPS 2007, Parsons, in prep.) . . . .

In addition to improving conditions within individual wetlands, restoring or improving functionality may improve the health of the overall Tomales Bay ecosystem. Increased connectivity of floodwaters with floodplains could improve water quality, because floodwaters carry sediments, nutrients, pathogens, and contaminants that could now be deposited onto floodplains rather than transported downstream to Tomales Bay. The failure of Tomales Bay to consistently meet water quality standards for designated beneficial uses such as oyster mariculture and public recreation and wildlife needs prompted the San Francisco District of the Regional Water Quality Control Board (RWQCB) to designate the bay and some of its subwatersheds as impaired for sediment, nutrients, pathogens, and mercury under Section 303(d) of the Clean Water Act. Water quality problems threaten not only the oyster fisheries and humans using the Bay for recreational purposes, but the freshwater, estuarine, and marine wildlife species that use Tomales Bay for breeding or foraging habitat. The potential value of the Project Area to improvement in downstream water quality is underscored by the fact that two-thirds of water flowing into the Bay comes from Lagunitas Creek (Fischer et al. 1996), which is currently leveed to run through the middle of the Giacomini Ranch.

Restoring these wetlands would not only benefit water quality, but would increase habitat and food resources for wildlife within the Project Area and the entire Tomales Bay watershed. Restoration would increase the export of carbon to downstream portions of the Bay and would improve the potential for marine and estuarine species to move into the Project Area to feed on resident estuarine, as well as non-resident, species. Restoration would also increase the amount of aquatic and "terrestrial" habitat available for breeding/nesting, resting, and refugia.

The NPS identifies numerous best management practices that it will implement to protect water quality in and adjacent to the project during wetland restoration activities. The FEIS states that contractors would abide by the following stipulations in order to protect water quality within the Project Area and downstream of the Project Area:

- *Conduct construction activities during the dry season.*

- *Conduct construction work in accordance with site-specific construction plans that minimize the potential for increased delivery of sediment to surface waters.*

- *Ensure that concentrated runoff and concentrated discharge are diverted away from channel banks.*

- *Minimize removal of and damage to native vegetation.*

- *Install temporary construction fencing to identify areas that require clearing, grading, revegetation, or recontouring, and minimize the extent of areas to be cleared, graded, recontoured, or otherwise disturbed.*

- *Grade and stabilize spoils sites to minimize erosion and sediment input to surface waters and generation of fugitive dust (see discussions under Measures to Protect Air Quality below).*

- *As appropriate, implement erosion control measures to prevent sediment from entering surface waters, including the use of silt fencing or fiber rolls to trap sediments and erosion control blankets on slopes and channel banks.*

- *Avoid operating equipment in flowing water by using temporary cofferdams and/or other suitable structures to divert flow around the channel and bank construction area.*

The consistency determination reports that to avoid or reduce the potential impacts associated with restoration activities:

> *. . . the project incorporates stringent mitigation measures for minimization of earth movement, construction windows related to both water quality and special status species constraints, and erosion control and revegetation. The proposed project must adhere within wetland and creek areas to construction windows imposed by permitting agencies, specifically October 31. Early rains could cause the proposed project to close for the construction season earlier than intended. Revegetation with native species, use of biotechnical stabilization measures (e.g., "willow mattress"), installation of erosion control blankets and waddles, and hydromulching are some of the erosion control and sediment stabilization measures proposed, with the exact technique dependent on the area and the potential for precipitation- and floodwater-related run-off and erosion. Topsoil removed during grading and excavation are proposed for reuse within many areas of the restoration component to enhance the success of passive and active revegetation efforts, as soils below the topsoil horizon are often anoxic and would potentially undergo some biogeochemical changes if used as a topsoil layer that could preclude plant growth.*
>
> *The only proposed development associated with the project would be public access facilities, and, as discussed under Visual Resources, design of these low-intensity facilities would specifically focus on ensuring compatibility with the surrounding natural and rural*

landscape and materials used in development. No construction of impervious surfaces is proposed.

As noted previously in this report, these measures are discussed in further detail in the *Mitigation and Monitoring Program Report* in Appendix B of the consistency determination (**Exhibit 10**).

In conclusion and as described above, the proposed wetland restoration project will itself lead to improved water quality in the Giacomini Ranch and Olema Marsh project areas, and in Tomales Bay. The project also includes mitigation measures and best management practices to protect water quality during the multi-year construction period. With the proposed restoration elements and mitigation measures, the Commission finds that the proposed project is consistent with the water quality protection policies of the CCMP (Coastal Act Section 30231).

D. Public Access and Recreation. The Coastal Act provides the following:

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). *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 . . . .

Section 30214(a). *The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:*

(1) Topographic and geologic site characteristics.

(2) The capacity of the site to sustain use and at what level of intensity.

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the proximity of the access area to adjacent residential uses.

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.*

The NPS states in the FEIS that because the Giacomini Ranch has been privately owned until recently, the only formal trails are those on lands owned by the Seashore and GGNRA and lands managed by the County of Marin Parks and Open Space District. While there has been little formal trail development in the project area, several informal trails have been established along portions of the Giacomini Ranch's levees and are used for walking, dog-walking, birdwatching, and other passive recreational pursuits. The NPS reports that it and the CSLC have:

> *. . . carefully worked to incorporate opportunities to experience and enjoy the restoration process through public access, which is one of the project objectives. However, the proposed project has the potential to affect some or all of the existing public access and viewshed resources in the Giacomini Ranch and Olema Marsh and may have temporary impacts on park visitors, local residents, and staff through increases in construction-related traffic and potential temporary closures in roads.*

The FEIS examines the existing public access and recreation elements in and immediately adjacent to the project area (**Exhibit 19**):

> *To the north of the Giacomini Ranch, Tomales Bay Trail, which is on GGNRA lands that are leased by the Martinelli family for bef cattle grazing, starts at a moderate-sizedparking lot on State Route 1 on the eastern side of Tomales Bay and winds approximately 1.37 miles on a fire road trail through grassy hills to a vista point that overlooks the southern portion of the Bay. This designated hiking and biking spur trail ends at the base of Railroad Point, just north of where Tomasini Creek flows out into Tomales Bay.*
>
> *South of Giacomini Ranch, the County has leased two areas from the state of California Wildlife Conservation Board that are maintained as parks. The largest of these is the County's White House Pool park located at the intersection of Sir Francis Drake Boulevard and Bear Valley Road (Figure 38). An approximately 0.5-mile unpaved dirt path starts on the northern side of Levee Road near the northeastern corner of Olema Marsh and winds through dense riparian habitat and open ruderal grassland areas adjacent to Lagunitas Creek before it ends at White House Pool. Two small wooden bridges cross the former and current outlets for Bear Valley Creek. A large paved parking lot (discussed below) occurs at the western end of the park and provides some access for water-based recreation such as kayaking.*
>
> *The eastern end of the White House Pool County Park trail is directly opposite the Olema Marsh trail, which runs approximately 0.39 mile along the eastern edge of Olema Marsh through grassland directly adjacent to the shutter ridge created by the San Andreas Fault (Figure 38).*
>
> *For many years, the public has accessed the Giacomini property along an approximately 0.32-mile informal dirt path on the elevated creek bank and levee (Figure 38). This spur trail ends at approximately the location of the Giacomini's old summer dam and largely has views of Lagunitas Creek, some patches of riparian habitat, the Giacomini Ranch's East Pasture, and the White House Pool County Park.*

The other informal trail in the Project Area is at the northwestern corner of the Giacomini Ranch along the top of the levee at the northern end of the West Pasture (northwestern levee; Figure 38). It can be accessed from a small pull-out area on the east shoulder of Sir Francis Drake Boulevard north of Drake's View Drive. This approximately 0.28-mile dirt spur trail leads from Sir Francis Drake Boulevard to the northeastern corner of the West Pasture at Lagunitas Creek.

Two formal parking lots serve trails in the Project Area and vicinity. There is a parking lot with 14 parking spaces at the trailhead for Tomales Bay Trail that generally has high capacity (i.e., occupancy does not exceed 90 percent of capacity during weekday and weekend regardless of season) and another parking lot with approximately 43 parking spaces at White House Pool County Park that has medium capacity (i.e., occupancy does not exceed 90 percent of capacity during weekdays and most weekends except for some holiday and high season period weekends). Approximately 23 informal parking areas exist for the Giacomini Ranch West Pasture in pullout areas along the side of Sir Francis Drake Boulevard, although parking often overflows onto the street during the winter high tide periods. There are no designated formal or informal parking areas for the Giacomini Ranch East Pasture and Green Bridge County Park trail network, with most people parking alongside homes on 3rd and C Street in Point Reyes Station or walking to the trail from other parts of town. Parking can be difficult on busy weekends and weekdays.

In describing the proposed access and recreation elements incorporated into the proposed restoration project, the consistency determination reports that:

Because of the interest expressed during scoping in public access, the Park Service and CSLC at the outset identified public access as a goal and have worked hard to incorporate access opportunities that enable people to enjoy and learn about the restored wetland without conflicting with the primary purpose of the project, which is restoration . . . [D]*eveloping public access facilities that met the needs and desires of the public while not impacting habitats evolved into a complex and very challenging task, because a large portion of the Project Area already supports wetland and riparian habitat, even though these habitats are degraded and minimally functional. The agencies have focused efforts on improving existing access facilities in areas with sensitive natural resources and constructing new facilities largely only in degraded upland areas such as the Dairy Facility. These facilities would cater primarily to low-intensity recreational uses such as hiking, birdwatching, and nature study and would emphasize earthen or decomposed granite surfacing; wooden, split-rail fencing; and unobtrusive interpretative exhibits and viewing overlooks that would not detract from the rural nature of the local community. In addition, the agencies have tried to be sensitive to the needs and concerns of adjacent residents. The Project Area is directly bounded by private property on the eastern, western, and southern perimeters.*

As described previously in this report (**Exhibit 8**), the proposed access and recreation facilities include:

- Enhancement of the existing informal spur path on the south side of Lagunitas Creek in the East Pasture with the path connecting to a new path that would lead to a viewing overlook at the Dairy Facility;
- An improved entrance to the Green Bridge County park off State Route 1;
- An ADA-compliant trail, viewing overlook, and new vault toilet facility at White House Pool County park;
- Extension of the Tomales Bay Trail southward along the historic railroad grade through minor grading and improvements;
- Creation of an interpretative exhibit along the Tomales Bay Trail at the top of mesa;
- A viewing overlook/blind at the current entrance to the West Pasture north levee, which would be removed.

In addition to the above, the Park Service has committed to work collaboratively with the County of Marin in the future on the enhancement and development of additional public access facilities on the southern perimeter of the project area, which could potentially include a trail on Levee Road and the Green Bridge, extension of a trail to Inverness Park, and construction of a non-vehicular bridge across Lagunitas Creek between White House Pool County Park and the Giacomini Ranch at the site of the old summer dam. Any future public access projects that might arise from these collaborative efforts would need to undergo separate environmental documentation and receive all necessary local, state, and federal permits and/or authorizations.

The FEIS documents the mitigation measures which the NPS and CSLC would implement to minimize the effects of project construction on recreational use. Information on upcoming closures, including closure dates and arrangements for alternate parking, restroom facilities, and trail access points would be posted on the park website, distributed at the Bear Valley Visitor Center, and posted at the construction site. Information on alternate recreational opportunities would be publicized on the park website, in the park newsletter, and in signage at the construction sites where closures are necessary. In addition, the NPS and CSLC state that both agencies are committed to working with the birding community to develop informational signage that explains the reasons for the change and identifies other nearby birdwatching areas.

In conclusion, the Commission finds that while the proposed project will create adverse effects on existing public access along the perimeter of the project area during the construction period, those effects are temporary and not significantly adverse. The project would eliminate the existing, informal accessway along the north levee in the West Pasture but includes construction of a replacement viewing overlook at the edge of the West Pasture along Sir Francis Drake Boulevard. As described above, the project also includes other public access and recreation elements that will allow the public to view and enjoy the restored wetland areas from the perimeter of the project area. The NPS will also work with the County of Marin to study potential future public access and recreation projects in the project area. Therefore, the Commission finds that the proposed project will provide public access and recreation benefits in a manner that will not adversely affect the restoration and protection of wetlands and other environmentally sensitive habitat areas. The Commission further finds that the proposed project

is consistent with the public access and recreation policies of the CCMP (Coastal Act Sections 30210, 30212, 30214, and 30220).

E. Hazards. Section 30253 of the Coastal Act provides in part that:

> New development shall:
>
> *(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard*
>
> . . . .

The project area is located in an area at risk of damage from flooding and earthquakes. The project area is situated at the confluence of several large creeks (Lagunitas, Olema, and Bear Valley), is within the 100-year floodplain, and has experienced numerous devastating floods during the last 100 years, including the 1982 flood, the 1998 flood, and, most recently, the 2006 flood. The FEIS states that:

> *In areas where levees are removed, flooding can be a concern. However, one of the hydrologic functions that the proposed project hopes to restore is reduction in flooding of adjacent homes and roads by hydrologically reconnecting Lagunitas Creek and some of the other tributaries to their historic floodplains on the Giacomini Ranch and Olema Marsh. In addition, increasing connectivity of creeks with wetlands and riparian habitats has the potential to dissipate or dampen the erosive energy of flood flows.*

Based on the hydraulic modeling analyses undertaken for the Final EIS/R, the NPS reports that the proposed restoration project would reduce flooding in several portions of the project area, specifically eastern and western portions of Levee Road, and in White House Pool County Park. The consistency determination also states that the project area is located within an Alquist-Priolo earthquake fault zone and within a very high liquefaction susceptibility zone (**Exhibit 20**). Should the NPS ultimately replace existing culverts at Levee and Bear Valley roads, arch culverts would be used rather than bridges because the latter require substantial footings due to the liquefaction potential of the culvert locations. The type of development included in the proposed project is primarily public access facilities such as trails viewing overlooks, interpretive exhibits, and potentially two culvert replacements. Should it be necessary for a particular infrastructure project, the NPS will retain a state-licensed engineering geologist to prepare geotechnical reports that evaluate soil, slope, and geologic conditions, provide mitigation measures as needed, and provide required structural engineering recommendations to ensure public safety.

In conclusion, the Commission finds that the proposed wetland restoration project would not generate increased flood or seismic hazards in the project area. The project is expected to alleviate some of the flooding that currently occurs along Levee Road, and does not include construction of the types of structures that would be at risk or place the public at risk in the event of a seismic event or subsequent liquefaction. Therefore, the Commission determines that the proposed project is consistent with the hazards policy of the CCMP (Coastal Act Section 30253).

F. Cultural Resources. Section 30244 of the Coastal Act provides that:

> *Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.*

The FEIS addresses the potential for archeological resources in the project area:

> *Archeological resources are "the remains of past human activity and records documenting the scientific analysis of those remains" (NPS 1998). These include artifacts, ecofacts, and features. Over 100 Native American archeological sites exist within the Seashore, primarily on the coastal lowlands . . . The Seashore also has approximately 90 historic terrestrial archeological sites . . . Almost 90 percent of the Seashore's lands have not yet been surveyed for archeological resources.*

The FEIS reports that the 1999 Point Reyes National Seashore Cultural Affiliation report examining Native American affiliation at Point Reyes concluded that:

> *. . . the Federated Coast Miwok people have a "clear, exclusive affiliation with the lands managed by the Seashore extending back more than 2,000 years. The Federated Coast Miwok are politically recognized by the federal government as the Federated Indians of Graton Rancheria. A FIGR representative was present for most of the archeological survey conducted in the Project Area.*

The FEIS further states that no archeological resources or human remains were identified during surveys conducted in 2002 by the Anthropological Studies Center at Sonoma State University.

The NPS states in its consistency determination that:

> *The Park Service contracted for an archaeological and cultural resource survey in 2002 by the Anthropological Studies Center at Sonoma State University (Newland 2003). Historic structure surveys were conducted in 2004 by Garcia and Associates (Garcia and Associates 2004) to evaluate the historic buildings, structures, and landscape features at the Giacomini Dairy Facility and a separate residence on Sir Francis Drake Boulevard in Inverness Park. No anthropological resources or structures eligible for potential registry in the National Register of Historic Places or on the Park Service's List of Classified Structures were found during the surveys. Four cultural landscape features -- (1) a portion of the North Pacific Coast Railroad grade; (2) a historic-period levee and dam, (3) two manure lagoons, and (4) two corrals – were identified during these two surveys, but none of these features were considered eligible for the National Register of Historic Places (Newland 2003; Garcia and Associates 2004).*

The consistency determination concludes by reporting that the State Historic Preservation Office (SHPO) reviewed and concurred in August 2006 with the National Park Service's determination for the wetland restoration project of "no historic properties affected" under Section 106 of the

National Historic Preservation Act (NHPA). The NPS has committed that if unrecorded resources are discovered during construction of project elements, operations will be suspended until the NPS completes consultation with SHPO in accordance with Section 106 of the NHPA.

The Commission finds that the proposed wetland restoration project will not adversely affect cultural resources known to exist in the project area, and that work will stop and consultation procedures implemented should any cultural resources be discovered during project construction. Therefore, the Commission determines that the proposed project is consistent with the cultural resource policy of the CCMP (Coastal Act Section 30244).

G. Scenic Views. Section 30251 of the Coastal Act provides that:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.*

The project Final EIS/R examines the visual resources in the project area:

> *The major visual resource landforms in the Project Area and immediate vicinity are the rift zone valley along the San Andreas Fault (valley bottom), the Point Reyes Mesa coastal marine terrace bordering the Giacomini Ranch to the east (terrace), the granitic-dominated Inverness Ridge on the west (ridge), and the grassy shutter ridge hills that separate Bear Valley Creek from Olema Creek (hills). For the purposes of evaluating existing viewshed resources, visual quality was assessed at nine viewpoints in the Project Area and immediate vicinity. Viewsheds in the Project Area include both low-elevation viewpoints along roads and trails, as well as higher elevation ones on the Point Reyes Mesa and Inverness Ridge, which include many rural residential developments. Because of the steepness of the Inverness Ridge and even Point Reyes Mesa, background visual resources, which include features more than 3 miles from the viewpoint, are often not visible, except in certain directions (e.g., north along the rift zone valley) or from elevated viewpoints on the Inverness Ridge or Point Reyes Mesa.*
>
> . . .
>
> *Some viewpoints can only be accessed on foot. The elevated vista point near the end of Tomales Bay Trail offers spectacular views of southern Tomales Bay, Lagunitas Creek, undiked marshlands, the forested Inverness Ridge, and, depending on the exact viewpoint, some views of the heavily vegetated Point Reyes Mesa bluff. The lower elevation White House Pool County Park trail and the two Giacomini Ranch informal paths offer more constrained views of Lagunitas Creek, pastoral areas with cows, riparian habitat, the forested Inverness Ridge, the heavily vegetated Point Reyes Mesa bluff, and/or undiked marshlands. Visual quality of these areas is negatively affected to some degree by unsightly infrastructure or encroachments associated with agricultural development such as levees,*

riprap, pipelines, power poles, and deteriorating barns, although the dairy cows and pasturelands themselves, which remain green almost all year long, can be perceived as a benefit to visual quality as they provide highly valued pastoral scenery.

The Final EIS/R and consistency determination analyzed the potential project impacts on visual resources and concluded that there would be moderate adverse effects in the short-term due to construction activities, and moderate beneficial effects over the long-term due to the removal of agricultural infrastructure and the development of a more natural and diverse landscape created by excavation of portions of the East Pasture, the re-routing of Tomasini Creek, the introduction of flood and tidal waters, and the resulting growth of salt marsh vegetation. In addition, the consistency determination states that proposed overlook viewing areas and interpretive exhibits would not be highly elevated, would be designed to blend in with the adjacent natural environment, and would not obstruct scenic public views in the project area.

The Commission agrees that the proposed wetland restoration project construction activities will temporarily intrude on scenic views in the project area. Overall, however, the removal of agricultural infrastructure, the restoration of wetland habitats in the project area, and the placement of low-profile viewpoints will not adversely affect public views across the project area but rather will enhance visual resources at Giacomini Ranch, Olema Marsh, and adjacent public lands of the Seashore and the GGNRA. The Commission therefore finds that the proposed project is consistent with the public view policy of the CCMP (Coastal Act Section 30251).

H. Agriculture. The Coastal Act provides in part that:

Section 30241. *The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas agricultural economy . . .*

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 us eon surrounding lands.*

The FEIS reports that according to the California Department of Conservation (CDC) the 2004 version of the *Important Farmland Map of Marin County* shows the Giacomini Ranch and Olema Marsh as having several important farmland soil types. The FEIS further reports that within the project area, the southeastern 133.2 acres of the Giacomini Ranch East Pasture was mapped in 2004 by the CDC as Farmland of Statewide Importance. The West Pasture, the northernmost and easternmost portion of the East Pasture, the very westernmost portion of White House Pool County Park, and Olema Marsh were also mapped in 2004 as Grazing Land, totaling 293.2 acres. The remainder (136.4 acres) of the East Pasture and the White House Pool County Park were mapped as Farmland of Local Importance (**Exhibit 21**).

The consistency determination compares the value of the project area as wetlands and as agricultural lands:

> *More than 90 percent of the Giacomini Ranch is wetland, and these wetlands have been impacted by intensive management as a dairy since these historic tidal marsh lands were leveed in the 1940s. These impacts have reduced the quality of wetland conditions in the Giacomini Ranch and have reduced functionality of wetlands that might otherwise play a vital role in improving the health of Tomales Bay, which has been declared impaired by the RWQCB under Section 303(d) of the Clean Water Act for poor water quality. The extensive amount of wetlands present, combined with the frequency of large-scale flooding and prolonged inundation due to its location in the bottomlands of an alluvial valley just downstream of the confluence of several major creeks, also lessens the long-term suitability and viability of these lands for agriculture. During its operation as a dairy, the Giacomini family has been required to intensively manage these lands through levees, tidegates, culverts, ditching, dredging, pumping, and irrigation to maintain a viable dairy operation. Even though lands would be converted from agriculture to open space, the conversion would comply with the general policies regarding agricultural land conversions, specifically that continued agricultural use is not feasible (Section 30242).*

The consistency determination also examines whether the conversion of the Giacomini Ranch to restored wetlands would adversely affect the status of other agricultural lands within Point Reyes National Seashore and the GGNRA:

> *While the proposed project would involve conversion of grazing land into a restored wetland, the Seashore and the GGNRA are committed to continuation of the historic agricultural landscape within these parks. The Seashore and GGNRA currently share a General Management Plan (NPS 1980), which uses three zoning designations to guide park management -- Natural Resource Zone, Historic Resource Zone, and Special Use Zone. The Natural Resource Zone covers pastoral lands, natural landscape areas, sensitive resources, designated wilderness and marine reserves. The Natural Resource Zone contains two management zones that are pertinent to the Giacomini project – the Pastoral Landscape Management Zone and Special Protection Zone. Approximately 19,000 acres of the northern Point Reyes Peninsula of the Seashore have been retained in agricultural production within the pastoral zone that supports beef and dairy production. The north district GGNRA in northern Olema Valley contains an additional 10,500 acres leased for cattle grazing. These lands constitute the Pastoral Landscape Management Zone. Pastoral operations presently include six dairies and nine beef cattle ranches.*
>
> *The current GMP indicates that, at a minimum, agricultural buildings and open grasslands will be retained in these areas, and, where feasible, livestock grazing will continue within the limits of carefully monitored range capacities (NPS 1980). This plan acknowledged, however, that future resource management studies could significantly alter the configuration of this zone . . . .*

As discussed previously in this report, the NPS purchased the Giacomini Ranch from a willing seller for the express purpose of restoring wetland habitats and functions to the subject property

after approximately sixty years of agricultural operations on what previously were tidal wetlands at the head of Tomales Bay. Continued agricultural use was determined to be infeasible due to the scope and intensity of management actions that were required to maintain these lands as a functioning and productive dairy operation. The Commission agrees with the NPS that the conversion of the Giacomini Ranch to wetlands and open space would not adversely affect the viability of other agricultural lands within the National Seashore and the GGNRA, or privately-owned agricultural lands within the coastal zone in Marin County, and that it is not feasible to continue agricultural use on the subject lands. The Commission therefore finds that the proposed wetland restoration project is consistent with the agricultural land protection policies of the CCMP (Coastal Act Sections 30241 and 30242).

SUBSTANTIVE FILE DOCUMENTS:

Giacomini Wetland Restoration Project, Final Environmental Impact Statement/Environmental Impact Report, National Park Service and California State Lands Commission, June 2007.

Giacomini Wetland Restoration Project, Long-Term Monitoring Program, Part 1 Monitoring Framework, Point Reyes National Seashore, May 24, 2005.

Delineation of Wetlands and Deepwater Habitats, Giacomini Wetland Restoration Project, Marin County, California, Point Reyes National Seashore, March 1, 2005.

Mitigation Monitoring Program Report, Giacomini Wetland Retsoration Project, National Park Service and California State Lands Commission, May 17, 2007.

Consistency Determination CD-060-03 (Point Reyes National Seashore, Giacomini Ranch emergency levee and culvert repair on Fish Hatchery Creek, Marin Co.).

Negative Determination ND-064-06 (Point Reyes National Seashore, Giacomini Ranch habitat improvements, Marin Co.).

Negative Determination ND-045-07 (Point Reyes National Seashore, Giacomini Ranch upland restoration activities, Marin Co.).

Coastal Development Permit No. 1-90-109 (Caltrans, State Highway 1 reconstruction due to landslide at Lone Tree Creek, P.M. 9.2, Marin Co.)

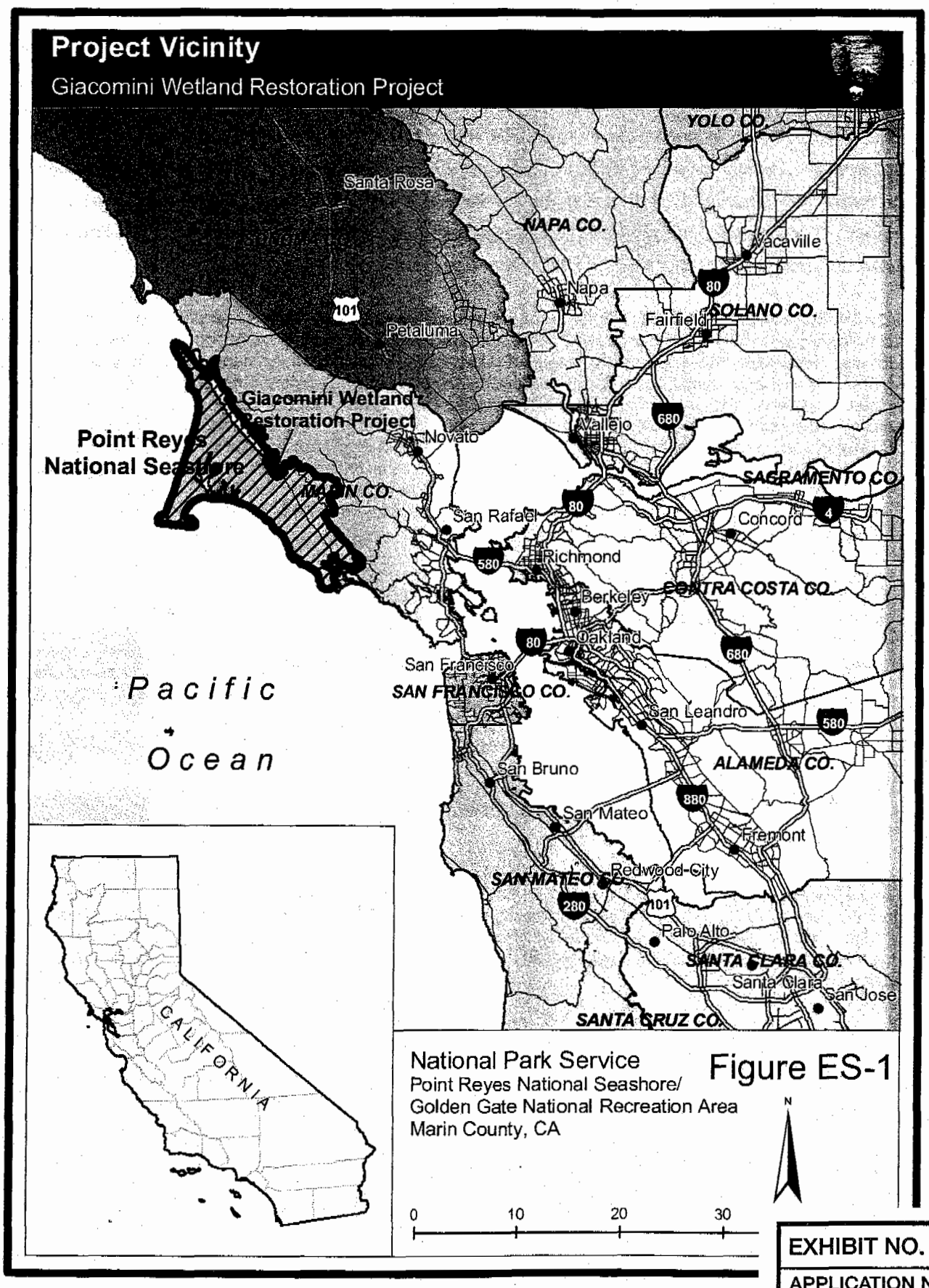


EXHIBIT NO. 1
APPLICATION NO.
CD-048-07

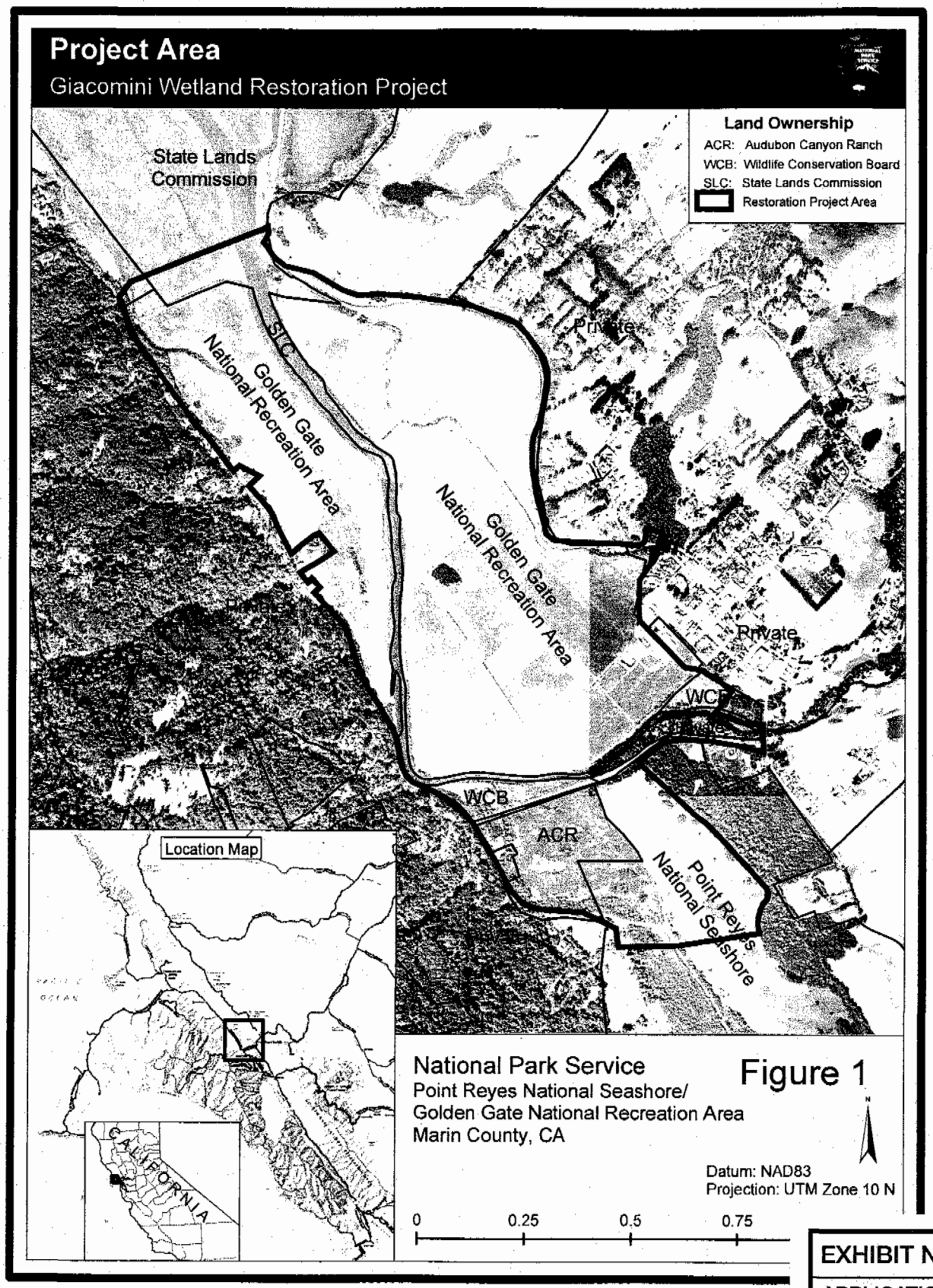


EXHIBIT NO. 2
APPLICATION NO.
CD-048-07

California State Lands Commission

State of California

Point Reyes National Seashore
Golden Gate National Recreation Area

National Park Service
U.S. Department of the Interior

FINAL

Giacomini Wetland Restoration Project

Environmental Impact Statement / Environmental Impact Report

June 2007

EXHIBIT NO. 3

APPLICATION NO.

CD-048-07

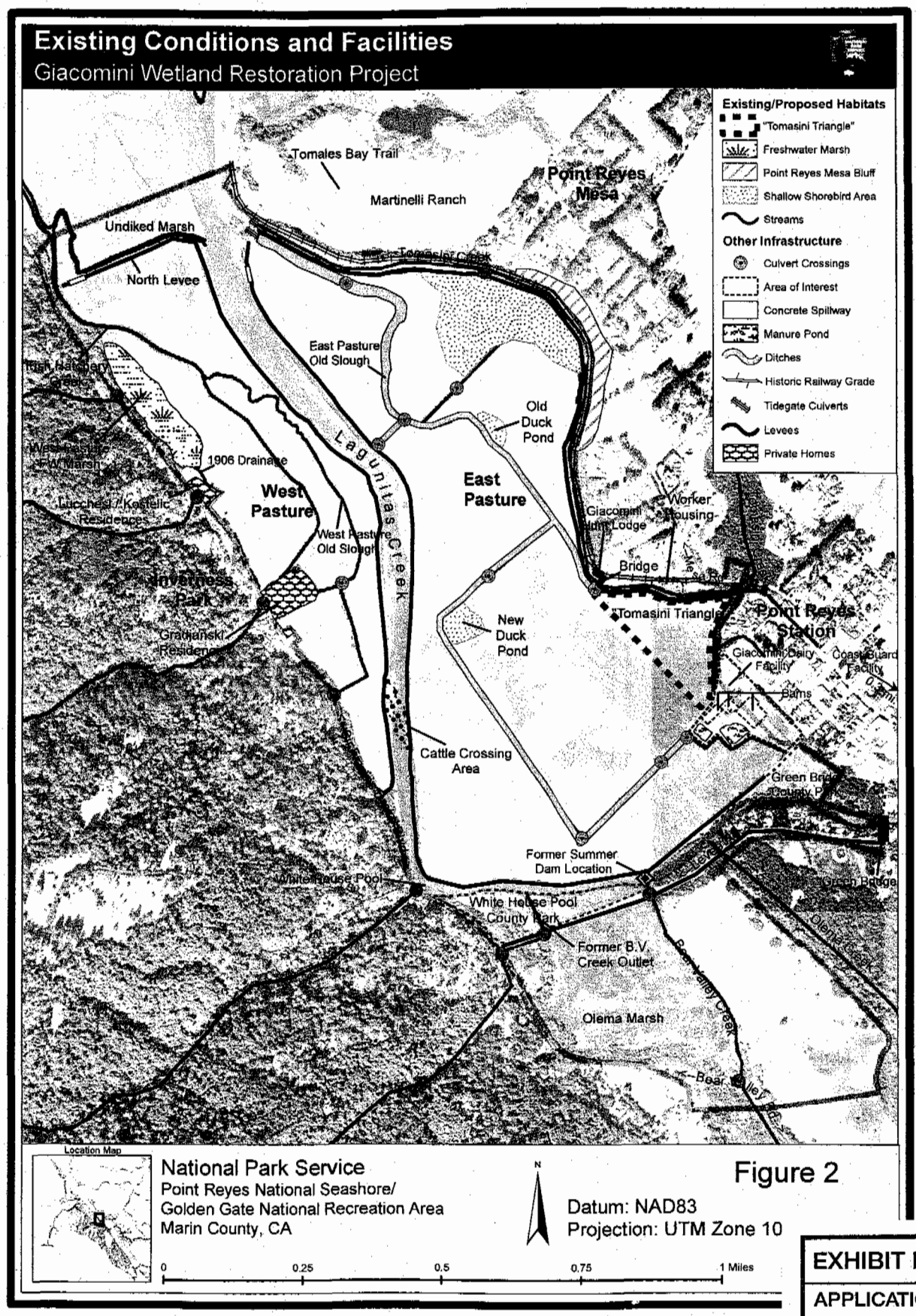


EXHIBIT NO. 4
APPLICATION NO.
CD-048-07

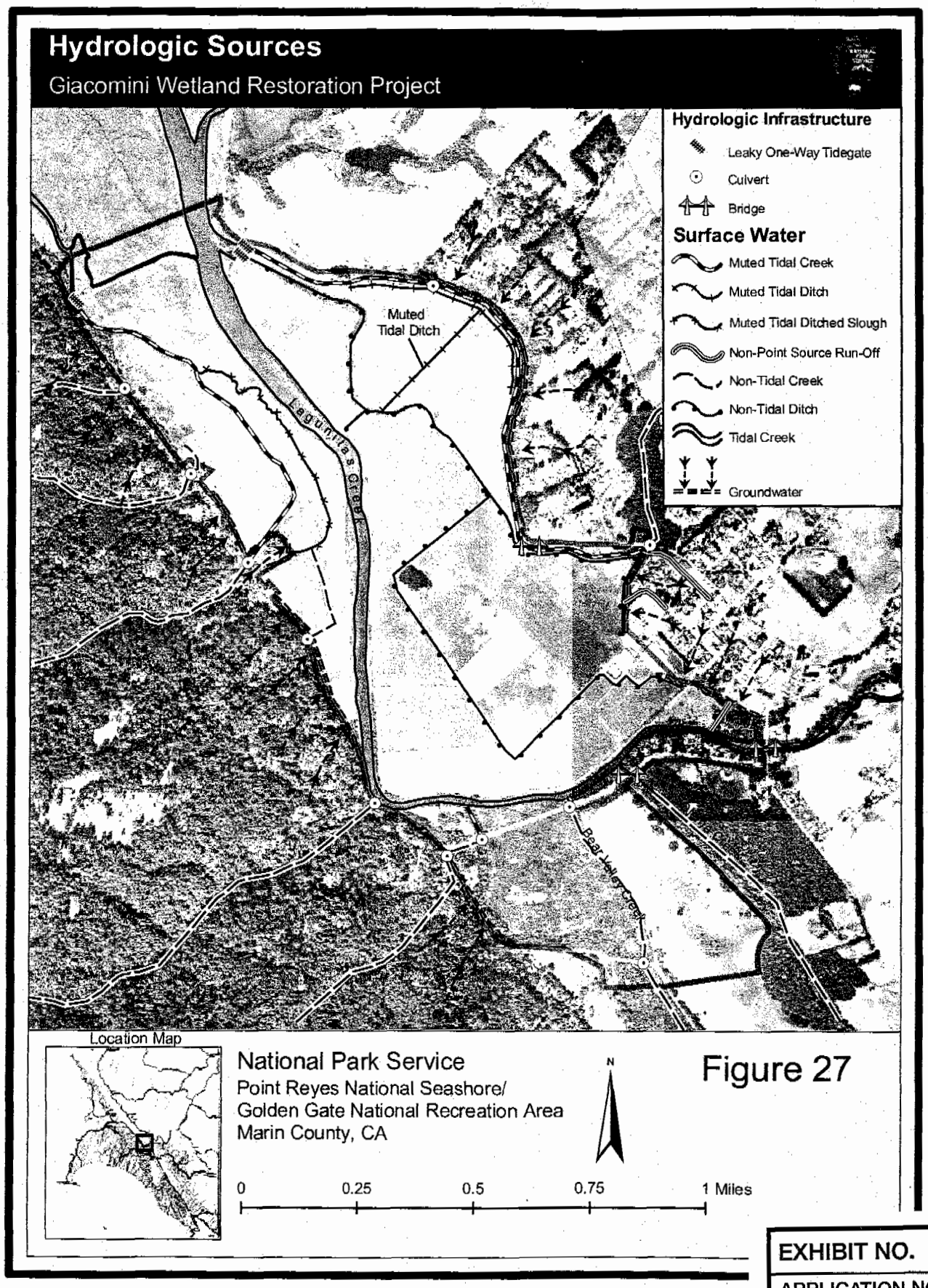


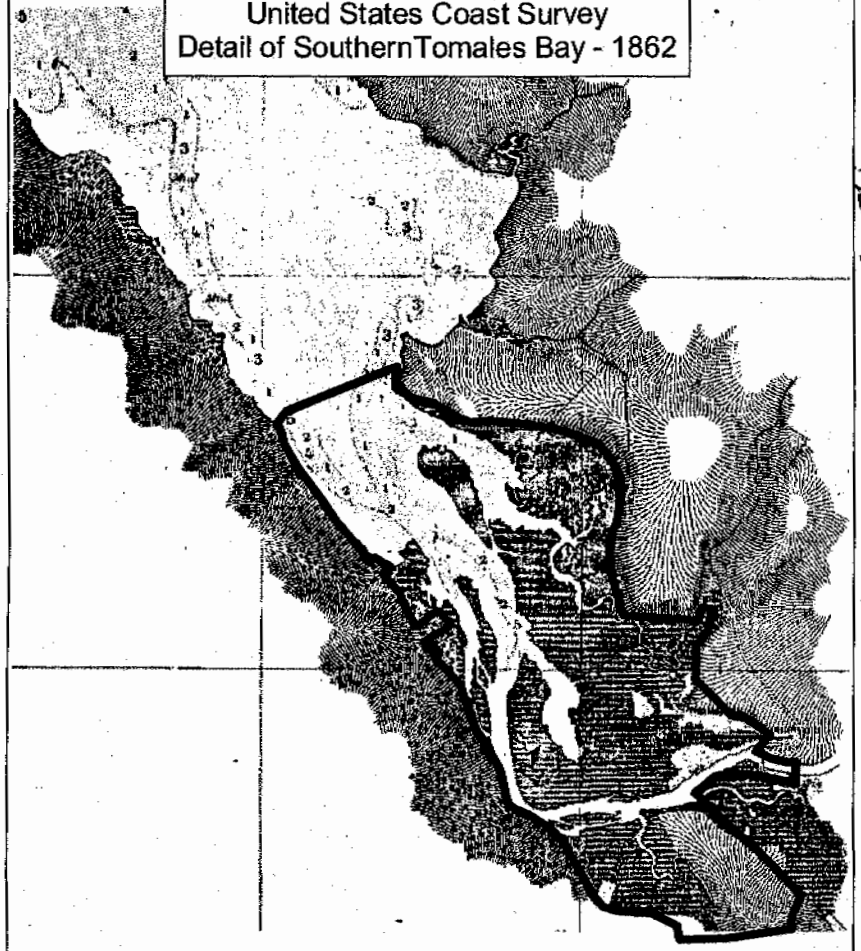
Figure 27

EXHIBIT NO. 5
APPLICATION NO.
CD-048-07

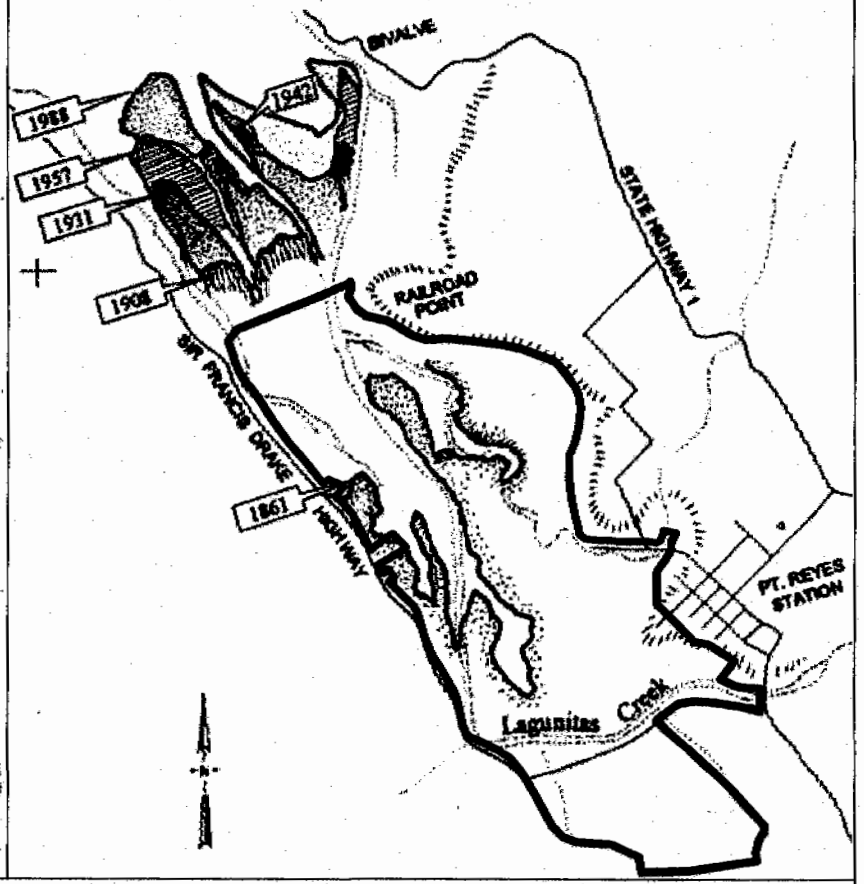
Historic Map of Southern Tomales Bay

Giacomini Wetland Restoration Project

United States Coast Survey
Detail of SouthernTomales Bay - 1862



Expansion of Lagunitas Creek Delta
Location of Marsh Edge from 1861-1988



l Park Service
yes National Seashore/
iate National Recreation Area
unty, CA

Source: Maps provided by Phillip Williams and Associates, Ltd., 1993
San Francisco, California

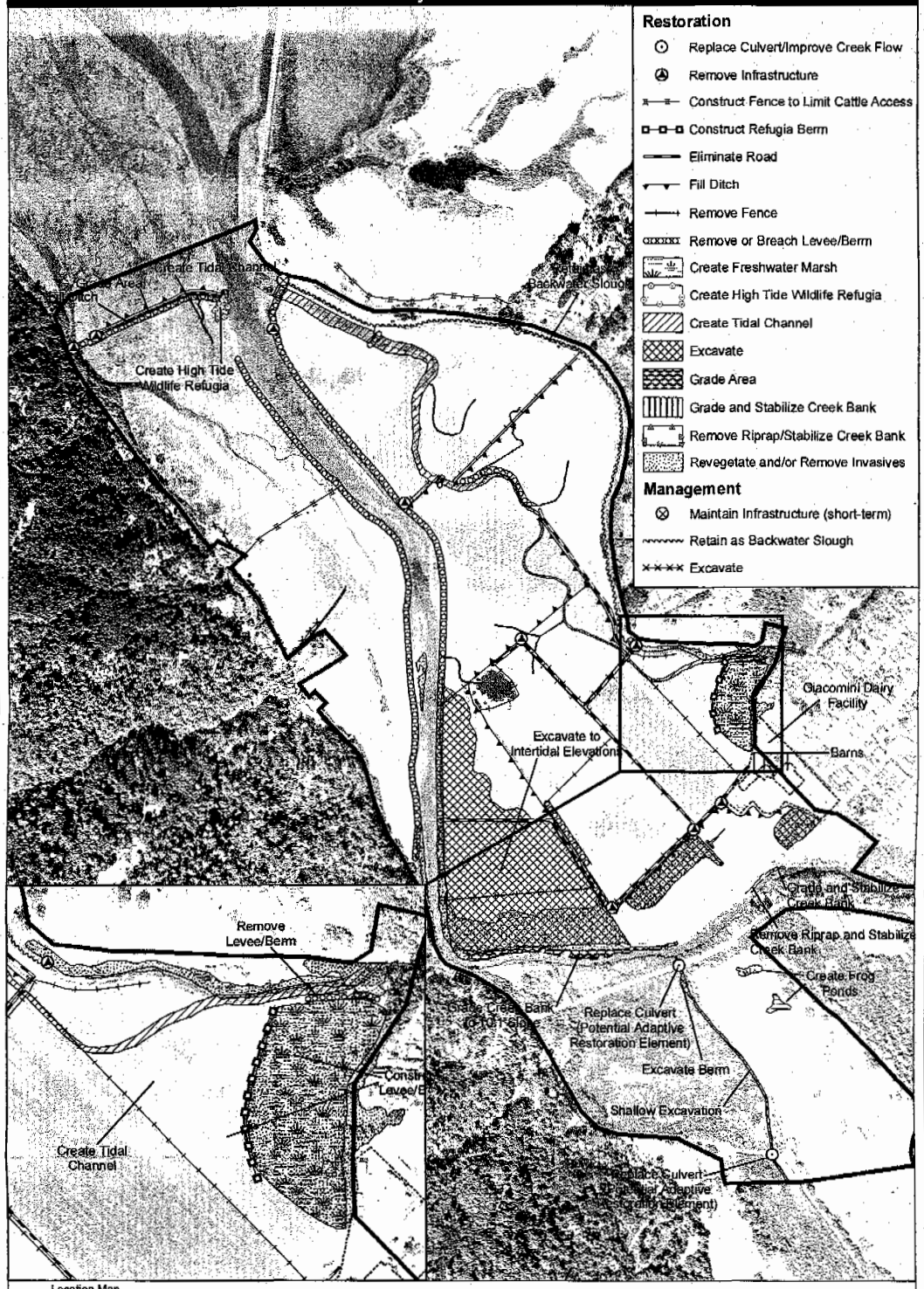
PWA

Figure 21

EXHIBIT NO. 6
APPLICATION NO.
CD-038-07

Restoration and Management Actions

Giacomini Wetland Restoration Project



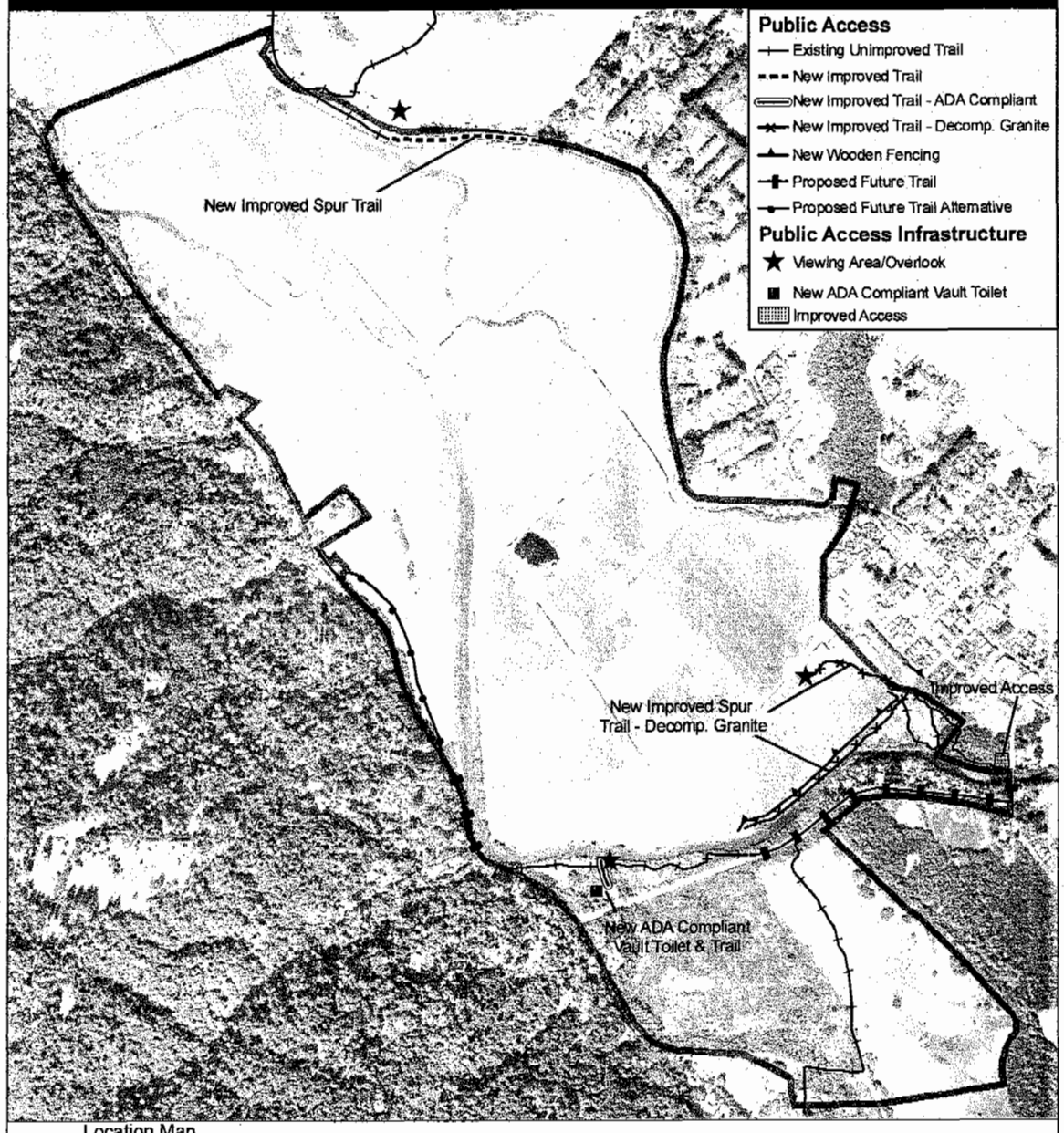
National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA

Figure 3

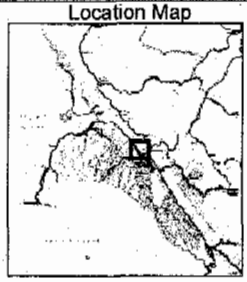
EXHIBIT NO. 7
APPLICATION NO.
CD-048-07

Public Access Actions

Giacomini Wetland Restoration Project



Location Map



National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA

N

0 0.25 0.5 0.75 1 Miles

Figure 4

EXHIBIT NO. 8
APPLICATION NO.
CD-048-07

Point Reyes National Seashore/
Golden Gate National Recreation Area

National Park Service
US Department of the Interior

Giacomini Wetland Restoration Project

Long-Term Monitoring Program

Part I. Monitoring Framework

Prepared By:

Lorraine Parsons
Point Reyes National Seashore
Point Reyes Station, CA 94956

May 24, 2005

EXHIBIT NO. 9
APPLICATION NO.
CD-048-07

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EXECUTIVE SUMMARY

The National Park Service (Park Service) is proposing an approximately 550-acre wetland restoration project in the southern end of Tomales Bay in Marin County, California (Figure 1). The Project Area historically supported a vast complex of subtidal and intertidal waters and wetlands, but these wetlands were diked during the 1900s for a dairy operation and construction of a road. Rather than try to recreate what was present historically, the Park Service is focusing on restoring natural hydrologic tidal and freshwater processes, thereby promoting restoration of hydrologic and ecological functions. Natural hydrologic processes are the cornerstone of many hydrologic and ecological functions and economic "services" associated with wetlands such as floodwater retention, flood energy dissipation, water quality improvement, and wildlife habitat that benefit both wildlife and humans. These hydrologic and ecological functions are particularly important in Tomales Bay. While it is generally perceived as pristine, this rural coastal watershed still suffers from negative anthropogenic influences such as agriculture, home and road development, leaking septic systems, mercury mining, landfills, and oil spills.

As an integral component of the restoration project, the Park Service is proposing to implement a comprehensive long-term monitoring program to assess whether restoration is successful. This document outlines the proposed framework and general methodologies for our monitoring program. Monitoring protocols, including specific sampling locations and periods, will be explained in greater depth in a second volume.

The proposed 20-year monitoring program will include assessment of both the Project Area and nearby reference wetlands. This framework will enable us to better determine whether restoration has increased functionality of the restored Project Area relative to conditions present in the Project Area prior to restoration and brought it closer to conditions in natural undiked marshes or reference wetlands. The Park Service anticipates that restoration will either reintroduce processes and functions that were lost through diking or enhance functions that are already present due to the fact that the pastures are largely already "wetland." The monitoring program will enable the Park Service to evaluate how successful removing, modifying, or minimizing infrastructure and agricultural practices have been in reintroducing or enhancing wetland processes and functions. In addition, it will address the success of the Project in achieving Critical Resource Objectives, which are processes and functions or components of processes and functions that the Park Service has prioritized for restoration such as water quality, floodplains, marsh/transitions, riparian, high marsh/upland ecotone, shallow shorebird habitat, and anadromous species. The objective of establishing processes and functions in the restored Project Area similar to those occurring in reference wetlands also meets one of the requirements imposed by the California Coastal Commission (CCC) in its mitigation agreement with California Department of Transportation and the Park Service.

Similar to many other restoration projects, our monitoring program will rely on a modified BACI sampling approach (Stewart-Oaten et al. 1986, Underwood 1991).

"BACI" refers to monitoring of an "impact" (I) area both "before" (B) and "after" (A) an activity is implemented, with concurrent monitoring of "control" (C) areas. Based on this sampling design, we will evaluate the Project Area before and after restoration is implemented and use three (3) reference wetlands to better discern the effects of the restoration "impact" relative to natural variability. The Park Service will focus monitoring efforts on those hydrologic and ecological processes and functions that are expected to be either improved or reintroduced through restoration. These key processes and functions will be assessed either by directly measuring some variable or realized component of function (e.g., wildlife density for wildlife habitat) or by using indicators that relate to the capacity or opportunity for a function to occur (e.g., measuring floodplain width rather than total water storage for floodwater retention). In instances where assessing function is too difficult, specifically water quality improvement, we will focus on functional potential and establishment of optimal ecological or water quality conditions similar to those present in reference wetlands.

Monitoring of these variables and indicators incorporate both field- and office-based components, such as mapping, field surveys, sample collection and analysis, and aerial image and map interpretation using Geographic Information System (GIS) software. Intra-annual and inter-annual monitoring frequency varies depending on the variable or indicator, with some assessed several times annually, and others, only once. Overall, inter-annual monitoring is scheduled annually prior to restoration and at Years 1, 2, 3, 4, 5, 7, 10, 15, and 20 after restoration is implemented. The scale of monitoring efforts is dramatically reduced by the fact that most variables and indicators are incorporated into more than one process, function, or condition.

The Park Service will use overall numerical "scores" obtained from summing variables and indicators for each process, function, or condition to assess the Project's progress toward reaching its Purpose, Goals, and Objectives through use of Performance Goals. Through statistical analysis of the data, the Park Service will assess whether key hydrologic and ecological processes, functions, and conditions of the restored Project Area 1) exceed those of the Project Area prior to restoration and 2) begin to approach, over time, those of nearby reference marshes, given the potential for some natural range of variation in functionality, even among unimpacted wetlands. Preliminary reports or memoranda will be prepared at the end of pre-project monitoring and annually prior to Year 5. Final reports will be prepared at Years 5 and 10 and will more formally evaluate success of the project through determining whether the Project is meeting specific Performance Goals set for five (5) and 10 years after implementation of restoration.

Information from this monitoring will enable the Park Service to measure the success of its efforts in restoring or improving hydrologic and ecological processes and functions and, thereby, help the Park Service determine whether the Project Purpose and Objectives have been achieved. It will also help Park Service managers recognize when adaptive management or remedial measures might be necessary to improve the success of restoration efforts. Lastly, we believe that lessons learned from this restoration project through will prove invaluable to managers of other future wetland restoration projects.

PROPOSED MONITORING METHODOLOGIES

The following section describes our proposed monitoring methodologies. The list of variables and indicators described in Tables 3-4 have been divided into eight (8) components – landscape-level analysis, hydrology, water, sediment, vegetation, invertebrates, nekton, and wildlife, specifically avifauna and amphibians. As noted earlier, many of the indicators and variables in Tables 3-4 are incorporated in multiple processes or functions, thereby decreasing the total number of indicators or variables assessed. In addition, certain indicators or variables from these different components will be monitored simultaneously due to similarities in monitoring methods, sampling locations, and/or sampling times, thereby converting the seemingly exhaustive list in Table 2 into something manageable in terms of implementation. Approximately 17 of the variables or indicators will be monitored primarily using interpretation of aerial photographs or imagery. Also, not every variable and indicator will be assessed during each year of monitoring, with some assessed only every three (3) or five (5) years. Table 7 presents a list of variables and indicators that can be monitored simultaneously using similar methods and/or sampling times.

To simplify our discussion of methodologies, we will collectively refer to the Project Area and reference wetland monitoring locations as Study Areas, because monitoring methodologies will generally not differ between control and impact sites. Proposed techniques for analyzing data generated by our monitoring program are discussed at the end of this section.

SUBSAMPLING DESIGN

As discussed earlier, BACI can be implemented either with or without subsampling (Smith 2002). Certain variables or indicators such as Width of Stream Corridor for Lateral Migration must be calculated or are logistically feasible to calculate for the entire Study Area. However, for most variables, some type of subsampling will be necessary due to logistical constraints, with further subsampling being conducted within subsampling areas based on a stratified random approach that varies depending on the variable or indicator or class of variable or indicator (e.g., hydrology, vegetation) being assessed.

Several different subsampling schemes have been proposed by existing coastal wetland monitoring programs. The Cape Cod National Seashore Long-Term Monitoring Program advocated randomly locating subsamples within Study Areas by stratifying according to major hydrologic gradients. For example, downstream salt marsh areas predominantly influenced by tides would be separated from more freshwater or brackish upstream wetlands that are predominantly influenced by river or stream flow. Alternately, SFEI's WRMP suggested randomly locating subsamples in wetlands areas stratified on the basis of third-order or smaller drainage divides where first-order drainages represent the smallest drainages that are typically located in the headwaters of the subwatershed. For this system, then, each subsampling area represents a gradient from freshwater to saltwater environments.

TABLE 7. METHODOLOGIES USED FOR THE GIACOMINI WETLAND RESTORATION PROJECT LONG-TERM MONITORING PROGRAM. Primary headings refer to section of document where methodology is discussed. Column headings refer to field sampling combinations or groupings (i.e., sediment sampling will be combined with vegetation). Secondary or auxiliary groupings are indicated by gray shading of diamonds.

VARIABLE OR INDICATOR	METHODOLOGIES FOR ASSESSING VARIABLE OR INDICATOR								
	Photo Interp	Modeling	Hydro Monitor	Water Sampling	Veg Sampling	Benthic Invert	Fish Sampling	Avian Surveys	Misc Surveys
LANDSCAPE-LEVEL									
Width of Stream Corridor for Lateral Migration	◆								
Planform Consistent with Geomorphic Landscape	◆								
Connectivity to Floodplain	◆	◆							
Number of Manmade Constrictions	◆								◆
Surface Hydraulic Connections with Channel	◆								◆
Distance	◆								
Surface Roughness	◆	◆							
Aquatic Edge	◆								
Opportunity for Marsh Access	◆								
HYDROLOGY									
Areal Extent of Seep Influence	◆								
Seasonal Patterns in Water Table Depth			◆						
Tidal Prism	◆	◆							
Average Depth of Inundation		◆	◆						
Flooding Duration		◆	◆						
WATER									
Water Quality Field Parameters (e.g., pH, DO)				◆					
Water Turbidity/Clarity				◆					
Water Nutrients				◆					
Water Pathogens				◆					
Water Dissolved Organic Carbon/Particulate Organic Carbon				◆					
Water Chlorophyll a				◆					
SEDIMENT									
Sedimentation									◆
Soil Substrate					◆				
Organic Matter/Surfaces for Microbial Activity					◆				
Soil Nitrogen					◆				
Soil Salinity					◆				
VEGETATION									
Width of Riparian Corridor	◆								
Length of Unfragmented Riparian Corridor	◆								
Total Percent Vegetation Cover for Strata					◆				
Total Percent Vegetation Cover by Exotic Species					◆				
Species Composition for Overstory, Subcanopy, and Herb Strata					◆				

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TABLE 7 (CONT.). METHODOLOGIES USED FOR THE GIACOMINI WETLAND RESTORATION PROJECT LONG-TERM MONITORING PROGRAM. Primary headings refer to section of document where methodology is discussed. Column headings refer to field sampling combinations or groupings (i.e., sediment sampling will be combined with vegetation). Secondary or auxiliary groupings are indicated by gray shading of diamonds.

VARIABLE OR INDICATOR	METHODOLOGIES FOR ASSESSING VARIABLE OR INDICATOR								
	Photo Interp	Modeling	Hydro Monitor	Water Sampling	Veg Sampling	Invert Sampling	Fish Sampling	Avian Surveys	Misc Surveys
VEGETATION (CONT.)									
Vegetation Canopy Complexity					◆				
Vegetation Community Patchiness	◆				◆				
Nekton Habitat Complexity	◆								
Number of Special Status Plant Species with Potential to Occur in Habitat					◆				
Upland Edge	◆								
Macrotopographic Complexity in Marsh	◆				◆				
INVERTEBRATES									
Zooplankton Species Composition/Richness				◆					
Zooplankton Species Density				◆					
Number of Non-Native Zooplankton Species				◆					
Epiphytic & Benthic Invertebrate/Macroinvertebrate Species Composition						◆			
Epiphytic & Benthic Invertebrate/Macroinvertebrate Species Density						◆			
Number of Non-Native Invertebrate/Macroinvertebrate Species						◆			
NEKTON									
Habitat Structure	◆								◆
General Fish Species Composition/Richness							◆		
General Fish Species Density							◆		
Number of Non-Native Fish Species							◆		
Special Status Resident Fish-Areal Extent of Habitat Used							◆		
Special Status Resident Fish-Species Density							◆		
Special Status Non-Resident Fish-Density							◆		
WILDLIFE									
General Avifauna Composition/Richness								◆	
General Avifauna Density								◆	
Waterfowl/Shorebird Species Composition/Richness								◆	
Waterfowl/Shorebird Species Density								◆	
Migratory/Breeding Bird Species Composition/Richness								◆	
Migratory/Breeding Bird Species Density								◆	
Avifauna – Habitat Distribution								◆	
Special Status Avifauna-Density								◆	
Special Status Avifauna-Areal Extent of Habitat Used								◆	
Special Status Amphibians-Density									◆
Special Status Amphibians-Areal Extent of Habitat Used									◆

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PROPOSED STATISTICAL ANALYSIS METHODOLOGIES

Several different statistical analysis techniques have been used for analyzing data generated by BACI monitoring programs. These techniques range from univariate parametric procedures such as Analysis of Variance (ANOVA) to multivariate ones such as Canonical Correspondence Analysis or gradient design (Smith 2002). Statisticians continue to debate the validity of using parametric statistics given some of the inherent limitations of this sampling design, namely, the lack of randomization in site selection and the potential for temporal autocorrelation between sampling times. However, BACI advocates have continued to refine the sampling design in efforts to improve its compatibility with the assumptions of parametric statistical procedures, including adding multiple control sites for use as experimental controls and/or covariates. As discussed earlier, ecological data rarely meet all the assumptions of parametric statistics, particularly that the distribution of values for the underlying "population" being sampled should be normally distributed (bell-shaped curve). However, some ecologists have successfully used data transformations to enable use of either univariate or multivariate parametric procedures, while others have opted instead to use distribution-independent methods such as non-parametric statistical tests.

Based on the BACI sampling design, we are proposing Performance Goals that incorporate two components to assessing progress toward the Project's Purpose, Goals, and Objectives. As discussed earlier, progress of the Project towards meeting the Project's Purpose, Goals, and Objectives will be assessed at specified time intervals using both components of these Performance Goals. While Performance Goals incorporate specific numbers, these numbers are intended to provide some measure of progress toward ecological goals, not some absolute dictum of Project success or failure. This assessment of Project progress will take into consideration non-normal circumstances such as prolonged drought that could slow progress toward ecological goals.

STATISTICAL ANALYSIS OF PERFORMANCE GOALS

1. Hydrologic and ecological processes, functions, and conditions of the restored Project Area should exceed those of the unrestored Project Area or the Project Area prior to restoration.

   Progress Criteria—Year 5—Before-After Comparison: **By Year 5**, 70 percent or seven (7) of the 10 assessed processes and functions performed by the **restored Project Area should exceed those of the unrestored Project Area or the Project Area prior to restoration**, unless non-normal circumstances such as long-term drought or unforeseen impacts from adjacent land use occur. Three (3) of the seven (7) processes, functions, and conditions showing improvement should be Hydrologic Process – Freshwater – Surface Flows, Hydrologic Process – Tidal – Surface Flows, and Ecological Functions/Conditions – Sediment/Nutrient Retention and Transformation.

   Progress Criteria—Year 10—Before-After Comparison: **By Year 10**, 90 percent or nine (9) of the 10 assessed processes, functions, and conditions performed by

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the **restored Project Area should exceed those of the unrestored Project Area or the Project Area prior to restoration,** unless non-normal circumstances such as long-term drought or unforeseen impacts from adjacent land use occur. Three (3) of the nine (9) processes and functions must be Hydrologic Process – Freshwater – Surface Flows, Hydrologic Process – Tidal – Surface Flows, and Ecological Functions/Conditions – Sediment/Nutrient Retention and Transformation.

Progress Criteria—Year 10—Year 5 to Year 10 Comparison: In addition, **by Year 10**, 30 to 60 percent or three (3) to six (6) of the 10 assessed processes, functions, and conditions performed by the **restored Project Area should exceed those of the restored Project Area at year 5.**

Data Analysis Techniques: Data will be collected for all indicators or variables in accordance with the time frames outlined in the Monitoring Program plan. Sampling will occur for at least two years (and possibly up to four years) prior to restoration in order to develop some idea of a baseline condition for all indicators or variables. In addition, multiple sampling events prior to restoration and any large-scale changes may enable us to assess to some degree how much error comes from sampling technique or differences in personnel, etc. Sampling for selected indicators or variables will take place at specified intervals during the first five (5) years after restoration. At the end of five (5) years after restoration, the averaged values for indicators or variables sampled "Before" restoration will be compared with the averaged values for indicators or variables sampled "After" restoration. Data will be compiled for each subsampling area, and then all the subsampling areas will be averaged to derive a mean for the particular Study Area.

There is a potential for some of our data to be temporally and even spatially autocorrelated (i.e., sampling periods or sites are not independent of each other). As noted earlier, there is spatial overlap between some of the subsampling areas as the boundaries are hydrologically driven, and two adjacent subsampling areas may share floodplains. In addition, sequential monitoring of the same sampling sites may lead to a lack of independence between data from two consecutive sampling periods. Our data, however, may not lend itself to more powerful statistical analytical techniques involving repeated measures over time such as Time Series Analysis, because these techniques typically require 50 or more datapoints.

The "BA" portion of our BACI comparison will involve using a parametric multivariate procedure such as Hotelling's T2 or non-parametric equivalent (ANOSIM) to evaluate differences between "Before" and "After" for each processes, functions, and conditions identified (e.g., Water Quality/Sediment Deposition and Nutrient/Contaminant Retention, Wildlife Habitat and Use, etc.). Use of a multivariate procedure will help minimize the number of analyses performed and decrease the experiment-wise error rate. The decision regarding

use of the parametric or non-parametric procedure will occur after the raw data is screened for the degree (or lack) of normality, homogeneity of variances, etc. Prior to conducting analyses, tests for collinearity between variables and indicators will be performed. Should differences in group means be observed for a particular process or function between "Before" and "After," we will compare "Impact" data with "Control" data to determine whether differences really result from restoration activities or some long-term trend in the indicator or variable sampled. This latter comparison will be conducted either informally ("eyeballing" the data) or formally by incorporating reference site data as a covariate or adjustment to the means. Data will be statistically analyzed using a commercial software package such as SYSTAT (SPSS Inc., Chicago, Ill.) or PC-ORD (McCune and Mefford 1999; MjM Software, Gleneden Beach, Oregon).

Another set of formal analyses will be conducted at Year 10, with satisfactory progress toward ecological goals being considered as 30 to 60 percent improvement in processes, functions, and conditions relative to Year 5. It should be noted that, while the first formal analysis of the success of restoring process and function is not scheduled until Year 5 to allow sufficient time for development of some sort of equilibrium condition, we will be conducting more informal analysis of project success during Years 1-4, as well, to ensure that the Project is progressing satisfactorily and to determine the need for remedial measures.

2. Hydrologic and ecological processes, functions, and conditions of the restored Project Area should fall within the natural range of variation observed within selected reference wetlands for key variables and indicators.

   Progress Criteria -- Year 5: By Year 5, key variables and indicators for at least 40 percent or four (4) out of 10 identified processes, functions, and conditions assessed should fall within the natural range of temporal and spatial variation observed within selected reference wetlands. In addition, values for these key indicators and variables in the restored Project Area must rank above the lowest 16.7 percent of the values (± 1 SD) measured in reference wetlands.

   Progress Criteria --Year 10: By Year 10, key variables and indicators for at least 80 percent or eight (8) of 10 of the identified processes, functions, and conditions assessed must fall within the natural range of temporal and spatial variation observed within selected reference wetlands. In addition, values for these key indicators and variables in the restored Project Area must rank above the lowest 16.7 percent of the values (± 1 SD) measured in reference wetlands.

   Data Analysis Technique: As with comparison of pre- and post-project impacts (BA), comparison of the "Impact" or restored site with reference wetlands will involve assessing key indicators or variables representative of processes, functions, and conditions. However, this Performance Standard is more focused on similarities between Impact and Control sites in the range of natural variation

than exceedance, so we will need to use a slightly different statistical approach to assess it. We plan to compare the Project Area to reference sites using a few key indicators or variables as representatives for each selected process, function, or condition.

The definition of "key" for the purposes of this project is still being developed at this time. As noted earlier, Short et al. (2000) advocated using only variables with a low coefficient of variation among all reference sites for inclusion in project-related success criteria based on his experience with a mitigation project in Maine's Great Bay Estuary. For example, key variables might include densities of benthic invertebrates if the range of variation in densities among all reference sites was low, even if high spatial or temporal differences occurred within respective sites. Irwin (2002), however, cautioned that variability may not be the only or the most important factor in choosing variables or indicators: some metrics with low variability may not be responsive to impacts or central to the question at hand. Should we elect to follow Short's suggestion, key variables and indicators would be selected using the coefficient of variation (CV; standard deviation divided by the mean), with those having a CV exceeding 0.2 discarded. At this point, we are planning to further evaluate criteria for selecting key indicators and variables by assessing the biological relevance of indicators and variables that display both low and high variability as we move forward with preliminary monitoring efforts.

For each process, function, or condition, values of the key indicator or variable from the restored Project Area would be compared with that of all the reference wetlands to determine whether the former fell within the range of variation observed in the "Control" sites. Depending upon the monitoring year, between 40 to 80 percent of the values measured for key indicators or variables in the restored Project Area should fall within the range of values recorded for reference wetlands. We are planning to define the normal range as the range of values incorporating 95 percent of the population of reference values (Kilgour et al. 1998). While ranges are not as frequently tested as means, there are some methods available for analysis, including use of summary statistics, box and whisker plots, and others (Irwin 2002). If possible, parametric or non-parametric range comparison tests (Thompson 1938, Kilgour et al. 1998) – some of which are multivariate -- may be used to assess Impact and Control site variation, although the number of reference locations (3-4) may be relatively low for formal tests such as these.

In addition to the success criterion described above, an additional requirement is that at least 50 percent of the values measured in the restored Project Area must also rank above the lowest 16.7 percent of the values recorded in reference wetlands. The latter standard is similar to that established by Short et al. (2000) for the Great Bay Estuary project. Success criteria for this project required that data from the "impact" site fall not only within the distribution of values for each indicator from the reference wetlands, but rank above the lowest 16.7 percent of

those values (± 1 SD). The "1 SD" measure was selected, because it is the statistical standard of variability that is independent of sample size and yet directly related to the coefficient of variation (Short et al. 2000).

This comparison of the restored Project Area with reference wetlands would be conducted in Years 5 and 10, although informal analyses would probably be conducted, as well, during Years 1-4.

DESCRIPTIVE STATISTICS

For all indicators or variables used to assess hydrologic and ecological processes and functions, we will calculate basic descriptive statistics, including mean, summed total, standard deviation, standard error, range of variation, and sample size for subsampling areas within each Study Area.

MITIGATION MONITORING PROGRAM REPORT

GIACOMINI WETLAND RESTORATION PROJECT
NATIONAL PARK SERVICE
Point Reyes National Seashore/Golden Gate National Recreation Area

CALIFORNIA STATE LANDS COMMISSION

May 17, 2007

Mitigation Monitoring Program

Under the California Environmental Quality Act (CEQA), the lead agency is required to adopt a program for reporting or monitoring regarding the implementation of mitigation measures for the Project, if it is approved, to ensure that the adopted mitigation measures are implemented as defined in this EIS/EIR. The Lead Agency's responsibility originates in Public Resources Code §21081.6(a) (Findings) and the State CEQA Guidelines 14 CCR §15091(d) (Findings) and §15097 (Mitigation Monitoring or Reporting). The adopted mitigation measures and monitoring program would be included as part of the Notice of Determination (NOD) issued under CEQA, as well as, in this case, the Record of Decision (ROD) issued under the National Environmental Policy Act (NEPA). This mitigation monitoring program will also be used by the National Park Service (Park Service), the Point Reyes National Seashore Association (PRNSA), and their cooperators and contractors to track implementation of required mitigation measures within the Project Area.

Monitoring Authority

The purpose of a Mitigation Monitoring Plan (MMP) is to ensure that measures adopted to mitigate or avoid significant impacts are implemented and, once implemented, to evaluate their effectiveness. A MMP will be a working guide to facilitate not only the implementation of mitigation measures by the project proponent, but also the monitoring, compliance, and reporting activities of the Park Service, PRNSA, and monitors they designate.

The Park Service and PRNSA may delegate duties and responsibilities for monitoring to the other environmental monitors or consultants as deemed necessary, and some monitoring responsibilities may be assumed by responsible agencies, such as affected jurisdictions. The number of construction monitors assigned to the project will depend on the number of concurrent construction activities and their locations. The Park Service, PRNSA, or their designee(s), however, will ensure that each person delegated any duties or responsibilities is qualified to monitor compliance. Monitoring identified in this plan will be integrated into the workplans of the site construction manager and environmental monitors, as assigned.

Any mitigation measure study or plan that requires the approval of the Lead Agencies (Park Service and CSLC) must allow for adequate review time. When a mitigation measure requires that a mitigation program be developed during the design phase of the project, the applicant must submit the final program to the Park Service, CSLC, and their designee(s) for review and approval before construction begins. Other involved agencies and jurisdictions may require additional review time. It is the responsibility of the assigned environmental monitor assigned to ensure that appropriate agency reviews and approvals are obtained.

The Park Service, CSLC, or their designee will also ensure that any deviation from the procedures identified under the monitoring program is approved by the Park Service or CSLC. Any deviation and its correction shall be reported immediately to the Park Service, CSLC, or their designee by the assigned environmental monitor.

Enforcement Responsibility

The Park Service and CSLC are responsible for enforcing the procedures adopted for monitoring through the environmental monitor assigned to the project construction. Any assigned environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals without any problems, and report the problems to the Park Service or CSLC or their designee.

Mitigation Compliance Responsibility

The Applicant is responsible for successfully implementing all the mitigation measures in the MMP, and is responsible for assuring that these requirements are met by all of its construction contractors and field personnel. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely. Other mitigation measures include detailed success criteria. Additional mitigation success thresholds will be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

General Monitoring Procedures

Environmental Monitors. Most of the monitoring procedures will be conducted during the construction phase of the Project. The CSLC, NPS, and the environmental monitor(s) are responsible for integrating the mitigation monitoring procedures into the construction process in coordination with the applicant. To oversee the monitoring procedures and to ensure success, the assigned environmental monitor must be on site during that portion of construction that has the potential to create a significant environmental impact or other impact for which mitigation is require. The environmental monitor is responsible for ensuring that all procedures specified in the monitoring program are followed.

Construction Manager: The construction manager is a representative of the project proponent and interfaces directly with construction personnel. Many of these mitigation activities will be incorporated as part of the construction design and design detail documents. Environmental monitors should work with the construction manager to ensure compliance with the MMP.

Construction Personnel. A key feature contributing to the success of mitigation monitoring will be obtaining the full cooperation of construction personnel and supervisors. Many of the mitigation measures require action on the part of the construction supervisors or crew for successful implementation. To ensure success, the following actions, detailed in specific mitigation measures, will be taken:

- Physical mitigation measures will be documented in the design drawings and specifications. Procedures to be followed by contractors will be written into contracts between the applicant and any construction contractors.
- One or more preconstruction meetings will be held to inform all and train construction personnel about the requirements of the monitoring program.
- A written summary of the mitigation monitoring procedures will be provided to construction supervisors for all mitigation measures requiring their attention.

General Reporting Procedures. Site visits and specified monitoring procedures performed by other individuals (inspectors) will be reported to the environmental monitor assigned to the project. A monitoring record form will be submitted to the environmental monitor by the inspector so that details of the visit can be integrated by the environmental monitor. A checklist and record of mitigation measures will be developed and maintained by the environmental monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The environmental monitor will note any problems that may occur and take appropriate action to rectify the problems.

Evaluation of Effectiveness Mitigation. After implementation, the effectiveness of each mitigation measure in reducing or avoiding the intended impact will be evaluated. This evaluation will be performed by the environmental monitor based on the monitoring records, field observations, and other available evidence. This evaluation will be submitted to the Lead Agencies along with recommendations for improving the effectiveness of mitigation measures or monitoring and reporting procedures.

Public Access to Records. The public is allowed to access monitoring records and reports. Monitoring records and reports will be made available by the Park Service, CSLC, or their designees on request.

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Mitigation Monitoring Table

The following section presents the mitigation monitoring tables for each environmental impact topic. Two tables – Mitigation Measure and Applicant-Proposed Protective Measures -- are presented on the following pages.

Table columns include the following information:

- Impact or Resource Area (for the Applicant's protective measures);
- Mitigation Measure (Short description of measures required to reduce potentially major or significant impacts to less than major or significant: these are discussed in Chapter 4 of the FEIS/EIR).
- Applicant-Proposed Protective Measures (Short description of measures proposed either in Chapter 2 or Chapter 4 to avoid or minimize impacts that either could have been major if not proposed as part of the Alternative through avoidance and minimization measures described in Chapter 2 or probably would have never been more than moderate in intensity) ;
- Location (where the impact occurs and the measure should be applied);
- Monitoring/reporting action (action to be taken by the monitor or Lead Agency);
- Effectiveness criteria (how the agency can know if the measure is effective);
- Agency responsible for monitoring; and
- Timing (prior to permit approval; before, during, or after construction; during operation, etc.)

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Monitoring Program for Mitigation Measures: Note measures are not numbered in FEIS/EIR.

Affected Resource Area	Mitigation Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Respons-ible Agency	Timing
Air Resources – Air Quality and Noise						
Enhanced control measures to minimize NOx emissions and noise levels in Sensitive Construction Areas.	M-N-1. Construction Contractor shall be provided with information and map of Sensitive Construction Areas prior to start of construction.	Project Area	Environmental Monitor shall provide Construction Manager with map of Sensitive Construction Areas prior to start of construction. Construction Manager will provide to Construction Contractor and discuss constraints in these areas.		NPS/ PRNSA	During Construction – Both years
	M-N-2. Residents adjacent to Sensitive Construction Areas shall be notified in advance of construction starting in these areas.	Project Area	NPS and/or Construction Manager will notify residents or sensitive receptors adjacent to Sensitive Construction Areas at least 1 week prior to start of construction in these areas.	Minimal number of complaints from residents adjacent to Sensitive Construction Areas.	NPS/ PRNSA	During Construction-Both years (Noise)
	M-AQ/N-3. Construction Contractor shall maintain properly tuned equipment. All equipment should have sound control devices no less effective than original equipment and would have muffled exhaust.	Project Area	Construction Contractor shall maintain properly tuned construction equipment. Construction Manager or Environmental Monitor will take note and report to Construction Contractor on equipment that appears excessively loud or emits excessive amounts of emissions.	Observations of construction equipment by Construction Manager or Environmental Monitor.	NPS/ PRNSA	During Construction-Second year (Air Quality); Both years (Noise) – Sensitive Construction Areas
	M-AQ/N-4. Construction Contractor shall limit idling time of construction equipment to 5 minutes.	Project Area	Construction Contractor shall instruct employees to limit idling time of construction equipment o no more than 5 minutes. Equipment shall be turned off after 5 minutes.	Visual observations of construction practices by Construction Manager and/or Environmental Monitor.	NPS/ PRNSA	During Construction-Second year (Air Quality); Both years (Noise) – Sensitive Construction Areas

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Monitoring Program for Mitigation Measures: Note measures are not numbered in FEIS/EIR.

Affected Resource Area	Mitigation Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	M-AQ/N-5. Construction Contractor shall limit the number of hours of construction operation or the number of pieces of concurrently operating equipment	Project Area	Sound levels within Sensitive Construction Areas during construction may be monitored by Construction Manager or Environmental Monitor to better determine optimal number of pieces of construction equipment that can be operated.	Visual observations by Construction Manager and/or Environmental Monitor. Sound levels within Sensitive Construction Area during construction are estimated to be less than 75 dBA.	NPS/ PRNSA	During Construction-Second year (Air Quality); Both years (Noise) – Sensitive Construction Areas
	M-N-6. Construction Contractor shall limit hours of construction in Sensitive Construction Areas to 8 a.m. to 6 p.m. Monday through Friday, with weekends authorized only by permission from the NPS or CSLC.	Project Area	Construction Manager and Environmental Monitor will monitor hours of construction in Sensitive Construction Areas.	Minimal number of complaints from residents adjacent to Sensitive Construction Areas.	NPS/ PRNSA	During Construction-Both years (Noise) – Sensitive Construction Areas
Public Services – Municipal Water Supply						
Measures to avoid or minimize impacts to NMWD municipal groundwater supply operations	M-WS-1. Lead Agencies shall not implement major restoration actions in Olema Marsh until: 1) further study shows that increase in salinities in Lagunitas Creek would not have more than minor adverse effect on chloride concentrations in alluvial aquifer and NMWD operations; 2) further study shows that major restoration actions in Olema Marsh would not have more than a minor effect on salinities in upstream portions of Lagunitas Creek; or 3)	Project Area	NPS will work with NMWD and its consultants to further study the relationship between Lagunitas Creek and the alluvial aquifer and the potential effect that restoration of Olema Marsh might have on salinity dynamics in upstream portions of Lagunitas Creek. As it has already been doing, NPS would continue to meet with NMWD to update the agency on the results of studies and computer modeling efforts performed by its consultants. NPS would continue to support NMWD in its efforts to develop a more	Delay of major restoration actions in Olema Marsh should cause no change in salinity structure of upstream portions of Lagunitas Creek or NMWD operations relative to existing conditions.	NPS	Construction and Post-Construction

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Monitoring Program for Mitigation Measures: Note measures are not numbered in FEIS/EIR.

Affected Resource Area	Mitigation Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Respons-ible Agency	Timing
	NMWD establishes a well that can be used for off-tide pumping. Major restoration actions specifically refer to replacement of culverts at Levee and Bear Valley Roads.		reliable approach to water supply for West Marin			
	M-WS-2. Lead Agencies shall not pursue less intensive restoration actions for Olema Marsh unless additional study and hydrodynamic modeling efforts definitely suggest that these restoration actions would not have more than a minor adverse effect on salinities in upstream portions of Lagunitas Creek and/or NMWD operations. Less intensive restoration actions could include removal or breaching of berm or shallow excavation of Bear Valley Creek channel in Olema Marsh.	Project Area	NPS will work with its consultants to identify less intensive restoration actions that can be undertaken without causing more than a minor increase in salinities in Lagunitas Creek and/or minor adverse effect on NMWD operations. NPS will meet with NMWD staff to discuss restoration actions prior to implementation. NPS staff or designee will monitor salinities in Lagunitas Creek near confluence with Bear Valley Creek and up to Coast Guard wells to determine effect of these actions on salinity structure of upstream portions of Lagunitas Creek.	No more than a minor increase in salinities in upstream portions of Lagunitas Creek; or no more than a minor adverse effect on NMWD operations.	NPS	Construction and Post-Construction

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Monitoring Program for Applicant-Proposed Protective Measures

Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Soil Resources						
Minimize potential for contamination of sediments by chemicals associated with construction	P-SR-1. An approved Spill Prevention and Response Plan will be developed by the construction contractor; approved by the lead agencies; and implemented by the contractor. Plan should include: 1) spill cleanup procedures; 2) worker training; and 3) impact avoidance measures, including those described below.	Project Area	Confirm approval of the Spill Prevention and Response Plan prior to construction activities. Monitor spill clean-up for compliance with all applicable plan procedures.	Copy of the Spill Prevention and Response Plan is readily accessible, and visual inspection indicates items are properly followed.	NPS/ PRNSA	Prior to start of construction and during construction- Both years.
	P-SR-2. Staging and storage areas for equipment and materials shall be 100 feet away from surface waters.	Project Area	Staging and storage areas will be designated during design phase. Construction Manager and Environmental Monitor will work with contractor to designate other appropriate areas, as needed.	Visual inspection	NPS/ PRNSA	Final Design; Construction- Both years.
	P-SR-3. No fueling or maintenance of vehicles below Ordinary High Water mark of creeks.	Project Area	See P-SR-2	Visual inspection	NPS/ PRNSA	Final Design; Construction- Both years.
	P-SR-4. No equipment is operated in flowing waters without installation of water diversion facilities.	Project Area	Prior to construction, implementation of construction elements will be discussed to determine whether equipment will need to operate in flowing waters and, if so, appropriate BMPs for avoiding impacts.	Visual inspection	NPS/ PRNSA	Prior to Construction and During Construction – Both years.
Air Quality						
Enhanced control measures to	P-AQ-1. Require trucks hauling materials to cover	Project Area	Construction Manager or Environmental Monitor shall	Visual inspection	NPS/ PRNSA	During construction-

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Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
minimize dust and pollutant emissions.	trucks or require them to maintain at least 2 feet of freeboard.		inspect trucks to ensure loads are covered prior to leaving work site.			Both years.
	P-AQ/VR-2. Wash tires or tracks of trucks and equipment entering and leaving project sites to limit dust on roads.	Project Area	Establish wash station for trucks tires leaving and arriving at the Project Area. Random inspections by Construction Manager or Environmental Monitor	Visual inspection, operation of tire spray station.	NPS/ PRNSA	During construction- Both years.
	P-AQ-3. Sweep streets daily where visible soils are carried on to public streets.	Paved Roads adjacent to Project Area	Construction Manager or Environmental Monitor shall inspect adjacent roads, ensure excess soils are removed	Visual inspection	NPS/ PRNSA	During construction- Both years.
	P-AQ-4: Enclose, cover, water, or apply non-toxic soil stabilizers to stockpiles as necessary.	Project Area	Construction Manager work with contractor to determine fate and condition of stockpiles	Coordination and visual inspection	NPS/ PRNSA	During construction- Both years.
	P-AQ-5: Apply non-toxic soil stabilizers to inactive earthwork areas (inactive for 10 days or more)	Project Area	Environmental manager work with contract oversight to determine fate and condition of inactive work areas	Coordination and visual inspection	NPS/ PRNSA	During construction- Both years.
	P-AQ-6. Limit traffic speeds on unpaved roads to 10 mph	Project Area	Construction Manager shall observe speeds of trucks on unpaved roads and notify contractor of trucks exceeding speed limit.	Visual inspection	NPS/ PRNSA	During construction- Both years.
Water Resources - Water Quality						
Measures to minimize and avoid impacts to water quality	P-WQ-1. Conduct construction activities during the dry season	Project Area	Construction scheduling would be conducted to minimize potential for activities to occur during wet season.	Visual inspection	NPS/ PRNSA	Before and During construction- Both years.
	P-WQ-2. Prepare Stormwater Pollution Prevention Plan that details how construction would be	Project Area	Construction Contractor will prepare Stormwater Pollution Prevention Plan and submit to Park Service and PRNSA for	Document Review and Approval; Visual Inspection of construction activities	NPS/ PRNSA	Prior to Construction and During Construction-

Monitoring Program for Applicant-Proposed Protective Measures

Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	conducted in accordance with measures to decrease delivery of sediment to surface waters. Construction Contractor will adhere to measures outlined in approved SWPP, which should include measures outlined below.		approval. Construction Manager and Environmental Monitor will ensure that Construction Contractor adheres to SWPP.	around surface waters		Both years
	P-WQ-3. Ensure that concentrated run-off and concentrated discharge are diverted away from channel banks	Project Area	Construction Manager and Environmental Monitor will ensure that Construction Contractor adheres to SWPP.	Visual Inspection of construction activities around surface waters	NPS/ PRNSA	During construction-Both years.
	P-WQ-4. Install temporary construction fencing to identify areas that will be cleared, graded, recontoured, or revegetated.	Project Area	Construction Manager and Environmental Monitor will ensure that Construction Contractor adheres to SWPP.	Visual Inspection of construction activities around surface waters	NPS/ PRNSA	During construction-Both years.
	P-WQ-5. Grade and stabilize soils to minimize erosion and sediment input into adjacent surface waters	Project Area	Construction Manager and Environmental Monitor will ensure that Construction Contractor adheres to SWPP.	Visual Inspection of construction activities around surface waters	NPS/ PRNSA	During construction-Both years.
	P-WQ-6. Implement erosion control measures where appropriate to prevent sediment from entering surface waters, including silt fencing, fiber rolls, or erosion control blanket	Project Area	Construction Manager and Environmental Monitor will ensure that Construction Contractor adheres to SWPP.	Visual Inspection of construction activities around surface waters	NPS/ PRNSA	During construction-Both years.
	P-WQ-7. Avoid operating equipment in flowing waters by using temporary cofferdams or other water bypass procedures to divert flow around construction area.	Project Area	Construction Manager and Environmental Monitor will ensure that Construction Contractor adheres to SWPP.	Visual Inspection of construction activities around surface waters	NPS/ PRNSA	During construction-Both years.

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Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Respons-ible Agency	Timing
Vegetation Resources – Wetlands, Riparian, Special Status Species, and Invasives						
Measures to minimize and avoid impacts to vegetation – General and Invasives	P-VR-1. Use temporary construction fencing to delimit work areas. Exclude foot and vehicle traffic from sensitive areas using fencing and flagging.	Project Area	Ensure that construction contractor clearly delineates work areas with construction fencing and that work areas are identified correctly.	Visual inspection	NPS/ PRNSA	Final Design; Before and During Construction-Both years.
	P-AQ/VR-2. Wash tires or tracks of trucks and equipment entering and leaving project sites to prevent seed transport.	Project Area	Ensure clean equipment arrives at the site. Establish wash station for trucks tires leaving and arriving at the Project Area.	Visual inspection; Operation of tire spray station.	NPS/ PRNSA	Before and during construction activities.
	PR-VR-3. Removal or limbing of riparian vegetation should be avoided. No riparian vegetation shall be removed or limbed without express approval from the Environmental Monitor.	Project Area	Construction Contractor will work with Environmental Monitor to ensure that impacts to riparian vegetation are avoided or minimized to the extent possible. Environmental Monitor will work with Construction Contractor to clearly mark trees approved for removal or limbing.	Visual inspection	NPS/ PRNSA	During Construction-Both years.
Measures to minimize and avoid impacts to vegetation – Wetland and riparian resources	P-VR-4. Staging and stockpiling of equipment and materials shall be in upland and non-riparian areas whenever possible.	Project Area.	Lead agencies will review and approve staging areas identified in Final Design. Construction Manager and Environmental Monitor will inspect staging areas established by Construction Contractor. Contractor will request permission prior to establishing new staging and stockpile areas not identified in specifications.	Review construction specifications; Visual inspection of work areas and confirmation of staging and stockpile areas	NPS/ PRNSA	Final Design; Before and During Construction-Both years.
	If stockpiling and staging and access must occur in wetland or riparian areas, following measures should be implemented:	Project Area.	Lead agencies will review and approve staging areas identified in Final Design. Construction Manager and Environmental Monitor will inspect staging and	Review construction specifications; Visual inspection of flagged stockpile and staging and access road	NPS/ PRNSA	Final Design; Before, During, and After Construction-

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Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	• P-VR-5. Temporary impacts should be minimized to the extent possible by minimizing work area and road width. • P-VR-6. Contractor will demarcate stockpiling and staging areas and access roads in wetlands and riparian areas with construction fencing and/or flagging. • P-VR-7. All temporary fill will be removed at the end of construction.		stockpile areas and access roads demarcated by flagging by Construction Contractor. Contractor will request permission prior to establishing new staging and stockpile areas and access roads not identified in specifications.	areas to ensure appropriate siting prior to initiation of earthmoving; Visual inspection throughout construction to ensure no new impacts and after construction to ensure that all temporary fill is removed.		Both years.
	P-VR-8. Construction access routes shall be flagged to ensure that construction equipment does not detour or widen access roads into wetlands or riparian habitat without prior permission.	Project Area.	Lead agencies will review and approve access routes identified in Final Design. Construction Manager and Environmental Monitor will inspect access roads demarcated by flagging by Construction Contractor. Contractor will request permission prior to establishing new access roads not identified in specifications.	1) Review construction specifications; 2) Visual inspection of flagged access roads to ensure appropriate siting prior to initiation of earthmoving; 3) Visual inspection to ensure that access does not deviate from approved routes.	NPS/ PRNSA	Final Design; Before and During Construction-Both years.
	P-VR-9. Where possible, construction equipment shall operate in upland locations	Project Area	Construction Manager and Environmental Monitor will work with Construction Contractor to identify most environmentally feasible construction approaches. Contractor will request permission prior to operating in wetland locations that were not previously approved.	Visual inspection of construction operations	NPS/ PRNSA	During Construction-Both years.

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Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Measures to minimize and avoid impacts to vegetation – Special status species	P-VR-10. Construction in areas with special status plant species shall be delayed to avoid most of the season of reproduction, which, for most species, would be approximately July-August. Areas with special status plant species shall be flagged.	Project Area	Construction Manager and Environmental Monitor will work with Construction Contractor to identify scheduling of actions in areas with special status species. Environmental Monitor will flag areas with special status plant species prior to initiation of construction in these areas and will discuss flagging scheme with Construction Manager and Contractor. Contractor will request permission prior to operating in areas identified as having special status species.	Pre-construction meetings with contractor; Visual inspection of construction operations.	NPS/ PRNSA	Prior to and During Construction-Both years.
	P-VR-11. Construction Contractors shall excavate and stockpile topsoils in flagged areas with special status plant species. Topsoils should be replaced in designated areas after construction is completed. In affected areas where topsoil salvage is not possible, seeds would be collected and stored for dispersal after completion of construction activity.	Project Area	Lead agencies will review and approve plans for salvaging and stockpiling topsoils in areas with special status species in Final Design. Environmental Monitor will flag areas with special status species identified for salvage and will discuss flagging scheme with Construction Manager and Contractor. Where topsoil salvage not possible, Environmental Monitor or designee will collect seeds when ripe and store for dispersal once construction is completed. Construction Manager and/or Environmental Monitor will inspect salvage, stockpiling, and topsoil replacement operations to ensure performed properly.	Lead Agencies review and approve salvage and stockpiling elements of Final Design; Visual inspection of salvage, stockpiling, and topsoil replacement operations.	NPS/ PRNSA	Prior to and During Construction-Both years.

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Monitoring Program for Applicant-Proposed Protective Measures

Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Respons-ible Agency	Timing
Fish and Wildlife Resources – General Wildlife and Special Status Species						
Measures to minimize and avoid impacts to fish and wildlife resources – Breeding and migratory birds	P-FWR-1. Pre-construction surveys shall be conducted no more than 1 week prior to start of construction in specified construction areas. Pre-construction surveys required for work between March 1 and August 15.	Project Area	Qualified avian biologist designated by NPS or PRNSA will conduct pre-construction avian surveys no more than 1 week prior to start of construction in specified areas and will report results in memo format to Environmental Monitor.	Review of submitted memos to ensure that timing and areal extent of surveys sufficient to ensure compliance.	NPS/ PRNSA	Prior to Construction
	P-FWR-2. Construction Contractor shall stay at least 100 feet away from any area identified as having nesting or breeding migratory birds until August 15.	Project Area	Construction Manager will inform Construction Contractor of identified nesting areas and provide maps prepared by Environmental Monitor showing 100-foot boundary.	Visual inspection of construction operations to ensure compliance with 100-foot boundary.	NPS/ PRNSA	During Construction-Both years.
Measures to minimize and avoid impacts to fish and wildlife resources – Aquatic species	P-FWR-3. Before any construction or potential de-watering activities begin in any creeks within the Project Area, the Park Service and PRNSA shall ensure that native aquatic vertebrates and larger invertebrates are relocated out of the construction area by a qualified fisheries biologist.	Project Area	Qualified fisheries biologist will relocate aquatic species from open water areas subject to construction through seining and other appropriate measures to point at which it can be assumed that almost all individuals have been caught. Water levels may be lowered to improve efficiency of trapping. Individuals would be kept in buckets with aerators until relocated to flowing stream segments not subject to construction identified by the NPS in consultation with the appropriate agencies. Fisheries biologists would report findings to Environmental Monitor, who would oversee activities. Environmental Monitor would inform Construction Manager when areas are cleared.	1) Review of submitted memos to ensure that timing and areal extent of relocation efforts sufficient to ensure compliance; 2) Inspection and clearance by Environmental Monitor prior to initiating construction or dewatering activities; 3) Visual inspection of construction operations to ensure that construction and dewatering are not initiated prior to clearance.	NPS/ PRNSA	Prior to Construction and During Construction-Both years.

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Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Fish and Wildlife Resources – General Wildlife and Special Status Species						
Measures to minimize and avoid impacts to fish and wildlife resources – California black rail and California clapper rail	P-FWR-4. Qualified avian biologist shall conduct pre-construction surveys in spring to locate active nests in suitable breeding habitat using survey methods approved by CDFG[1] and USFWS[2].	Project Area	Qualified avian biologist shall conduct surveys and report findings to Environmental Monitor. Environmental Monitor shall report findings to CDFG and USFWS.	Review of submitted memos to ensure that timing and areal extent of relocation efforts sufficient to ensure compliance	NPS/ PRNSA	Prior to Construction- Both years.
	P-FWR-5. Construction Contractor shall stay at least 250 feet away from established rail breeding habitat between February 1 and August 31.	Project Area	Environmental Monitor will provide Construction Manager with maps showing extent of 250-foot boundary at least 1 month prior to start of construction. Construction Manager will provide maps to Construction Contractor prior to start of construction.	Visual observation of construction activities to ensure that 250-foot boundary is observed.	NPS/ PRNSA	Prior to and During Construction- Both years.
Measures to minimize and avoid impacts to fish and wildlife resources – California red-legged frog and Northwestern pond turtle	P-FWR-6. Qualified amphibian biologist shall conduct pre-construction surveys in spring to locate extent of breeding habitat using survey methods approved by USFWS[2].	Project Area	Qualified amphibian biologist shall conduct surveys and report findings to Environmental Monitor. Environmental Monitor shall report findings to CDFG and USFWS.	Review of submitted memos to ensure that timing and areal extent of relocation efforts sufficient to ensure compliance	NPS/ PRNSA	Prior to Construction- Both years.
	P-FWR-7. Construction Contractor shall avoid construction in or directly adjacent to red-legged frog breeding habitat until after July 31.	Project Area	Environmental Monitor will provide Construction Manager with maps showing breeding areas off-limit to construction at least 1 month prior to start of construction. Construction Manager will provide maps to Construction Contractor prior to start of construction.	Visual observation of construction activities to ensure that specified breeding areas are avoided.	NPS/ PRNSA	Prior to and During Construction- Both years.

[1] CDFG=California Department of Fish and Game
[2] USFWS=U.S. Fish and Wildlife Service

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Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Respons-ible Agency	Timing
Fish and Wildlife Resources – General Wildlife and Special Status Species						
	P-FWR-8. No more than 1 week prior to start of construction or dewatering activities in open water areas, qualified biologist shall conduct pre-construction surveys to determine whether red-legged frogs and northwestern pond turtle are present. If present, frogs and turtles shall be trapped and relocated to non-construction areas approved in advance by Environmental Monitor in consultation with appropriate technical experts and/or agencies.	Project Area	Qualified biologist will capture and relocate red-legged frogs and northwestern pond turtle from open water areas subject to construction through appropriate trapping measures to point at which it can be assumed that almost all individuals have been caught. Water levels may be lowered to improve efficiency of trapping. Individuals would be kept in moist dark coolers until relocated to appropriate habitat not subject to construction identified by the NPS in consultation with the appropriate technical experts and/or agencies. Biologists will report findings to Environmental Monitor, who will oversee activities. Environmental Monitor will inform Construction Manager when areas are cleared.	1) Review of submitted memos to ensure that timing and areal extent of relocation efforts sufficient to ensure compliance; 2) Inspection and clearance by Environmental Monitor prior to initiating construction or dewatering activities; 3) Visual inspection of construction operations to ensure that construction and dewatering are not initiated prior to clearance.	NPS/ PRNSA	Prior to Construction and During Construction-Both years.
Measures to minimize and avoid impacts to fish and wildlife resources – Tidewater goby	P-FWR-9. Qualified fisheries biologist shall conduct pre-construction surveys in spring to locate extent of tidewater goby habitat using survey methods approved by USFWS[2].	Project Area	Qualified fisheries biologist shall conduct surveys and report findings to Environmental Monitor. Environmental Monitor shall report findings to USFWS.	Review of submitted memos to ensure that timing and areal extent of relocation efforts sufficient to ensure compliance	NPS/ PRNSA	Prior to Construction-Both years.
	P-FWR-10. Construction Contractor shall avoid construction in or directly adjacent to established tidewater goby habitat from	Project Area	Environmental Monitor will provide Construction Manager with maps showing established goby habitat off-limit to construction at least 1 month	Visual observation of construction activities to ensure that specified goby habitat	NPS/ PRNSA	Prior to and During Construction-Both years.

Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	April through June.		prior to start of construction. Construction Manager will provide maps to Construction Contractor prior to construction.	areas are avoided.		
	P-FWR-11. No more than 1 week prior to start of construction or dewatering activities in open water areas, qualified fisheries biologist shall conduct pre-construction surveys to determine whether goby is present. If present, goby shall be trapped and relocated to non-construction areas approved in advance by Environmental Monitor in consultation with appropriate technical experts and/or agencies such as Tomasini Creek.	Project Area	Qualified fisheries biologist will capture and relocate goby from open water areas subject to construction through extensive seining, minnow trapping, and other appropriate trapping measures to point at which it can be assumed that almost all individuals have been caught. Water levels may be lowered to improve efficiency of trapping. Individuals would be kept in buckets with aerators until relocated to appropriate habitat not subject to construction identified by the NPS in consultation with appropriate experts and/or agencies. Fisheries biologists will report findings to Environmental Monitor, who will oversee activities. Environmental Monitor will inform Construction Manager when areas cleared.	1) Review of submitted memos to ensure that timing and areal extent of relocation efforts sufficient to ensure compliance; 2) Inspection and clearance by Environmental Monitor prior to initiating construction or dewatering activities; 3) Visual inspection of construction operations to ensure that construction and dewatering are not initiated prior to clearance.	NPS/ PRNSA	Prior to Construction and During Construction-Both years.
Measures to minimize and avoid impacts to fish and wildlife resources – Salmonids	P-FWR-12. Construction Contractor shall avoid conducting construction activities in Lagunitas Creek and other known salmonid-supporting streams until after July 15.	Project Area	Environmental Monitor will provide Construction Manager with maps showing established salmonid habitat off-limit to construction at least 1 month prior to start of construction. Construction Manager will provide maps to Construction Contractor prior to construction.	Visual observation of construction activities to ensure that specified salmonid habitat areas are avoided.	NPS/ PRNSA	Prior to and During Construction-Both years.

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Monitoring Program for Applicant-Proposed Protective Measures

Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Fish and Wildlife Resources – General Wildlife and Special Status Species						
Measures to minimize and avoid impacts to fish and wildlife resources – California freshwater shrimp	P-FWR-13. Qualified biologist shall conduct pre-construction surveys in areas with appropriate habitat to determine whether shrimp are present using approved survey methods.	Project Area	Qualified biologist shall conduct surveys and report findings to Environmental Monitor. Environmental Monitor shall report findings to USFWS.	Review of submitted memos to ensure that timing and areal extent of relocation efforts sufficient to ensure compliance	NPS/ PRNSA	Prior to Construction-Both years.
Cultural Resources						
Measures to minimize and avoid impacts to undocumented cultural resources	P-CR-1. Lead Agencies shall ensure that NPS or Federated Indians of Graton Rancheria (FIGR) representative is on call during construction activities.	Project Area	Environmental Monitor should communicate cultural resource contacts to Construction Manager.	Appropriate response in case cultural resources are found on site.	NPS/ PRNSA	During Construction-Both years.
	P-CR-2. Construction Contractor shall stop construction activities and immediately notify Construction Manager should construction activities uncover potential cultural resource findings such as shells, pottery fragments, bones, or other historic or archaeological artifacts.	Project Area	Construction Contractor will communicate possible cultural resource findings immediately to Construction Manager, who will contact NPS or FIGR on-call representative.	Appropriate response in case cultural resources are found on site.	NPS/ PRNSA	During Construction-Both years.
Public Health and Safety – Disease and Disease Vectors						
Measures to minimize and avoid impacts to public health and safety from disease vectors	P-PH-1. Construction Contractor shall avoid temporary water impoundment or minimize the areal extent of water impoundment caused by construction activities to reduce breeding of mosquitoes.	Project Area	Construction Contractor will work with Construction Manager and Environmental Monitor prior to start of construction to determine the need and extent for water diversion and impoundment measures that could create temporary breeding habitat for mosquitoes.	Visual observation of construction activities to ensure that amount of temporary water impoundment does not exceed that discussed prior to construction.	NPS/ PRNSA	Prior to and During Construction-Both years.

Ex. 10
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Monitoring Program for Applicant-Proposed Protective Measures

Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Public Health and Safety – Disease and Disease Vectors						
Measures to minimize and avoid impacts to public health and safety from disease vectors	P-PH-2. NPS or designee shall monitor temporary impounded areas during construction for evidence of excessive mosquitoes or mosquito breeding and, if necessary, treat with NPS-approved IPM[3] management and treatment methods.	Project Area and Vicinity	Environmental Monitor will work with NPS or designee on monitoring of temporary impounded areas for evidence of excessive mosquitoes or mosquito breeding. Environmental Monitor will notify Construction Manager and Contractor if management or treatment is required.	Re-testing of impounded areas after implementation of management or treatment shows absence or highly reduced numbers of mosquitoes. Minimal number of complaints from surrounding residents and/or visitors.	NPS/ PRNSA	During Construction-Both years.
Public Services – Municipal Water Supply Distribution and Other Services						
Measures to minimize and avoid impacts to public services from interruption of public services	P-PS-1. NPS and Construction Manager shall provide advance notification to affected residents of any utility interruptions at least 1 week prior to occurrence.	Project Area and Vicinity	NPS shall prepare mailing for affected residents in consultation with Construction Manager and Contractor at least 1 week prior to planned interruption in utility.	Minimal number of complaints from affected residents.	NPS/ PRNSA	During Construction-Both years.
Public Services – Traffic and Transportation						
Measures to minimize and avoid impacts to transportation	P-TR-1. Engineer and Construction Contractor shall be required to develop and implement traffic safety plan that would include limits on vehicle size; approved access and hauling routes; approved traffic control procedures for road or lane closures, traffic stoppages, detours, flag-person requirements, and turnout needs.	Project Area and adjacent areas	Project Engineer shall include approved access and hauling routes on construction specifications and include information on minimum or suggested traffic control measures as part of specifications. Construction Contractor shall incorporate information from Engineer into Traffic Safety Plan, which will be submitted to Construction Manager and Environmental Monitor for review and approval	1) Review and approval of proposed access and hauling routes and traffic control measures in construction specifications. 2) Review and approval of Traffic Safety Plan. 3) Visual observation of access, hauling, and traffic control	NPS/ PRNSA	Before and During Construction-Both years.

[3] IPM=Integrated Pest Management

EX-10 18 of 19

Monitoring Program for Applicant-Proposed Protective Measures

Affected Resource Area	Applicant-Proposed Protective Measures	Location	Monitoring / Reporting Action	Effectiveness Criteria	Respons-ible Agency	Timing
			prior to start of construction. Traffic control measures will be submitted to County of Marin Public Works for approval. Construction Contractor shall adhere to the approved Traffic Safety Plan during entire construction period.	procedures.		
	P-TR-2. Construction Contractor shall observe weight limits suggested for County of Marin Roads to limit wear and tear on County, state, and NPS roads. Construction Contractor shall not use hauling trucks whose capacity exceeds weight limit of County of Marin roads.	Project Area and adjacent areas	Construction Contractor will have equipment on hauling trucks that allows load weight of hauling trucks to be checked on random basis by Construction Manager or designee. Construction Manager will maintain records of all such checks. In addition, Construction Manager or designee may perform video-monitoring of selected portions of roads to document condition prior to initiation of hauling.	Random checks by Construction Manager show that hauling vehicles within approved weight limits. Video-monitoring, if performed, shows that condition of roads does not decrease substantially after hauling is completed relative to existing conditions.	NPS/ PRNSA	Before and During Construction-Both years.
Public Access Resources						
Measures to minimize and avoid impacts to public access resources	P-PA-1. NPS and Construction Manager shall provide advance notification regarding any trail and road closures or detours to visitors and residents.	Project Area and Vicinity	NPS shall post information on trail and road closures and detours that could affect access to public access resources on 1) the park website, 2) at the Bear Valley Visitor Center, and 3) at the construction site.	Minimal number of complaints from affected residents.	NPS/ PRNSA	During Construction-Both years.

EX-10
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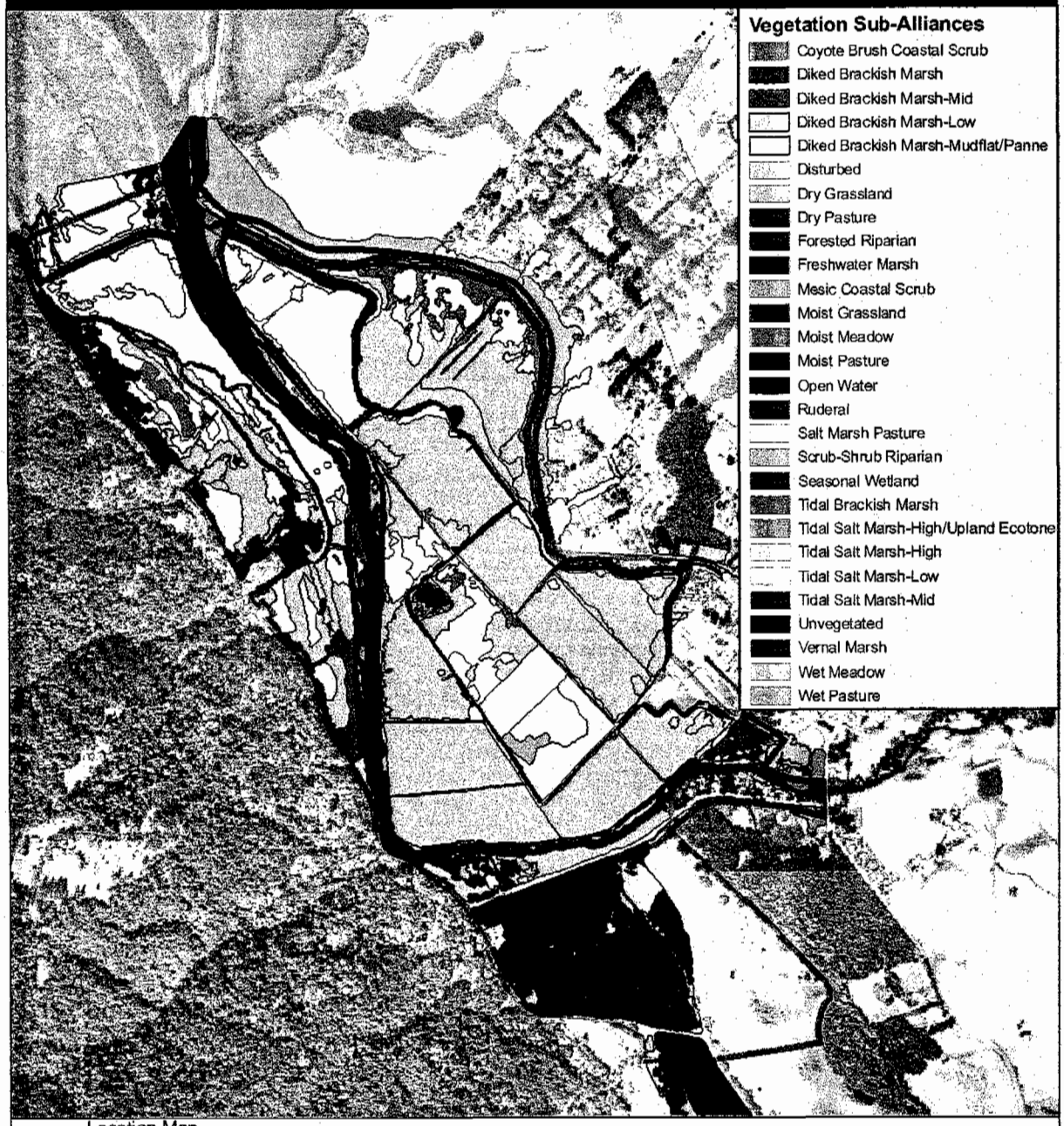
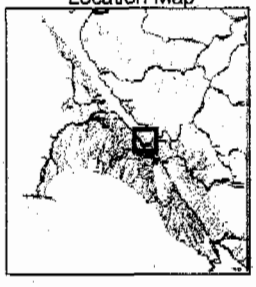
Vegetation Communities

Giacomini Wetland Restoration Project



Location Map



National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA

N

0 0.25 0.5 0.75 1 Miles

Figure 30

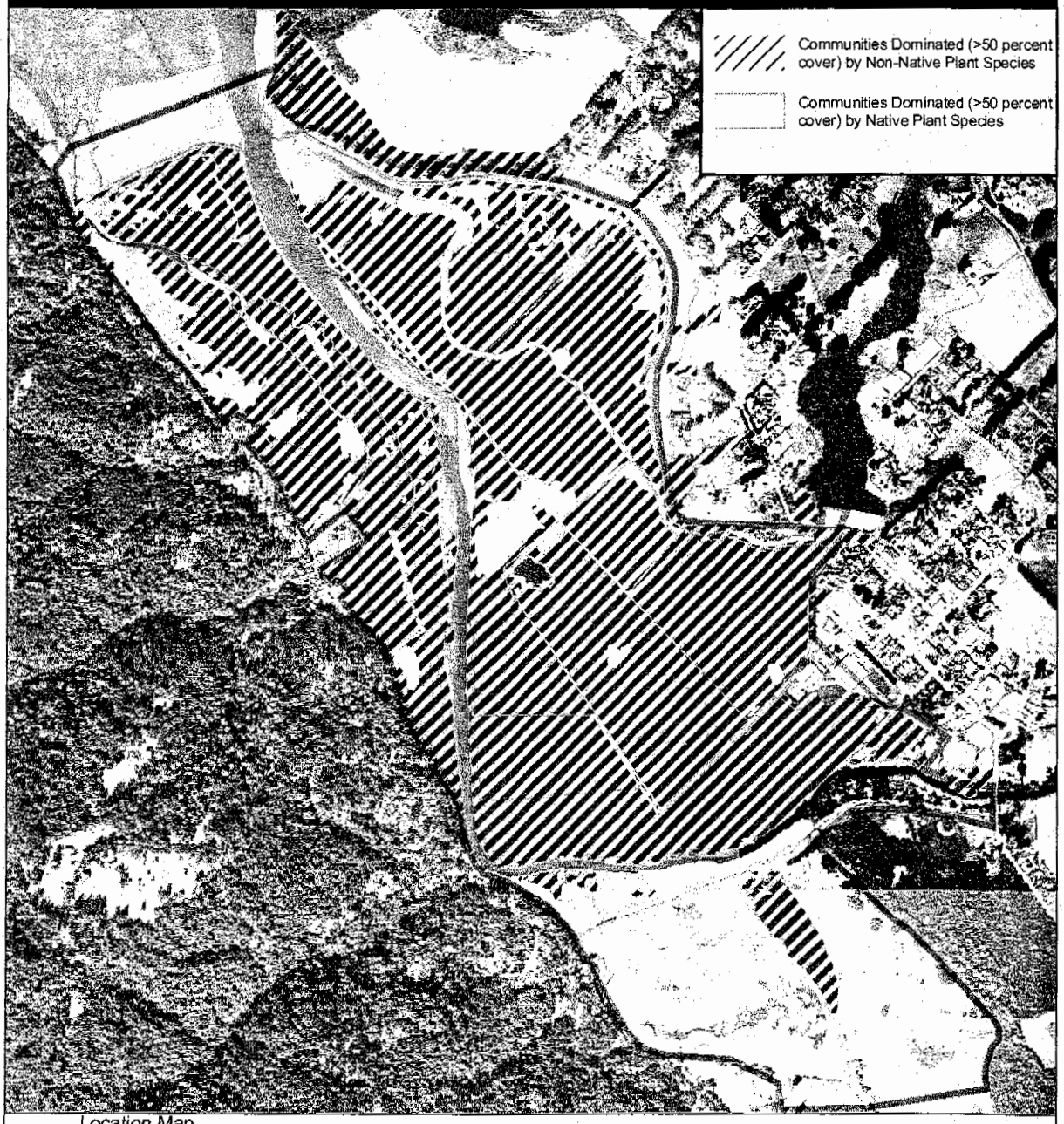
EXHIBIT NO. 11

APPLICATION NO.

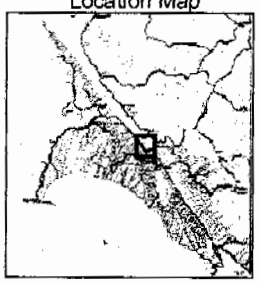
CD-048-07

Native and Non-Native Vegetation Communities

Giacomini Wetland Restoration Project



Location Map



National Park Service
Point Reyes National Seashore/
Golden Gate National Recreation Area
Marin County, CA

N

0 0.25 0.5 0.75 1 Miles

Figure 31

EXHIBIT NO. 12
APPLICATION NO.
CD-048-07

TABLE 11. ACREAGES OF THE MOST DOMINANT VEGETATION COMMUNITIES MAPPED IN THE PROJECT AREA

		Giacomini		Olema Marsh		TOTAL	
		Acres	%	Acres	%	Acres	%
1.	Wet Pasture	209.6	38.1	0	0.0	209.6	34.2
2.	Salt Marsh Pasture	87.5	15.9	0	0.0	87.5	14.3
3.	Ruderal	54.3	9.9	0.2	0.3	54.5	8.9
4.	Open Water	45.5	8.3	5.5	8.7	51.0	8.3
5.	Freshwater Marsh	14.3	2.6	36.3	57.6	50.6	8.3
6.	Forested Riparian	17.2	3.1	13.6	21.6	30.8	5.0
7.	Wet Meadow	22.6	4.1	0.3	0.5	22.9	3.7
8.	Tidal Salt Marsh-Mid	20.6	3.7	0	0.0	20.6	3.4
9.	Diked Brackish Marsh-Low	15.04	2.7	0		15.0	2.5
10.	Diked Brackish Marsh-Mid	14.4	2.6	0	0.0	14.4	2.3
11.	Scrub-Shrub Riparian	11.3	2.1	2.3	3.7	13.6	2.2
12.	Mesic Coastal Scrub	12.4	2.3	0	0.0	12.4	2.0
13.	Diked Brackish Marsh-Mudflat/Panne	12.3	2.2	0	0.0	12.3	2.0
14.	Diked Brackish Marsh-High	9.1	1.7	0	0.0	9.1	1.5

Riparian communities east of the East Pasture and Tomasini Creek (Parsons and Allen 2004b).

Brackish marsh vegetation communities are also diverse in general, but Tidal Brackish Marsh habitats often consist of extensive stands of tall emergent plant species along the upper reaches of Lagunitas Creek (Parsons and Allen 2004b). Diked Brackish Marsh and Tidal Salt Marsh communities are comprised of varying mixtures of salt marsh species. Within the Giacomini Ranch, Diked Brackish Marsh occurred in low-lying areas or depressions that were formerly tidal channel sloughs (Parsons and Allen 2004b; Figure 30). Prolonged ponding in diked areas that are tidally influenced either directly or indirectly has either precluded or minimized vegetation establishment, creating Mudflat/Panne communities (Parsons and Allen 2004b). Tidal Salt Marsh-Mid communities -- or salt-adapted vegetation communities that typically occur at middle intertidal elevations in salt marshes that are inundated frequently by tides -- occurred on the outer perimeter of the Giacomini Ranch levees and in the undiked marsh north of the Ranch, while Lagunitas Creek accounted for most of the Open Water habitat (Figure 30).

The number of plant associations within most of the vegetation communities is relatively diverse, ranging from only one to as many as 10 associations or groups of plant species (Parsons and Allen 2004b, Ryan and Parsons, *in prep.*). Plant associations represent groupings of particular plant species that commonly occur together, and a particular vegetation community might be composed of several different distinct plant associations. A more detailed description of the dominant vegetation communities and their plant associations is provided below.

While not all non-native plant species are invasive and/or are documented to have negative effects on native plant species communities or wildlife habitats, vegetation communities and plant associations dominated by natives are considered to be more "intact" and likely to support to wildlife through providing habitat, food, and

EXHIBIT NO. 14
APPLICATION NO.
CD-048-07

TABLE 1. Project-Related Permanent Excavation and Fill Activities Associated with Giacomini Wetland Restoration Project, Golden Gate National Seashore/Point Reyes National Seashore

Restoration or Public Access Action	**Excavation**	**Fill** (Remain Wetland)	**Fill** (Convert to Upland)
GIACOMINI RANCH			
Removal of Levees, Including Tidegate/Culverts (EP&WP)	1.56		
Excavation to Intertidal/Lower Floodplain Elevations (max depth=1 ft; EP)	32.00		
Scraping of Southern Portion of East Pasture (max depth=0.5 ft; EP)	26.10		
Excavation to Create Freshwater Marsh in Tomasini Triangle (1.0-4.0 ft; EP)	5.20		
Use of Topsoil to Create Partial Berm for Tomasini Triangle Freshwater Marsh (EP)			0.83
Deepen Slough and Improve Hydraulic Connectivity through Excavation (EP)	4.28		
Excavation of Tidal Creek Channels (EP&WP)	1.18		
Filling of Irrigation Drainage Ditches (EP)		3.37	
Filling of West Pasture North Levee Borrow Ditch (WP)		0.46	
Excavation and Replacement of Salt Marsh Topsoil between Levee and Borrow Ditch (WP)	0.57		
Extension of High Tide Refugia Area to Natural Alluvial Levee in Undiked Marsh (WP)			0.07
Excavation and Fill Associated with Tomasini Creek Realignment (EP)	0.50		0.003
Grading of Toe and Lower Bank of Lagunitas Creek Bank to Stable Profile (EP)	1.82		
Placement of Some Excavated Riprap in Trench at Toe of Bank for Stabilization (EP)		0.001	
SUBTOTAL	**73.33**	**3.371**	**0.833**
OLEMA MARSH			
Shallow Excavation of Bear Valley Creek Flow Path to Improve Hydraulic Connectivity	0.810		
Remove Berm at Outlet of Bear Valley Creek near Levee Road	0.056		
Excavate to Create Olema Creek Frog Ponds	0.73		
Replace Levee Road Culvert	0.09		
Widen Outboard Portion of Bear Valley Creek to Create Active Floodplain	0.059		
Replace Bear Valley Road Culvert	0.064		
SUBTOTAL	**1.81**	**0.00**	**0.00**
PUBLIC ACCESS			
Improved Entrance to Green Bridge County park Trail		0.03	
Viewing Area – White House Pool County park			0.015
Viewing Area – Sir Francis Drake Boulevard			0.020
SUBTOTAL	**0.00**	**0.03**	**0.035**
QUARRY DISPOSAL/RESTORATION SITES - SUBTOTAL	**0.00**	**0.00**	**0.00**
PROJECT - TOTAL	**75.14**	**3.86**	**0.94**

EXHIBIT NO. 15
APPLICATION NO. 2-08-007

ALTERNATIVES ANALYSIS

Giacomini Wetland Restoration Project

National Park Service/California State Lands Commission
Point Reyes Station, California

August 7, 2007

Under Section 404 (b)(1) as set forth in Title 40, Code of Federal Regulations, Part 230, no discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment, so long as the alternative does not have other significant adverse environmental consequences; or (2) the nation's waters would be significantly degraded.

For the purpose of this requirement, practicable alternatives include, but are not limited to: (i) Activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters; and (ii) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters. As part of the alternatives analysis, an applicant must show that, to the extent practicable, steps have been take to 1) avoid wetland impacts; 2) minimize potential impacts on wetlands; and 3) provide compensation for any remaining unavoidable impacts. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant, which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity, may be considered.

Where the discharge activity proposed for a wetland or other special aquatic site does not require access or proximity to or sighting within the special aquatic site in question to fulfill its basic purpose (i.e., is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a wetland or other special aquatic site, all practicable alternatives to the proposed discharge that do not involve a discharge into a wetland or other special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

For actions subject to NEPA, the analysis of alternatives required for NEPA environmental documents will, in most cases, provide the information for the evaluation of alternatives under these Guidelines. On occasion, these NEPA documents may address a broader range of alternatives than required to be considered under this paragraph or may not have considered the alternatives in sufficient detail to respond to the requirements of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information. To the extent that practicable alternatives have been identified and evaluated under a Coastal Zone Management program, a section 208 program, or other planning process, such evaluation shall be considered by the permitting authority as part of the consideration of alternatives under the Guidelines. Where such evaluation is less complete than that contemplated under this subsection, it must be supplemented accordingly.

Alternatives evaluated in the FEIS/EIR for the proposed project included: a No Action Alternative and four (4) action Alternatives (Alternative A-D) that vary inversely in the degree or amount of restoration and public access proposed. The document also identified restoration and management elements that were common to all alternatives, which included discontinuation of agricultural land management, removal of buildings and structures from the dairy facility, and removal of worker

housing. The Park Service and CSLC selected Alternative D, the environmentally preferred alternative, for implementation. The document also identified that, due to seasonal and special status species constraints, implementation of the selected alternative would need to be phased over several years.

Alternatives to the elements proposed in Alternative D or the selected alternative would largely involve 1) taking no action or, in some cases, 2) reducing the size of the area affected. The No Action and potential alternative actions to are described below for the largest excavation and fill elements affecting areas potentially subject to oversight as wetlands, as well as the potential feasibility and issues associated with these alternative actions:

1) ***Decreasing the elevation of topographically elevated areas to lower intertidal or floodplain elevations (32 acres)***: If this 32-acre area was not excavated to lower elevations, it would simply reduce the amount of mid-marsh and high-marsh intertidal habitat and low-elevation floodplain and maintain a higher proportion of high-elevation floodplain that would only be flooded during moderate storm events (> 2-year flood event). This would reduce the value of this area, to some extent, for wildlife, as well as for water quality improvement and floodwater retention and dissipation of flood flow energy during smaller storm events (< 2-year flood event). Another alternative would be to reduce the extent of area. This may occur regardless, because of funding constraints. As part of the extensive alternative development and refinement process, this alternative element has already been revised to reduce the extent and depth of excavation.

2) ***Scraping the densely rooted cover of non-native forage grasses and herbs from the southern portion of the East Pasture (26.1 acres)***: Not removing the weedy topsoil in the very southern portion of the East Pasture could substantially reduce the potential that native upland ecotone grasses would establish there in the future and the success of revegetation efforts. These forage grasses and herbs, particularly the stoloniferous grasses, have created a densely rooted cover that would not be likely to be reduced naturally by the intrusion of saltwater should levees be removed in the future, as hydraulic modeling shows that this area falls topographically above the extent of the highest high tides (KHE 2006). Another alternative would be to reduce the extent of area. As part of the extensive alternative development and refinement process, this alternative element has already been revised to reduce the extent and depth of excavation.

3) ***Excavating the Tomasini Triangle freshwater marsh (5.2 acres) and creation of a partial, low-elevation berm (0.83 acre)***: For the freshwater marsh-pond creation in Tomasini Triangle, potential alternatives would include 1) not constructing a marsh (No Action); 2) relocating the marsh so that it would be built entirely in upland; 3) building a smaller marsh with a smaller berm; and 4) building the proposed marsh with no berm. If the ponds were not constructed, ongoing and projected losses of freshwater marsh in the Project Area would not be mitigated, thereby reducing habitat for a federally threatened species. A large proportion of the Giacomini Ranch is wetland: large-scale upland areas occur primarily in the southern portions of both the West and East Pastures. Unfortunately, these areas do not have sufficient hydrological resources to enable construction of a marsh that would pond in at least some portion through July or August. The Tomasini Triangle area was chosen, because the Park Service and CSLC wanted to incorporate (if possible) on-site mitigation, and this area not only already appeared to have sufficient hydrologic resources, but hydraulic modeling showed that it fell topographically above the extent of most tides, except perhaps extreme high tides (KHE 2006). (Some off-site mitigation is already proposed at the Olema Creek Frog Pond area: see description below). The size of the Tomasini Triangle marsh was designed to be large enough to more than off-set the ongoing and projected future losses of the West Pasture freshwater marsh from conversion to brackish marsh, with size ultimately dictated by the constraints of the estimated water budget for this area (KHE 2006). A low-elevation berm was considered necessary to minimize saltwater

intrusion during extreme high tides – eggs of California red-legged frog are believed to be sensitive to salinities exceeding 4.5 ppt (Jennings and Hayes 1989), as well as to provide some high water refugia within an otherwise low-elevation, topographically homogenous environment.

4) ***Excavating the East Pasture Old Slough to improve hydraulic connectivity (4.8 acres)***: Because the East Pasture Old Slough is currently diked and no longer open to tidal action, large stands of cattails (*Typha* spp.) and bulrush (*Scirpus* or *Schoenoplectus californicus*) have established within 4.8 acres of this former tidal slough that has not been as frequently dredged during ditch maintenance as the remainder of the drainage ditch system. If the channel was not excavated to improve hydraulic connectivity, flow velocities, and tidal energy, it is likely that the East Pasture Old Slough and many of the created tidal channels off the Old Slough would begin to accumulate sediment and cease to function properly. Some "cleaning out" would occur during large storms when flow velocities and energy in Tomasini Creek, which would be reconnected to the East Pasture Old Slough, would increase substantially, but this would not be sufficient to maintain the created tidal channel network, as well as to create and maintain tidal channels with open, intertidal mudflat on banks during low tide that would have important wildlife value for invertebrates, shorebirds, and other species. Another alternative would be to reduce the extent of area, but this would leave dense stands of tall emergents and cause rapid recolonization, as well as sediment accumulation and reduction in tidal energy.

5) ***Filling of drainage ditches (3.37 acres):*** The ditches are proposed to be filled, because they are an agricultural remnant that would not encourage development of natural hydrologic processes. The ditches to be filled are linear, unnatural-looking features that would also detract visually from the natural landscape that would be restored as part of the proposed project. Not filling the ditches would mean that much of the flow within the East Pasture would continue to be captured by these features, and these features may reduce the potential for successful establishment, development, and maintenance of the created tidal channels, which would be excavated to mimic natural tidal channels in deltaic systems. Reducing the extent of ditch to be filled has already been accomplished to some degree by retaining the sinuous portion of the East Pasture Old Slough in the northern portion of the East Pasture and incorporating the ditch, when possible, into the realigned Tomasini Creek channel system.

6) ***Grading southern portion of East Pasture creek bank to more stabile profile and stabilization (1.82 acres):*** Some portions of the Lagunitas Creek bank along the southern portion of the East Pasture are either steeply and unstably sloped, eroded from past flood events, or have been riprapped to improve stability. In these areas, riprap would be removed from the upper portions of the creek bank, and, in areas without riprap, the creek banks would be regarded to a more stable profile and, in areas where erosion is a problem, riprap would be placed in a trench to help stabilize the slope during future storm events. If these actions were not performed, it is likely that 1) eroded banks would continue to erode and destabilize adjacent areas with riparian vegetation; and 2) riprapped areas would continue to preclude establishment of riparian vegetation that could provide more biologically acceptable methods of stabilization that would also provide habitat for aquatic and terrestrial wildlife.

7) ***Excavating levee system to surrounding grade in areas where this would affect wetlands, including removal of tidegates/culverts (1.56 acres)***: Most of the levee system is area that would potentially be considered upland and not subject to oversight by the CCC. In certain areas, excavation of the levee to the surrounding grade would affect portions of the levee that could be considered wetland by the CCC. Impacts to areas potentially subject to oversight by the CCC as wetlands are estimated to total 1.54 acres. If these areas were not excavated, portions of the levee system would remain. These remnant levee sections would be subject to erosion over time, causing sediments to be carried downstream to Tomales Bay, which has been

declared impaired under Section 303(d) of the Clean Water Act. In addition, they would reduce floodplain and water quality improvement functions to some degree, as well as the aesthetics of the restored natural landscape.

8) ***Excavating tidal channels (1.18 acres)*: Most of the tidal channel creation – 1.06 acres – is** proposed for the East Pasture, because the dense, estuarine muds that underlie most of this pasture would tend to retard natural development of tidal channels, as would the dense cover of rhizomatous and stoloniferous pasture grasses (R. Kamman, KHE, *pers. comm.*). The East Pasture once supported an intricate network of sinuous tidal channels, particularly in its northern end, but most of these were eliminated through land-leveling and filling activities to improve pasturage. Without creation of tidal channels in the East Pasture, they would be unlikely to develop naturally (R. Kamman, KHE, *pers. comm.*). The extent of tidal channel creation was guided by the volume of water needed to maintain a dynamic and functional tidal channel system, as well as the interest in creating more habitat for aquatic organisms.

   Only a small proportion of the tidal channel creation proposed would be in the West Pasture (0.12 acre), because the alluvial soils that predominate in this area are more conducive to natural development of tidal channels (R. Kamman, KHE, *pers. comm.*). The only tidal channel created would be one that would connect to what appears to be a remnant tidal slough. This remnant slough would be connected to a large tidal channel that runs through the middle of the CSLC undiked marshlands. Without active creation, the tidal channel would be unlikely to initiate naturally due to the densely compacted soils underlying the north levee that would be between the remnant slough and the large tidal channel.

9) ***Excavation to realign Tomasini Creek (0.5 acres)***: Alternatives for realignment of Tomasini Creek would involve: 1) no realignment of the creek or 2) partial realignment. These alternative elements were actually incorporated into the alternatives analyzed in the FEIS/EIR. No channel realignment was proposed under the No Action Alternative and Alternatives A and B. Partial realignment was analyzed under Alternative C. Alternative D incorporated full realignment through the center of the Tomasini Triangle, however, during the early portions of the final design stage, hydrologists and engineers felt that having the channel run through the middle of the created marsh was not a stable, hydrologic design and instead suggest realigning into one of its historic alignments slightly downstream.

   Because of the presence of the federally endangered tidewater goby (*Eucyclogobius newberryi*), the Park Service and CSLC propose retaining the leveed channel and tidegate/flashboard dam system to minimize impacts to this listed species, however, under the proposed project, it would be a backwater slough feature, and Tomasini Creek would be realigned into one of its historic alignments. As discussed in the FEIS/EIR, without realignment, Tomasini Creek would continue to be a muted tidal system, because of the malfunctioning tidegate and flashboard dam structure that currently regulates flow at the creek's mouth. Natural hydrologic processes such as channel migration/avulsion, floodplain, and sediment deposition processes within the creek would continue to be limited or altered by the presence of the berm and the tidegate/flashboard dam structure. In addition, these structures would have negative impacts on other wildlife species such as coho and steelhead salmon, which have been sighted in this creek in recent years, as well as other native estuarine fish and invertebrate species.

   Partial realignment as described in Alternative C – realigned near the Giacomini Hunt Lodge rather than in the Tomasini Triangle – would have many of the same benefits, but it would not substantially reduce impacts to wetlands in terms of excavation.

10) ***Excavating Bear Valley Creek (0.81 acre) and Culvert Replacement at Levee Road and/or Bear Valley Road***: This component of the project is designed as an adaptive restoration project,

such that initial, less-intensive components would be undertaken first, and the system would be given to some time to equilibrate before a decision is made whether to proceed with the more intensive culvert replacement elements on the basis of improvement in hydrologic and ecological processes and conditions. The initial adaptive restoration elements involve shallow excavation of Bear Valley Creek and removal of a small earthen berm just upstream of the Levee Road culvert. Alternatives to the initial adaptive restoration element would principally be the No Action alternative, although conceivably shallow excavation could be performed without removal of the berm and vice versa. If shallow excavation were not performed to improve the flow path of the creek and hydraulic connectivity with Lagunitas Creek, drainage from Olema Marsh via Bear Valley Creek, which runs through the marsh, would remain restricted by the dense cover of densely rooted tall and medium-sized emergent marsh species that now grow in the creek's primary flow path along the eastern perimeter of the marsh. If removal of the berm was not performed, the berm – which essentially chokes off most of the outflow area from Olema Marsh -- would continue to reduce outflow, even if Bear Valley Creek is shallow excavated.

A reduction in drainage would maintain the current impoundment condition in Olema Marsh in which water levels have continued to increase in response to reduced drainage and outflow capacity, with waters levels believed to have increased by as much as 10 feet over the last decade (KHE 2006). This impoundment not only has implications for flooding of the adjacent Levee Road (Sir Francis Drake Boulevard) and Bear Valley Road during storms, but may reduce the ability of salmonids and other aquatic organisms to move effectively upstream and downstream, as well as continue to reduce riparian habitat by "drowning" vegetation on the perimeter of the marsh. The Olema Marsh riparian area supports one of the largest coastal breeding populations of saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*; CSC).

Implement of the initial adaptive restoration element would drop water levels to at least the culvert invert elevations. However, water levels would not drop to base elevations within adjacent Lagunitas Creek unless the Levee Road culvert was replaced. Replacement of the culvert and lowering of elevations of the channel bottom through excavation would also increase the extent of tidal influence in what was once a sizeable tidal marsh system. Several designs have been evaluated, but installation of a bridge would require footings to be sizeable and driven down very deep, because the Project Area is in a high liquefaction zone. Therefore, the Park Service and CSLC are currently proposing an arched culvert design.

11) ***Excavating to Create Olema Creek Frog Ponds (0.73 acre)***: For the Olema Creek Frog Pond area, potential alternatives would be somewhat similar to the Tomasini Triangle marsh: 1) not constructing marsh ponds (No Action); 2) relocating the marsh ponds so that they would be built entirely in upland; and 3) building smaller or fewer marsh ponds. The No Action and downsizing approaches would have many of the same drawbacks as discussed for the Tomasini Triangle. As the map of potential jurisdictional wetlands and "other waters" in Attachment A shows, the east-facing slopes of the shutter ridge that border Olema Creek have a large percentage of wetlands. The west-facing slopes of the ridge that border Olema Marsh/Bear Valley Creek are uplands, but, in general, they do not have sufficient hydrology to sustain ponding through July or August of each year. The east-facing slopes and adjacent floodplain flat not only receive surface water run-off, but overflow from Olema Creek during moderate to large-sized flow events, as well as some groundwater influence. Therefore, this area has the best potential to create successful breeding habitat for the red-legged frog.

12) ***Filling of borrow ditch (0.48 acre) with excavation of adjacent marsh (0.57 acre) and creation by fill of high tide refugia (0.07 acre)***: Potential alternatives to these actions would principally consist of the No Action alternative, with the possible exception of the borrow ditch. The borrow ditch could potentially be retained even if the tidal channel in the CSLC undiked marsh was connected to the remnant tidal channel in the West Pasture. Channels perpendicular

to the dominant flow pattern, which the borrow ditch is, are not typically common in deltaic systems. Retention of this perpendicular channel with restoration and enhancement of the natural tidal channel, which parallels Lagunitas Creek, creates a looped hydrologic design that might result in "null points" or problematic water circulation patterns that would lead the restored channel to fill in over time (G. Kamman, KHE, *pers. comm.*). Ultimately, this would compromise the function of not only the created section of channel in the West Pasture, but the natural tidal channel in the CSLC undiked marsh (G. Kamman, KHE, *pers. comm.).*

Based on this analysis of alternatives, the proposed alternative elements are "water-dependent," because the proposed project is a wetland restoration project. In addition, while practicable alternatives exist to these alternative elements that are less damaging to the aquatic environment in terms of temporary direct or immediate construction-related impacts, they offer far less long-term benefits to the Project Area and surrounding watershed. Implementing the No Action alternative to these elements would significantly reduce the potential benefits of the proposed project to restoring natural hydrologic and ecological processes and functions. Those alternatives to the actions proposed that involve less construction-related excavation or fill would also result in less benefit in terms of improvement in wetland condition and functionality. The Park Service and CSLC have undergone an extensive planning process in which alternative elements were refined to improve benefit to the environment while reducing impact to wetlands, riparian areas, wildlife, and other wildlife- and human-associated resources. In addition, the Park Service and CSLC have proposed a comprehensive set of impact avoidance and mitigation measures to be implemented as part of construction. These are described in more detail in the Mitigation and Monitoring Program report in Appendix B.

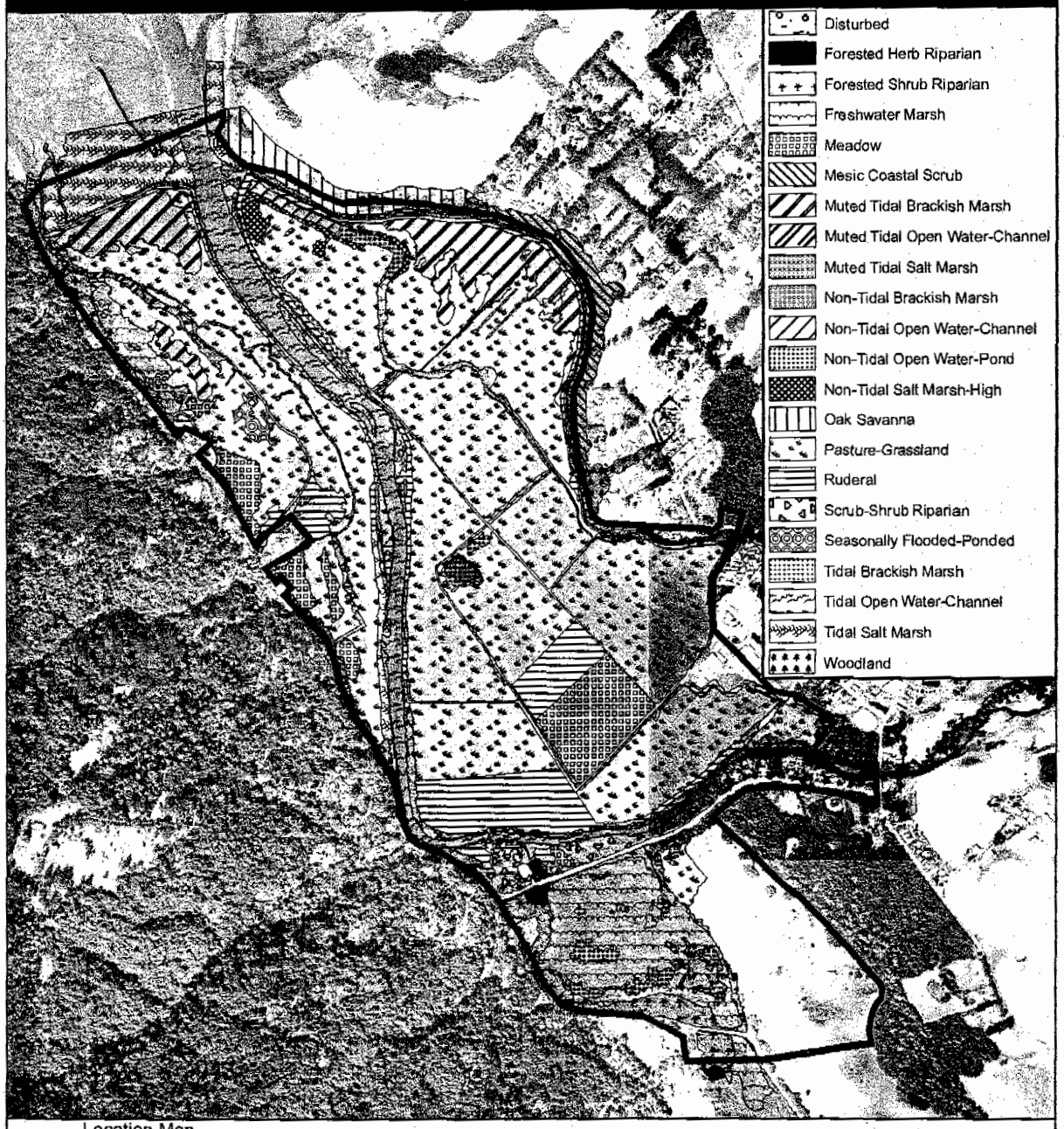


Figure 36

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TABLE 18. PRESENCE OF GENERAL WILDLIFE GROUPS, CLASS, OR ORDERS AND REPRESENTATIVE TAXA AND/OR SPECIES WITHIN SPECIFIC UNITS OF THE PROJECT AREA

Note: E: East Pasture; TC: Tomasini Creek; W: West Pasture; L: Lagunitas Creek; and O: Olema Marsh

General Groups, Class, or Orders	Representative Taxa or Species	E P	TC	W P	LC	O M
FISH						
Native Estuarine Fish-Resident	threespine stickleback, arrow goby, longjaw mudsucker, staghorn sculpin, prickly sculpin, **Tidewater goby, Tomales roach**	√	√ **TG**	√ **TG**	√ **TR**	√
Non-Resident Native Fish	Salmonids		√	√	√	?
	Starry flounder, topsmelt				√	
Non-Native Fish-Resident	Mosquitofish	√		√		
	yellowfin goby				√	
INVERTEBRATES						
Epibenthic Invertebrates	Gammarid amphipods		√	√	√	
Pelagic Invertebrates - Native	Mysid shrimp		√		√	
Pelagic Invertebrates – Non-native	Korean shrimp		√	√	√	
Benthic Invertebrates - Bivalves			√		√	
Macroinvertebrates - Native	Western shorecrab					
Macroinvertebrates – Non-Native	Green crab		√		√	
	crayfish	√		√		
AMPHIBIANS AND REPTILES						
Amphibians - Native	**California red-legged frog**	√	√	√		√
	Pacific tree frog	√	√	√	√	√
Amphibians – Non-Native	Bullfrog	√	√			√
Reptiles	**Northwestern pond turtle**	√	√	√	√	√
BIRDS						
Diving Ducks	Greater and lesser scaup, canvasback, buffleheads, ruddy	√			√	√
Dabbling Ducks	Mallards, gadwall, wigeon, teal, northern shoveler, wood ducks	√	√	√	√	√
Waterbirds	Cormorant, Virginia rails, sora, eared grebe, belted kingfisher, **California black rail, California clapper rail**			√ **B R**	√ **B R C R**	
Colonial Nesting Waterbirds	Herons, egrets,	√		√		
Shorebirds – Deep Probers	Dowitcher, greater yellowlegs, common snipe, willet	√		√		
Shorebirds – Shallow Probers	Dunlin, spotted sandpiper	√		√	√	
Passerines – Riparian/ Neotropical migrants	Swainson's thrush, warbling vireo, Wilson's warbler	√	√	√	√	√
Passerines –Riparian/ Resident	**Saltmarsh common yellowthroat,** Bewick's wren	√	√ **YT**	√ **YT**	√	√ **YT**
Passerines - Marsh	Marsh wren, red-winged blackbird, **Saltmarsh common yellowthroat**	√		√	√	√
Passerines - Grassland	Savannah sparrow, grasshopper sparrow, Western Meadowlark	√		√		
Raptors	Osprey, **American peregrine falcon,** White-tailed kite	√		√	√	?
Non-Native Birds	Turkeys, European starlings	√		√		
MAMMALS						
Small ground-dwelling mammals	Voles, gophers, shrews	√	√	√	√	
Bats		√	√	√	√	√
	Southwestern river otter	√	√	√	√	?
	Red fox	√		√		
	Black-tailed deer	√	√	√		

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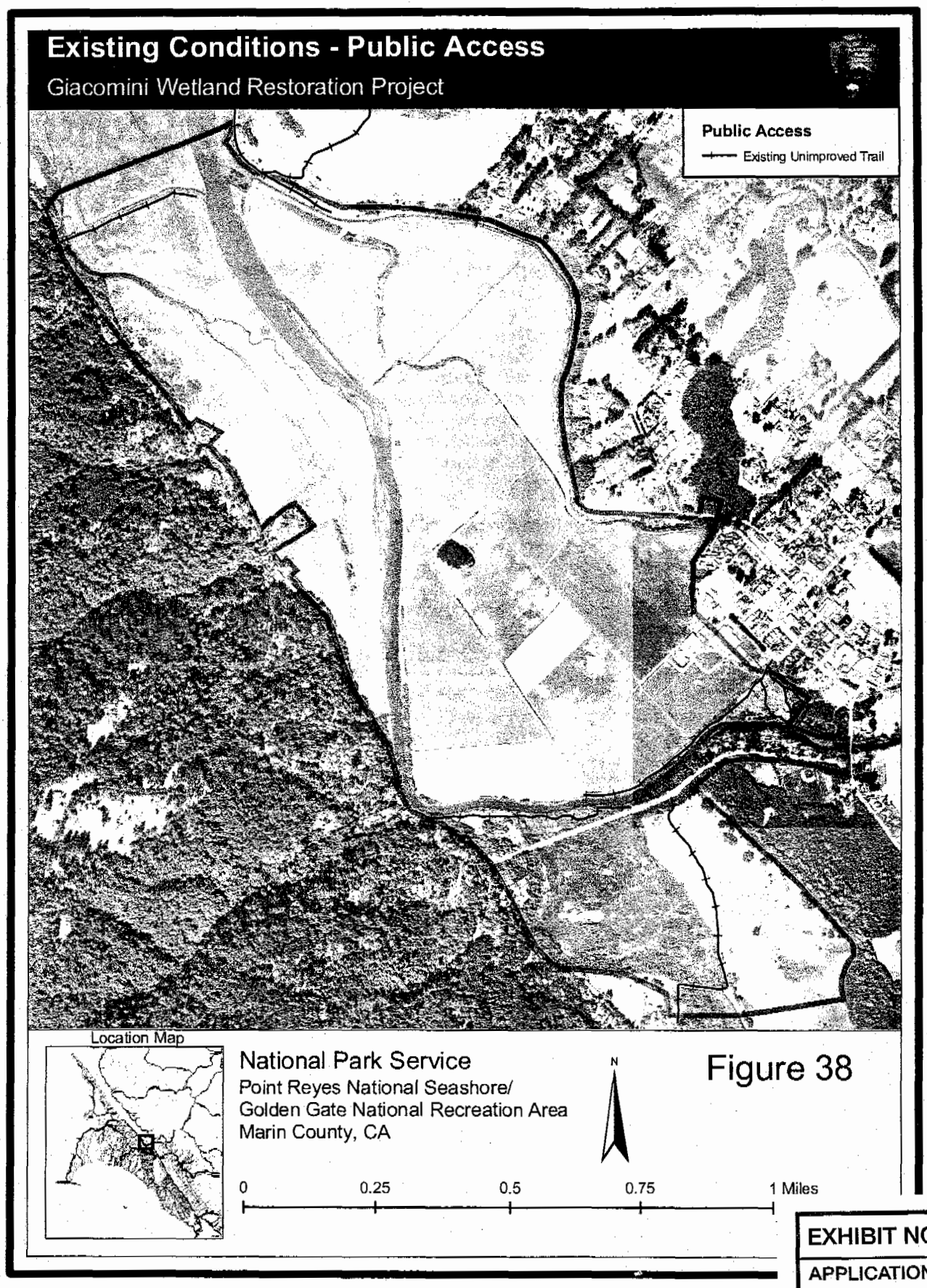

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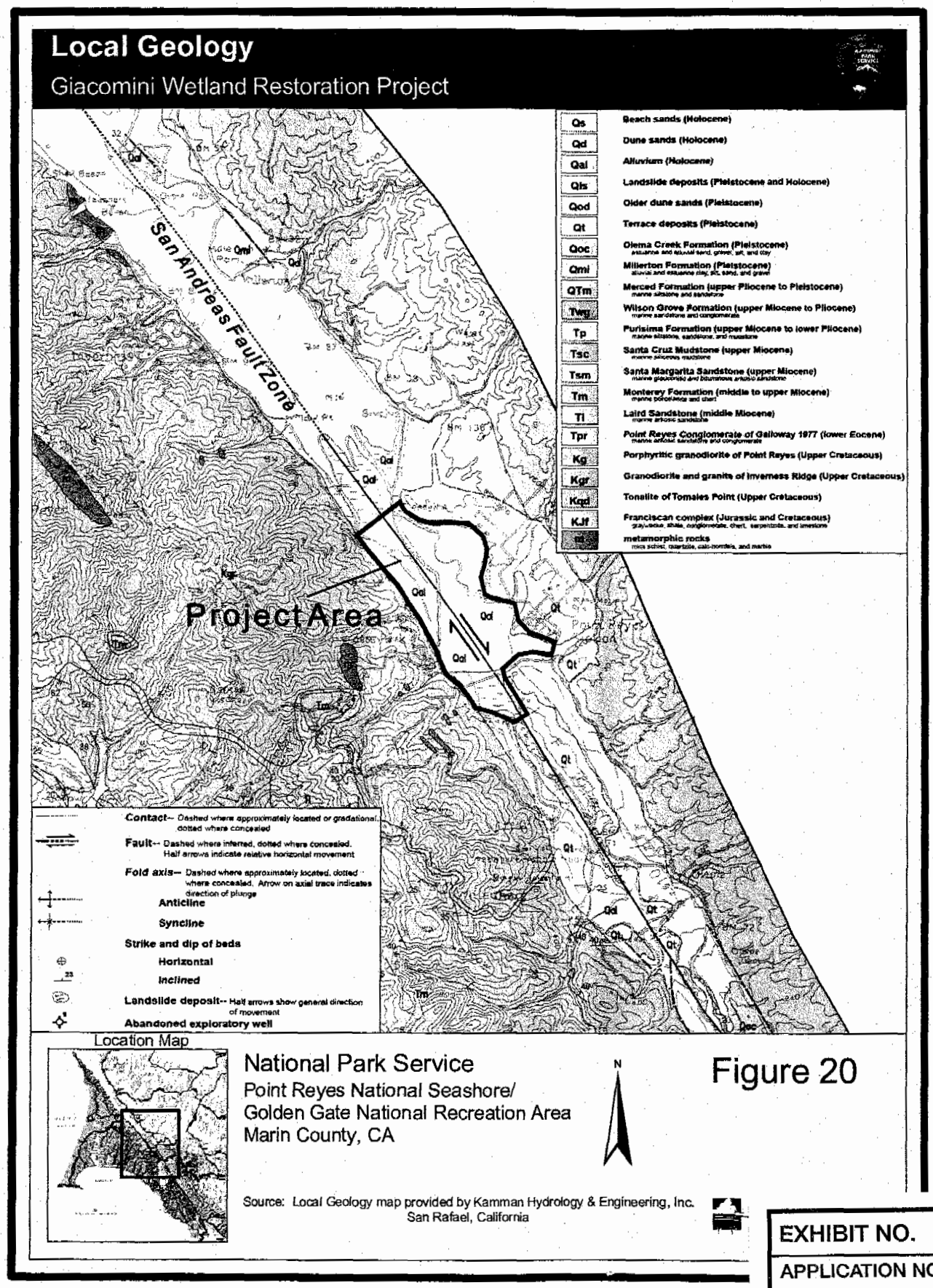

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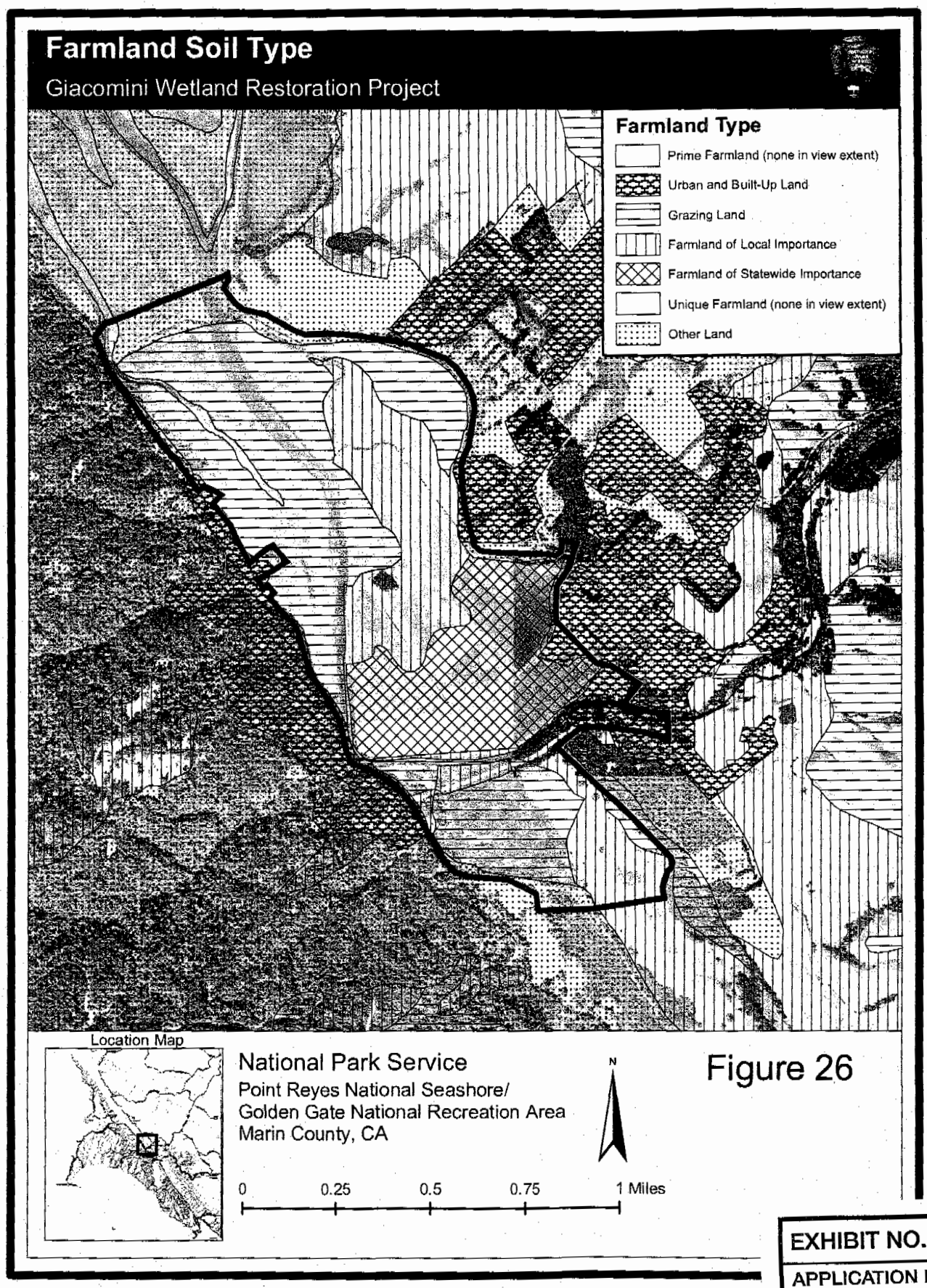

Figure 26

EXHIBIT NO. 21
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