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Th9b

MEMORANDUM

Date: September 11, 2013

To: Commissioners and Interested Persons

From: Alison Dettmer, Deputy Director
Bob Merrill, District Manager
Melissa Kraemer, Coastal Planner

Subject: Addendum to Commission Meeting for Thursday, September 12, 2013
North Coast District Item Th9b
CDP Application 1-13-009 (BCRAA, Del Norte County)

The purpose of this staff report addendum is to (1) summarize the recommendations of the August 30, 2013 staff report; (2) make substantive changes to the recommended special conditions and related findings in response to comments and concerns raised by the applicant and the public since publication of the staff report; (3) present and respond to public comments received since publication of the staff report; (4) make various non-substantive changes to the August 30, 2013 staff report, including typographical and other minor corrections and clarifications; and (5) present a new exhibit, Exhibit 22, which is attached to the end of this addendum packet that illustrates both the boundaries of the ecoregion recommended by staff for restoration mitigation and the location of land recommended by staff for acquisition mitigation.

Staff continues to recommend that the Commission approve the project with the special conditions included in the staff recommendation of August 30, 2013, as modified by the changes recommended herein.

I. Summary of Key Points of Staff Recommendation

Authorization as Repair and Maintenance

The proposed development is a repair and maintenance project because it does not involve an addition to or enlargement or expansion of the airport facility. The runways are not being extended or expanded, and the project will not in any way increase the capacity of the airport or the ability to accommodate larger or different aircraft. Rather, the proposed RSA improvements adjoining the ends and sides of the existing runways and the additional security fencing are

necessary to safely maintain the continued commercial use of the existing airport, which is currently substandard with respect to federally mandated safety requirements. Unless the airport brings its existing runways and security fencing into compliance with federally mandated safety standards by the end of 2015, the airport will lose its federal certification to operate as a commercial facility.

The applicant has the right to repair and maintain its airport facility. While many types of repair and maintenance are exempt from CDP requirements, the Coastal Act requires a CDP for extraordinary methods of repair and maintenance, such as the proposed project. In considering a permit application for an extraordinary method of repair or maintenance pursuant to Section 30610(d) of the Coastal Act and Section 13252 of the Commission regulations, the Commission reviews whether the proposed method of repair or maintenance is consistent with the Chapter 3 policies of the Coastal Act. The Commission's authority to regulate the proposed method of repair and maintenance to ensure that the methods are consistent with the Chapter 3 policies of the Coastal Act includes the authority to require mitigation for the adverse impacts resulting from the method of repair and maintenance. However, the Commission does not consider whether the existing underlying use or its impacts are consistent with the limitations of the Coastal Act.

Deadline for Submittal of Mitigation Plans

The airport is located at a site that contains significant wetland areas and significant environmentally sensitive dune and rare plant habitat. The project would result in a large amount of wetland fill, 16.9 acres, and would displace 4.5 acres of coastal dune habitat and affect populations of three rare plants. To mitigate for these impacts, the applicant proposes mitigation at various locations. The applicant's mitigation plans describe some locations where wetland, dune, and rare plant mitigation might occur as well as where acquisition of lands for mitigation purposes might occur, but the plans do not propose a final list of mitigation sites. Instead, the applicant proposes to submit a final mitigation plan for review by Commission staff after project approval by the Commission. As a result, the mitigation conditions of the staff recommendation are relatively complex. Instead of solely requiring needed changes to proposed mitigation activities at a specific location prior to approval of the CDP, in this case the special conditions set forth both criteria for the selection of mitigation sites as well as specific performance standards that the mitigation must meet. The Commission staff will rely on the criteria and performance standards established by the Commission to determine if the final mitigation plan submitted as part of condition compliance prior to the commencement of development is acceptable.

Requiring the applicant to develop a more complete mitigation plan detailing all of the proposed mitigation sites and mitigation activities prior to filing the application as complete and/or prior to Commission action on the project would have simplified the Commission's review of the project. However, given the extraordinary circumstances of this case, including the nature of the project as an essential public safety project, staff recommends that the Commission allow the applicant to determine the exact location of the mitigation sites as part of the final approved mitigation plan if: (1) the restoration sites are located within the same ecoregion as the habitat that would be impacted; (2) the final mitigation plan meets specified performance criteria, including criteria

that determines whether specific property qualifies as a mitigation site; (3) qualifying mitigation involving acquisition of property is confined to the area encompassing Pacific Shores, the surrounding area, and the historic footprint of Lake Earl; and (4) the final mitigation plan is submitted and approved prior to commencement of any development that would create the impacts being mitigated. See boundaries of mitigation generally depicted on Exhibit 22, attached as the last page of this addendum packet.

Because of funding and timing constraints, the applicant has expressed concerns about being able to develop complete mitigation plans satisfying the requirements of Special Conditions 3 and 7 prior to the commencement of development as required by the conditions. The applicant has indicated that construction on the project should commence in the spring of 2014 to ensure completion of the project by the end of 2015, as required by federal law. However, staff has allowed the Applicant to defer finalization of the required mitigation plans to the latest time permissible consistent with the limitations of CEQA. Further extending the time for submittal and approval of final mitigation plans beyond commencement of development would be inconsistent with the requirements of CEQA because a “project may not be undertaken without mitigation measures being in place to minimize any significant adverse effect on the environment of the activity.” Therefore, the final mitigation plans must be submitted and approved prior to the commencement of any development as required by recommended Special Conditions 3 and 7.

Required Mitigation Ratios

Staff believes that a combination of wetland creation and acquisition of lands in certain areas at an overall ratio of 4:1 for wetland impacts would best mitigate for the wetland fill impacts of the project. The staff recommends that offsite mitigation for the wetland fill impacts be provided in the form of both wetland creation of at least 16.9 acres of wetlands within the same coastal dune ecoregion where the airport exists to ensure no net loss of wetlands, with the balance of the acreage being provided either in the form of additional wetland creation and/or the acquisition of lands within the portion of the ecoregion that encompasses Lake Earl and other lands within the historic footprint of Lake Earl. Similarly, staff believes the impacts to 4.5 acres of coastal dune habitat be mitigated at an overall ratio of 3:1 in the form of direct restoration of at least 4.5 acres of coastal dune habitat, with the balance of the mitigation provided in the form of acquisition for preservation of other dune habitat in the ecoregion. Acquisition of lands for preservation as mitigation for either wetland or dune impacts would be given varying degrees of credit for mitigation proportional to the amount of wetland or dune habitat that exists within a given parcel acquired.

Limitations on Location of Mitigation

The wetlands and associated natural resources of Lake Earl and its environs were identified by the Department of Fish & Game (now CDFW) in 1974 as one of the 19 coastal wetlands included in a report entitled “Acquisition Priorities for Coastal Wetlands of California” in recognition of its extraordinary habitat values. As noted in the Commission’s ecologist’s, Dr. John Dixon’s memorandum attached as Exhibit 16 of this report, the dune-wetland complex that defines this ecological region is exceptional in its biological diversity, supporting over 250 species of birds, 50 species of mammals, and at least 16 species of reptiles and amphibians. The

area is especially critical for the many thousands of wading birds and shorebirds that rely on the resources of the Lake Earl Wildlife Area during the annual migration.

The Pacific Shores Subdivision is part of the dune-wetland complex associated with Lake Earl. The habitat that exists on the undeveloped lands within the Pacific Shores Subdivision is ecologically extremely valuable and a salient part of the dune-wetland ecosystem. Many of the surrounding lands and a patch-work of more than half of the 1,500+ half-acre lots within the Pacific Shores Subdivision have already been acquired and included within the CDFW's Lake Earl Wildlife Area. Other surrounding lands have been acquired and included within Tolowa Dunes State Park. Staff believes that the acquisition for preservation of a significant number of the remaining private lots within Pacific Shores would consolidate protected lands into a more continuous habitat area, thereby enhancing its overall habitat values and enabling comprehensive management of the area together with the existing lands at the Lake Earl Wildlife Area and Tolowa Dunes State park to maximize habitat values. Staff also believes that acquisition of lands below the 14-ft elevation within the historic footprint of Lake Earl and directly adjoining the Lake would protect the significant area of existing wetlands, and would provide potential over time for the restoration of degraded wetlands and surrounding areas. Therefore, given the unique biological resources of the Lake Earl dune-wetland complex and the existing land management framework in the area provided by the Lake Earl Wildlife Area and Tolowa Dunes State Park, staff believes that the acquisition for preservation of lands within the heart of the Lake Earl dune-wetland complex at Pacific Shores and within the historic footprint of Lake Earl would provide extraordinary habitat preservation benefits that would be suitable for mitigating for the temporal loss of habitat values between the time of project impact and the mitigation of the habitat that is required to ensure no net loss of these resources.

Staff has prepared Exhibit 22, included as the last page of this addendum packet, to better illustrate the boundaries of the ecoregion staff is recommending for mitigation restoration and the boundaries of the area staff is recommending for acquisition.

II. Revisions to Special Conditions & Exhibits

Staff is recommending various modifications to special conditions 3 through 11 and to special condition 13 of the August 30, 2013 staff report as well as the addition of one new special condition (Special Condition 15, related to requiring a fence design in response to comments from Bradford Norman and others). The recommended changes include adding clarifying information and corrections and incorporating suggestions received from the applicant and from public comments. The reasons for the recommended changes are given where appropriate. Text to be deleted is shown in ~~strike through~~, and text to be added appears in **bold double-underline**.

- ❖ ***Add Exhibit 21 (Additional public comments received after publication of the staff report) and Exhibit 22 (Recommended mitigation areas) to the exhibit list on page 5.***
- ❖ ***Make the following changes to the respective sections of Special Conditions 3 and 7, beginning on pages 7 and 15 respectively.*** Note, for simplification and brevity purposes, only Special Condition 3 and related changes are shown below, but all of the same

recommended changes also apply to the corresponding sections of Special Condition 7, except for the changed exhibit reference in subsection (ii) below.

3. Revised Final Wetland Mitigation Plan

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall submit, for the review and written approval of the Executive Director, a revised final Wetland Mitigation Plan prepared by a qualified wetland biologist or ecologist. The revised final plan shall substantially conform, in applicable part, to the plans and concepts provided in the project description included in the July 2013 CDP application update and in the plans entitled "Runway Safety Area Mitigation and Monitoring Plan, Option 1: Pacific Shores Road Removal" (dated June 2013) and "Runway Safety Area Conceptual Mitigation and Monitoring Plan" (dated August 2013), all prepared by GHD for the Border Coastal Regional Airport Authority, except the revised final plan shall be revised to include, at a minimum, the following:
- i. **Wetland mitigation ratios and credits:** The revised final wetland mitigation plan shall incorporate the wetland mitigation ratios, criteria, and credits detailed in Special Condition 4 and provide for wetland mitigation consistent with those wetland mitigation ratios, criteria, and credits.
 - ii. **Final design plans:** The final plan shall include ~~final~~ **mitigation** designs and analyses for reestablishing or creating wetland habitat as required by this condition, including: (1) goals, ~~objectives~~ **objectives**, and performance standards for the mitigation; (2) dimensioned, to-scale mapping of compensatory wetlands sites, including the on-site wetland restoration areas; (3) baseline ecological assessments of the mitigation areas; (4) existing and proposed hydrologic, soil, and vegetative conditions at the mitigation and restoration sites; (5) engineering/grading plans and schedule; (6) drainage plans, including, if applicable, plans demonstrating adequate conveyance of stormwater and/or waters of Lake Earl away from private properties; (7) erosion control plans and schedule; (8) weeding plans and schedule; (9) planting plans and schedule; (10) short- and long-term irrigation needs; (11) on-going maintenance and management plans; (12) implementation plans demonstrating there is sufficient scientific expertise, supervision, and financial resources to carry out the proposed project and monitoring program in a specified and realistic time frame; (13) provisions for submittal of initial as-builts within 30 days of completion of the initial mitigation/restoration work; (14) monitoring, reporting, and remediation plans consistent with the requirements of Special Condition 35. **Final plans for contractor construction of the mitigation area(s) shall be submitted prior to commencement of construction of mitigation area(s).**
 - iii. **Evidence of sufficient property interest to perform wetland reestablishment or creation:** The final plan shall include evidence, for each proposed wetland reestablishment or creation site, that the permittee has obtained sufficient property interests in the site(s) to be able to perform the proposed wetland reestablishment or creation and subsequent monitoring and maintenance of the wetland(s) as

conditioned herein. **Such evidence may include an option to buy, amended purchase agreement or other similar legal instrument.**

- iv. **Protection of mitigation sites:** Evidence, in a form and content acceptable to the Executive Director, that ~~the owner of~~ each identified wetland reestablishment or creation site(s), other than the 3.9-acre wetland reestablishment site on the airport property along the sides of the runways, ~~has~~ either **will be** transferred ~~the property~~ in fee to the California Department of Fish and Wildlife's Wildlife Conservation Board, **who is statutorily authorized to hold property for fish and wildlife conservation purposes** or **the landowner of the site has** executed an irrevocable offer to dedicate, to a public agency or private association acceptable to the Executive Director, an easement **or fee title property interest** for habitat restoration, habitat maintenance, open space, and habitat protection over the mitigation site, either alternative consistent with the recordation requirements of Special Condition 13.
- v. **Coastal development permit approvals:** The final plan shall include evidence that all necessary coastal development permit authorizations from Del Norte County and/or the Commission have been obtained for each proposed wetland reestablishment or creation site, except for development of the 3.9-acre wetland area to be reestablished on-site along the sides of the existing runways, which is authorized herein pursuant to the specific performance criteria identified in Special Condition 5.
- vi. **Other approvals:** The final plan shall include evidence that all necessary approvals from other agencies and local governments have been obtained for development of each of the wetland reestablishment or creation sites.
- vii. **Evidence of acquisition of qualifying land for mitigation acquisition:** The final plan shall identify the location and size of each property acquired **or to be acquired** as qualifying land to be applied to satisfying the total required wetland mitigation acreage and provide a legal description and map of the property and provide evidence that title to the property has been **or will be** acquired by the permittee.
- viii. **Wetland delineations of qualifying land for mitigation acquisition.** The final plan shall include a wetland delineation of each property acquired **or to be acquired** as qualifying land to be applied to satisfying the total required wetland mitigation acreage that documents the percentage of each property that delineates as coastal wetland as determined by evidence of wetland hydrology and a preponderance of hydrophytes.
- ix. **Provisions for transfer of qualifying land for mitigation acquisition.** The final plan shall include provisions for transfer of qualifying land acquired for use as qualifying mitigation acreage to the approved accepting entity for long-term protection and management consistent with Special Conditions 4 and 13 within one year of acquisition for property that will not be used for mitigation creation and within one year of completion of wetland creation for property that will be utilized for wetland creation. This one-year deadline may be extended by the Executive Director for good cause.

- B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

Reasons for recommended changes: The changes include corrections and clarifications, including clarifying language to emphasize that (a) the final mitigation plan required by the special condition need not include the plans and specifications that the contractor will use for actual construction of mitigation sites, which instead may be submitted prior to the development of the mitigation areas.

- ❖ *Make the following changes to Subsections B and C of Special Conditions 4 and 8, beginning on pages 10 and 17 respectively.*

4. **Wetland Mitigation Ratios, Qualifying Mitigation Acreage, and Credits.** The permittee shall provide wetland mitigation for the wetland impacts of the approved development consistent with the following mitigation ratios, qualifying criteria, and credits:

... ..

B. Criteria for qualifying mitigation acreage:

- i. The qualifying mitigation acreage shall include the reestablishment or creation of a minimum of 16.9 acres of palustrine emergent coastal wetlands, assuming that the 3.9 acre portions of the palustrine emergent wetlands reestablish on-site at the airport as proposed and subject to the requirements of Special Condition 5. **The minimum of 16.9 acres of reestablished or created wetlands shall be within the same coastal dune ecoregion that extends from the mouth of the Smith River to Point Saint George as generally depicted on Exhibits 2 and 16.** Qualifying mitigation acreage involving reestablishment or creation of wetlands shall meet the following criteria:
 - (a) The wetland mitigation shall not result in the conversion of agricultural lands to nonagricultural uses;
 - (b) The wetland mitigation site(s) shall be located adjacent to, or shall be capable of being functionally connected to, existing natural wetlands;
 - (c) The wetland mitigation shall not interfere with the ability of surrounding private property owners to physically access their properties; and
 - (d) The wetland mitigation site(s) shall not result in the conversion of any existing environmentally sensitive habitat area or wetland. Existing wetlands may be enhanced, but only the portions of the wetland mitigation site(s) that do not contain existing wetlands shall be credited towards the required mitigation reestablishment or creation acreage.

- ii. The balance of the qualifying mitigation acreage beyond that provided in the form of reestablishment or creation of palustrine emergent coastal wetlands may include additional creation of qualifying palustrine emergent coastal wetlands as set forth above or the acquisition of qualifying land based on the credits listed in subsection (C) below. Qualifying land for mitigation acquisition shall meet the following criteria:
 - (a) Located within or immediately adjacent to the Pacific Shores Subdivision or within the historic footprint of Lake Earl within the 12-foot contour. Only the portions of parcels actually within the 12-foot contour of Lake Earl maybe credited as qualifying land;
 - (b) Locally designated and zoned for uses other than ~~agriculture~~, public access, natural resources, visitor serving, or coastal dependent uses;
 - (c) **Acquisition shall not result in a conversion of agricultural land to nonagricultural uses;**
 - (d) Acquired from willing sellers only and for transfer to an entity approved by the Executive Director for long-term protection and management within one year of acquisition or whatever additional time may be granted by the Executive Director for good cause; and
 - (e) Acquisition and subsequent transfer of the land to the approved accepting entity shall not interfere with the ability of any other private property owner to physically access their property.
- C. **Credits for use of acquired “qualifying land” as qualifying mitigation:** The acquisition of qualifying land shall be applied to satisfying the total wetland mitigation acreage required to be provided by subsection (A) above according to the following set of credits:
 - i. Acquisition of qualifying land that is approximately one-half acre in size and which delineates as greater than 75% coastal wetlands by area shall be credited at half (50%) of qualifying mitigation acreage such that for each acquired half-acre of qualifying land that contains at least 75% coastal wetlands by area, one-quarter-acre of mitigation credit shall be applied to the calculation of the target mitigation acreage required;
 - ii. Acquisition of qualifying land that is approximately one-half acre in size and which delineates between >50% to 75% coastal wetlands by area shall be credited at 40% of qualifying mitigation acreage;
 - iii. Acquisition of qualifying land that is approximately one-half acre in size which delineates between >25% to 50% coastal wetlands by area shall be credited at 30% of qualifying mitigation acreage;
 - iv. Acquisition of qualifying land that is approximately one-half acre in size and which delineates between 5% and 25% coastal wetlands by area shall be credited at 20% of qualifying mitigation acreage;
 - v. Acquisition of qualifying land that is approximately one-half acre in size and which delineates <5% coastal wetlands by area shall be credited at 20% of qualifying mitigation acreage if land is contiguous with larger wetlands outside the parcel; and

- vi. Acquisition of qualifying land that is larger than approximately one-half acre in size shall be credited at one fifth (20%) of qualifying mitigation acreage **if land is contiguous with larger wetlands outside the parcel.**

8. ESHA Mitigation Ratios, Qualifying Mitigation Acreage, and Credits. The applicant shall provide ESHA mitigation for the coastal dune and coastal prairie impacts of the approved development consistent with the following mitigation ratios, qualifying criteria, and credits:

... ..

B. Criteria for qualifying mitigation acreage:

- i. The qualifying mitigation acreage shall include the substantial restoration or enhancement of a minimum of 4.5 acres of coastal dune and/or coastal prairie habitats on the airport property and Point Saint George, subject to the requirements of Special Conditions 6 (revised final western lily enhancement plan) and 10 (final rare plant mitigation plan). Qualifying mitigation acreage involving reestablishment or creation of wetlands shall meet the following criteria:
 - (a) The dune/prairie mitigation shall not result in the conversion of agricultural lands to nonagricultural uses;
 - (b) The dune/prairie mitigation site(s) shall be located adjacent to existing natural dune and/or prairie habitat;
 - (c) The dune/prairie mitigation sites shall not result in the conversion of existing forest ESHA, **except removal of young and scattered forest trees may be permitted near forest margins;** and
 - (d) The mitigation shall not interfere with the ability of surrounding private property owners to physically access their properties;
- ii. The balance of the qualifying mitigation acreage beyond that provided in the form of reestablishment or enhancement of coastal dune and prairie habitats may include the acquisition of qualifying land based on the credits listed in subsection (C) below. Qualifying land for mitigation acquisition shall meet the following criteria:
 - (a) Located within or immediately adjacent to the Pacific Shores Subdivision or within the historic footprint of Lake Earl within the ~~12~~ **14**-foot contour. Only the portions of parcels actually within the ~~12~~ **14**-foot contour of Lake Earl maybe credited as qualifying land;
 - (b) Locally designated and zoned for uses other than ~~agriculture~~, public access, natural resources, visitor serving, or coastal dependent uses;
 - (c) **Acquisition shall not result in a conversion of agricultural land to nonagricultural uses;**
 - (d) Acquired from willing sellers only and for transfer to an entity approved by the Executive Director for long-term protection and management within one year of acquisition or such additional time that the Executive Director may grant for good cause; and

- (e) Acquisition and subsequent transfer of the land to the approved accepting entity shall not interfere with the ability of any other private property owner to physically access their property.

C. Credits for use of acquired “qualifying land” as qualifying mitigation: The acquisition of qualifying land shall be applied to satisfying the total ESHA mitigation acreage required to be provided by subsection (A) above according to the following set of credits:

- i. Acquisition of qualifying land that is approximately one-half acre in size and which contains greater than 75% native flowering plants relative cover shall be credited at half (50%) of qualifying mitigation acreage such that for each acquired half-acre of qualifying land that contains at least 75% native flowering plants relative cover, one-quarter-acre of mitigation credit shall be applied to the calculation of the target mitigation acreage required by subsection (a) herein;
- ii. Acquisition of qualifying land that is approximately one-half acre in size and which contains between >50% to 75% native flowering plants relative cover shall be credited at 40% of qualifying mitigation acreage;
- iii. Acquisition of qualifying land that is approximately one-half acre in size which contains between >25% to 50% native flowering plants relative cover shall be credited at 30% of qualifying mitigation acreage;
- iv. Acquisition of qualifying land that is approximately one-half acre in size and which contains between 5% and 25% native flowering plants relative cover shall be credited at 20% of qualifying mitigation acreage; and
- v. Acquisition of qualifying land that is approximately one-half acre in size and which contains 5% native flowering plants relative cover shall be credited at 20% of qualifying mitigation acreage if land is contiguous with larger dune or prairie habitats outside the parcel;
- vi. Acquisition of qualifying land that is larger than approximately one-half acre in size shall be credited at one fifth (20%) of qualifying mitigation acreage **if land is contiguous with larger dune or prairie habitats outside the parcel.**

Reasons for recommended changes: The changes include corrections and clarifications, including clarifying language in subsection B(ii) of both special conditions to allow for the acquisition of agricultural lands to qualify for mitigation purposes provided that the acquisition and subsequent transfer of lands would not result in a conversion of agricultural land to nonagricultural uses. For example, many of the agricultural lands in the Lake Earl area serve both agriculture and wildlife habitat uses. Management of the lands may involve strategically timed livestock grazing to enhance Aleutian cackling goose habitat. In addition, subsection C(vi) of both special conditions has been clarified to add the inadvertently omitted qualifier that mitigation credit will only be given for the acquisition of larger parcels if those parcels are contiguous with wetlands (in the case of Special Condition 4) or dunes (in the case of Special Condition 8) outside of the parcel. Finally, Special Condition 8(B) is modified to allow for the limited removal of woody forest species that do not constitute environmentally sensitive forest habitat.

- ❖ ***Make the following changes to Special Condition 6, beginning on page 13:*** Though not shown below, the recommended changes also include changes to the subsection numbering as needed and minor changes to punctuation.

6. Revised Final Western Lily Habitat Enhancement Plan

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall submit, for the review and written approval of the Executive Director, two copies of a revised final plan for implementing western lily habitat enhancement activities on Point Saint George to address partial mitigation for coastal prairie impacts associated with the development authorized under this CDP. The revised final plan shall be a stand-alone document with associated figures, maps, and plans and shall include provisions for all of the following:
- i. Specification that vegetation removal enhancement activities within 5.2 acres of “mixed tree-shrub thicket” habitat as mapped in Exhibit 7 shall be the only enhancement acreage of the 14-acre enhancement area applied to satisfying the required 3-to-1 coastal prairie ESHA mitigation ratio, and it shall be applied at a mitigation credit of 50%, such that for each acre of vegetation removal enhancement activities within “mixed tree-shrub thicket” habitat, one-half-acre of mitigation credit shall be applied to the calculation of the target 3:1 mitigation acreage;
 - ii. Specification that vegetation removal using hand tools, power hand tools, and low ground pressure vehicles are is the only habitat enhancement method authorized by this coastal development permit. Implementation of any other habitat enhancement methods or vegetation treatment methods in the area shall not occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required;
 - iii. Documentation that only hand tools shall be used for vegetation removal within 25 feet of western lily occurrences and potential occurrences;
 - iv. Submittal of a description of and schedule for field activities, including annual surveys, vegetation removal activities, and spoils disposal details;
 - v. Submittal to the Executive Director of final mitigation and monitoring plans for initial and long-term vegetation removal enhancement measures approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife;
 - vi. As recommended by the U.S. Fish and Wildlife Service and consistent with the applicant’s proposed project, establishment of a conservation easement or fee title interest in property consistent with the requirements of Special Condition 13 to allow for the long-term resource management and conservation of the habitat area.
 - vii. Annual submittal to the Executive Director, prior to initiation of vegetation removal activities in the area in any given year of the enhancement program, of survey results, completed by a qualified botanist approved by the U.S. Fish and Wildlife Service and California Department of Fish and Game, identifying areas with western lily and/or western lily suitable habitat to be flagged for buffer and avoidance pursuant to subsection (viii) below during vegetation removal activities;

- viii. Establishment, using temporary flagging, of a minimum 25-foot-radius buffer area around any western lily plants or western lily potential habitat identified in the pre-treatment surveys ~~discussed in subsection (iv) above~~ prior to commencement of vegetation removal activities in any given year of the enhancement program;
 - ix. Submittal to the Executive Director of a long-term vegetation maintenance plan for the western lily enhancement area agreeable to the U.S. Fish and Wildlife Service, California Department of Fish and Game, the airport's maintenance operations, and Del Norte County;
 - x. Submittal to the Executive Director of a revised Airport Layout Plan labeling the 14-acre western lily enhancement area as an environmentally sensitive area unavailable for development and restricted from vegetation clearance except for western lily habitat enhancement purposes as authorized under this approved final plan and for compliance with Federal Aviation Regulation obstruction removal requirements authorized under a future coastal development permit;
 - xi. Submittal to the Executive Director of all survey and mapping monitoring results associated with the approved mitigation activities by December 31 of each year throughout the duration of the 5-year mitigation and monitoring period, including a survey for western lily over the entire enhancement area at the end of the 5-year monitoring period; and
 - xii. Submittal to the Executive Director of a final monitoring report at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified botanist or ecologist. The report must evaluate whether the mitigation site conforms to the goals, and objectives, ~~and performance standards~~ set forth in the approved final mitigation program. The report must address all of the monitoring data collected over the five-year period.
- B. If the final report indicates that the planned removal of woody vegetation project has been unsuccessful, in part, or in whole, based on the approved goals and objectives ~~performance standards~~, the applicant shall submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
- C. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

Reasons for recommended changes. The applicant requested the changes shown to subsections (A)(ii), (A)(x), and (B), which staff believes are appropriate. Subsections (A)(ii) and (A)(iii) are added for consistency with the recommendations of the U.S. Fish and Wildlife Service. Subsection (A)(iv) had been inadvertently omitted from the condition in the original staff report and is an important and necessary component of a complete final enhancement plan. The requirement added to the end of subsection (A)(xi) for comprehensive western lily surveys over

the entire enhancement area at the end of the 5-year monitoring period was added at the request of the U.S. Fish and Wildlife Service. The changes to subsection (A)(x) are incorporated to allow for removal of vegetation that must be removed to achieve compliance with FAA regulations provided further coastal development permit authorization for the removal is obtained first.

❖ ***Make the following changes to Special Condition 10, beginning on page 20:***

10. Rare Plant Mitigation Plan

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the applicant shall submit, for the review and written approval of the Executive Director, a rare plant mitigation plan that compensates for the loss of 0.3-acre of short-leaved evax (*Hesperis matronalis* var. *brevifolia*), sand dune phacelia (*Phacelia argentea*), and Del Norte buckwheat (*Eriogonum nudum* var. *paralinum*) within the project footprint. The plan shall demonstrate and include the following:
- i. An updated preconstruction rare plant survey estimating number of rare plant individuals to be impacted by construction activities;
 - ii. Quantitative and qualitative success standards that assure achievement of the approved mitigation goals and objectives of eradicating *Ammophila arenaria* from an approximately 0.4-acre on the airport property immediately north of runway 29 and east of runway 17 and for salvaging, relocating, reestablishing, and planting native dune plants and seeds in the enhancement area, including short-leaved evax, sand dune phacelia, and Del Norte buckwheat. Success standards shall include the following:
 - (1) For perennial species, at least three times the number of individuals lost shall be present at the mitigation site,
 - (2) For annual species, the cumulative number of flowering adults with viable seed present during the 5-year monitoring period shall be at least three times the number of individuals lost;
 - (3) For each species, there shall be evidence of natural recruitment by the end of the 5-year monitoring period; **and**
 - (4) Plant species diversity and native vegetative cover shall be similar to undisturbed areas of dune mat vegetation.
 - iii. Methodologies for (1) weed eradication, (2) plant **and seed** salvaging **and/or seed collection** from impact areas, storage, and relocation, and (3) planting and seeding of supplemental native dune plants in the area;

...

Reasons for recommended changes. The applicant requested the changes shown, which staff believes are appropriate. The changes relate to the available methods for harvesting short-leaved evax seeds, including harvesting the seed bed, since it won't be possible to salvage any evax plants, which are annuals, from the impact zone.

- ❖ ***Make the following changes to Special Condition 11, beginning on page 22:*** Though not shown below, the recommended changes also include changes to the subsection numbering as needed.

11. Construction Responsibilities. The authorized development shall be implemented consistent with the following construction-related responsibilities. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the applicant shall submit, for the review and written approval of the Executive Director, evidence that all of the following construction-related water quality and wildlife protection measures have been incorporated into the final construction plans, Stormwater Pollution Prevention Plan (SWPPP), and erosion and sediment control plans for the project:

- A. The permittee shall ensure that all on-site workers and contractors understand and agree to observe the standards for work outlined in this permit and in the detailed project description included as part of the application submittal and as revised by these conditions;
- B. Prior to commencement of ground-disturbing activities, appropriate erosion, sediment, and runoff control measures shall be deployed in accordance with the final SWPPP and erosion control plans, and all measures shall be properly maintained throughout the duration of construction activities;
- C. Vegetation clearing and ground disturbance associated with the authorized fence installation on the west side of the airport shall be minimized;
- D. Fence installation shall be restricted to the latter part of the dry season (July through October) and to periods when the ground is driest to minimize wetland soil compaction during installation activities;
- E. Alaska violet plants and other identified rare plants adjacent to the fence construction area as shall be flagged for avoidance by a qualified botanist prior to commencement of installation of the new securing/wildlife fencing;
- F. Construction activities shall be limited to the latter part of the dry season (July through October) to avoid disturbance to breeding northern red-legged frogs;
- G. No more than one week prior to commencement of ground disturbance in a particular work area, a qualified biologist shall survey the ground-disturbance area for northern red-legged frog and western pond turtle and shall coordinate with California Department of Fish and Wildlife staff to relocate any animals that occur within the work impact zone to nearby suitable habitats;
- H. Soil stabilization BMPs shall be implemented on graded or disturbed areas as soon as feasible where there is a potential for soil erosion to lead to discharge of sediment off-site or to coastal wetlands or waters;
- I. Any construction vehicle or equipment cleaning, fueling, and/or maintenance conducted on site shall take place only at a designated areas located at least 100 feet from coastal wetlands and waters, drainage courses, and storm drain inlets;
- J. Construction vehicle and equipment fueling areas shall be designed to fully contain any spills of fuel, oil, or other contaminants. Equipment that cannot be feasibly

- relocated to a designated fueling area (such as cranes) may be fueled and maintained in other areas of the site, provided that procedures are implemented to fully contain any potential spills;
- K. Stockpiled materials shall be stored a minimum of 100 feet from coastal wetlands, waters, concentrated stormwater flows or drainage courses, and storm drain inlets;
 - L. Disturbed areas shall be revegetated and/or reseeded with native plants only and with species that currently occur in the Point Saint George ecoregion. No plant species listed as problematic and/or invasive by the California Native Plant Society, the California Invasive Plant Council, or as may be identified from time to time by the State of California, shall be employed or allowed to naturalize or persist on the site. No plant species listed as a “noxious weed” by the governments of the State of California or the United States shall be utilized for erosion control, revegetation, landscaping, or other purposes;
 - M. The use of rodenticides containing any anticoagulant compounds, including but not limited to, Warfarin, Bromadiolone, Brodifacoum, or Diphacinone, is prohibited; ~~and~~
 - N. To minimize wildlife entanglement and plastic debris pollution, the use of temporary rolled erosion and sediment control products with plastic netting (such as polypropylene, nylon, polyethylene, polyester, or other synthetic fibers used in fiber rolls, erosion control blankets, and mulch control netting) is prohibited. Any erosion-control associated netting shall be made of natural fibers and constructed in a loose-weave design with movable joints between the horizontal and vertical twines.
 - O. Construction activities ~~are~~ **shall be** restricted to the access, staging, stockpiling, and other work sites identified on the approved plans (Exhibits 5-7) to avoid impacts to adjacent environmentally sensitive habitat areas that occur on and around the airport property. **Prior to commencement of construction, the limits of the work areas and staging areas shall be delineated with temporary fencing in cooperation with a qualified biologist, limiting the potential areas affected by construction and ensuring that all wetland and other environmentally sensitive habitats adjacent to construction areas are avoided during construction. All vehicles and equipment shall be restricted to pre-established work areas and haul routes and to established or designated staging areas.**

Reasons for recommended changes. The changes are in response to public comments received recommending that western pond turtle protective measures be incorporated into the project. The changes also include protection measures for northern red-legged frog identified in the final CEQA document prepared for the project. The recommended changes were discussed with the applicant, and the applicant agrees with the changes.

❖ *Make the following changes to Special Condition 13, beginning on page 23:*

13. Habitat Conservation Easement or Transfer in Fee Title

- A. No development, as defined in section 30106 of the Coastal Act shall occur within any mitigation site required by the special conditions herein except for:
- i. The authorized development that is approved by this permit; and
 - ii. The following development, if approved by the applicable local government or as applicable, the Coastal Commission as an amendment to this coastal development permit: (a) additional habitat enhancement and restoration activities such as grazing or fire treatments, and (b) mitigation activities approved under Special Conditions 3, 5, 6, 7, 9 and 10.
- B. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the Permittee shall either
- i. (i) ensure that the landowner executes and records a document in a form and content acceptable to the Executive Director, irrevocably offering to dedicate to a public agency or private association approved by the Executive Director an open space and conservation easement or fee title interest in property for the purpose of habitat restoration, habitat maintenance, open space, and habitat protection ~~Such easement shall be located over the mitigation areas required pursuant to Special Conditions 3, 6, and 7, other than the 3.9-acre wetland reestablishment site on the airport property along the sides of the runways.~~ or
 - ii. (ii) provide evidence of transfer of fee title to the California Department of Fish and Wildlife, Wildlife Conservation Board consistent with subsection (C) below.
 - iii. (iii) The recorded document shall include legal descriptions and graphic depictions prepared by a licensed surveyor of both the ~~applicant~~ landowners's entire parcel and the ~~easement~~ restricted area. The recorded document shall also reflect that development ~~in the easement area(s)~~ is restricted as set forth in this permit condition.
 - iv. (iv) The offer shall be recorded free of prior liens and encumbrances which the Executive Director determines may affect the interest being conveyed. The offer shall run with the land in favor of the People of the State of California, binding all successors and assignees, and shall be irrevocable for a period of 21 years, such period running from the date of recording.
 - v. (v) The recorded document shall: (1) permit the ~~applicant~~ permittee, its agents, and/or the accepting agency to enter the property when necessary to create and maintain habitat, revegetate portions of the area, and fence the newly created/revegetated area in order to protect such habitats; and (2) permit the Coastal Commission staff to enter and inspect for purposes of determining compliance with Coastal Development Permit 1-13-009.
- C. As an alternative to the Dedication Requirements of Conservation Easement Required in Subsection B Special Conditions 3, 6, and 7 above, the permittee may provide evidence, subject to the review and approval of the Executive Director, that the particular mitigation site will be transferred in fee to the California Department of Fish and Wildlife, Wildlife Conservation Board, who is statutorily authorized to hold property for fish and wildlife conservation purposes, for the purposes

identified in the applicable Special Conditions 3, 6 and 7 and consistent with all conditions of this permit and the statutory requirements governing Wildlife Conservation Board acquisitions.

Reasons for recommended changes. All of the changes were made for clarification purposes and to fix the condition formatting.

❖ *Add Special Condition 15:*

15. Final Fencing Plans

- A. Prior to installation of the new security/wildlife fence authorized by this coastal development permit, the permittee shall provide to the Executive Director a copy of final fencing plans demonstrating that minimum 6-inch gaps are maintained between ground level and the bottom of the fence above depressional areas throughout the length of the fenceline to allow for continued passage between habitats by small wildlife species.
- B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

Reasons for recommended added condition. The changes are in response to public comments received recommending that the fencing be designed to allow for passage by small animals such as western pond turtle. Six inches is the maximum allowable gap size for compliance with FAA security regulations and effectiveness at keeping deer off of runway areas.

- ❖ *Make minor typographical corrections to Special Conditions 5 and 9, including changing references to “wetlands” in Special Condition 9 to “ESHA,” deleting erroneously inserted redundant words, and a few other minor corrections.*

III. Recommended Corrections and Changes to Staff Report Findings

Staff is recommending various modifications to the staff report findings to (incorporate information, corrections, and suggestions received from the applicant and public comments and make typographical and other minor corrections and clarifications. Text to be deleted is shown in ~~strikethrough~~, and text to be added appears in **bold double-underline**.

- ❖ *Make the following correction to pages 24-25 of the staff report.*

CEC is a non-hub commercial service airport operated and maintained by the Border Coast Regional Airport Authority (BCRAA, the applicant) and owned by the County. The ~~five~~ six member entities of the BCRAA include the City of Crescent City, County of Del Norte, Elk Valley Rancheria, Smith River Rancheria, City of Brookings, Oregon, and the County of Curry, Oregon.

❖ *Make the following minor changes to page 42 of the staff report.*

(3) FEASIBLE MITIGATION MEASURES

The Commission must ensure that the method of repair and maintenance (a) minimizes adverse environmental wetland effects consistent with Section 30233; (b) minimizes significant disruption of habitat values consistent with Section 30240(a); (c) protects the biological productivity and the quality of coastal wetlands consistent with the requirements of sections 30230-30231; and (d) protects adjacent environmentally sensitive habitat areas and park and recreation areas from impacts that would significantly degrade those areas consistent with Section 30240(b). As previously discussed, the proposed method of repair and maintenance will impact significant expanses of environmentally sensitive wetland, dune, and prairie habitats, and will occur in areas immediately adjacent to additional areas of wetlands, dunes, prairie, and a park and recreation area (Point Saint George Management Area). As proposed, the method of repair and maintenance could have several significant adverse environmental effects, including: (a) a net loss of wetlands resulting from grading and filling wetland areas along the ends of the runways and substantial degradation of wetlands resulting from cutting and grading wetland areas along the sides of the runways; (b) impacts to coastal dune and coastal prairie habitats ~~within the RSA improvement area~~; (c) adverse effects to rare plant species ~~within the RSA improvement area~~; (d) impacts to additional sensitive species and habitats ~~within the new security fence alignment~~; (e) water quality impacts; and (f) impacts to adjacent ESHAs and park and recreation areas. The potential adverse environmental impacts and feasible mitigation measures to minimize those adverse impacts are discussed in the following sections.

❖ *Add the following findings related to Special Condition 13 to the end of the top paragraph on page 53 and also to the end of the last paragraph shown on page 57 (which for brevity sake is not repeated below).*

Submittal of revised final plans. To ensure that the project provides feasible mitigation measures to minimize the adverse environmental effects of filling 16.9 acres of coastal wetlands consistent with Section 30233, the Commission attaches **Special Conditions 3, 4, 5, and 13**. These special conditions specify criteria and performance standards that must be met for mitigation lands but require that the applicant obtain future approvals for specific mitigation sites. **Special Condition 3** requires that prior to the commencement of any development authorized by this CDP, the applicant submit a revised final wetland mitigation plan that includes various provisions for ensuring that sufficient wetland mitigation will be provided. This includes requirements to submit final plans, evidence of sufficient property interest in the mitigation

site(s) to be able to perform wetland restoration activities, evidence that easements or fee title interests over the restoration sites will be offered for dedication to protect the habitat and open space values of the mitigation site(s), evidence of other approvals for development of the restoration/mitigation sites, including all necessary coastal development permits from the County or the Commission as applicable to authorize the proposed wetland mitigation work, among other revisions. **Special Condition 4** requires in part that wetland mitigation be provided consistent with the mitigation ratios and credit scheme discussed above. **Special Condition 5** requires submittal of a final monitoring and reporting program for the wetland mitigation sites. The condition specifies final success criteria that must be achieved at wetland mitigation sites and requires that if the mitigation is unsuccessful, the applicant must submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program must be processed as an amendment to this coastal development permit. **Special Condition 13 requires that wetland mitigation sites be protected either through the transfer of property in fee to the California Department of Fish and Wildlife's Wildlife Conservation Board or through the execution and recordation of an irrevocable offer to dedicate an easement or fee interest in property to a public agency or private association acceptable to the Executive Director for habitat restoration, habitat maintenance, open space, and habitat protection.**

- ❖ *Make the following changes to the last paragraph on page 55 to reflect the changes made to Special Condition 6 described above:*

The Commission finds that submittal of a revised final plan for the proposed mitigation work on Point Saint George is needed to clarify the mitigation credit scheme, ensure that pre-treatment surveys, monitoring, and reporting results are submitted to the Executive Director, provide protection measures from vegetation removal impacts for existing western lily plants in the area, and ensure that, as recommended by the U.S Fish and Wildlife Service, revisions are made to the Airport Layout Plan labeling the 14-acre western lily enhancement area as an environmentally sensitive area unavailable for development and restricted from vegetation clearance except **for western lily habitat enhancement purposes** as authorized under the approved final plan **and for compliance with FAR obstruction removal requirements authorized under a future coastal development permit.** **Special Condition 6** is so attached requiring these revisions and submittal of the revised plan prior to commencement of development. As conditioned, the Commission finds that the proposed western lily enhancement activities in the degraded coastal prairie habitat adjacent to the airport will partially mitigate for 4.5 acres of coastal dune and prairie impacts that, as proposed, will be mitigated at a ratio of 3:1.

- ❖ *Make the following changes to subsection (d) of the “feasible mitigation measures” finding on page 60 to include protective measures for western pond turtle, northern red-legged frog, and other small wildlife consistent with the recommended changes to Special Conditions 11 and 15 summarized above:*

- (a) Impacts to **additional** sensitive species and habitats ~~resulting from the new security/wildlife exclusion fencing~~

As proposed, the replacement of the non-compliance airport security/wildlife exclusion fencing on the southwestern side of the airport property will impact about 1.42 acres of ESHA vegetation, primarily coastal prairie (~1.12 ac.) and wetland (~0.3-ac.) vegetation, which will be mowed and disturbed by installation equipment and vehicles. The applicant anticipates that the vegetation will regenerate in time and proposes no mitigation for the proposed major vegetation removal and potential ESHA impacts. As previously discussed, the Commission considers the prairie and wetland habitats that will be impacted throughout the proposed fence corridor to be ESHA, and significant vegetation clearing in these habitats could easily disturb or degrade them by, for example, facilitating the spread of invasive exotic weeds known to occur in the area, such as Spanish heath, pennyroyal, and velvet grass. In addition to the clearing impacts, the proposed fence posts would permanently displace 11 square feet of coastal prairie habitat and 3 square feet of wetland habitat. **Furthermore, the installation of the fencing across an environmentally sensitive area, while primarily for security and to keep large mammals off the runways, also could create a barrier for the movement of small mammals and reptiles that live in and around the airport (e.g., western pond turtle, which migrate between wetland feeding habitats and upland breeding habitats).**

The applicant has not proposed mitigation for ESHA vegetation impacts **associated with fence installation**, because it anticipates that the vegetation will regenerate in time to pre-disturbance conditions. The Commission finds that mitigation at the same ratios discussed above for wetland fill impacts (4:1) and dune-prairie impacts (3:1) also are appropriate to sufficiently mitigate for the expected permanent impacts to these environmentally sensitive habitats (i.e., for the permanent displacement of 11 square feet of coastal prairie habitat and 3 square feet of wetland habitat). The Commission further finds that a mitigation ratio of 1:1 is appropriate for coastal prairie and wetland vegetation impacts resulting from installation of airport security fencing (resulting in 1.42 acres of mitigation for 1.42 acres of security fencing vegetation impacts). Vegetation reestablishment along the length of the fenceline following construction may qualify as the required 1:1 mitigation, provided that revegetation is successfully reestablished within one year of impact and is substantially similar to pre-disturbance vegetation in terms of composition and cover. The mitigation conditions discussed above for wetland impacts (Special Conditions 3-5) and dune and prairie impacts (Special Conditions 7-9) include provisions for ensuring that feasible mitigation is provided for these impacts at appropriate ratios to minimize the project's adverse environmental effects on 1.42 acres of coastal prairie and wetland vegetation resulting from the proposed new security fence. In addition, **Special Condition 11** includes certain construction responsibilities that also will minimize the adverse environmental effects of fence installation on sensitive vegetation, such as minimizing vegetation clearing and ground disturbance associated with fence installation and limiting construction to the dry season to protect fragile wetland soils. **Furthermore, Special Condition 15 requires submittal of final fencing plans to the Executive Director prior to fencing installation demonstrating that minimum 6-inch gaps are maintained between ground level and the bottom of the fence above depressional areas throughout the length of the fenceline to allow for continued passage between habitats by small wildlife species, such as western pond turtle.**

In addition to potential impacts to sensitive vegetation and wildlife associated with the new fencing, sensitive wildlife species also could be impacted during construction of the RSA improvements unless appropriate measures are implemented. The applicant identified various conservation measures in the Final EIR adopted for the project to protect northern red-legged frogs inhabiting the work sites, including (1) timing construction activities to occur during the latter part of the dry season to avoid disturbance to breeding northern red-legged frogs; (2) having a qualified biologist conduct pre-construction frog surveys of all ground disturbance areas and relocating any frogs in the area from the impact zone to nearby suitable habitat sufficiently outside of impact areas; (3) erecting exclusion fencing around the project area to prevent frogs from re-entering work areas during construction activities; (4) erecting exclusion fencing around the margins of work areas to prevent encroachment by construction equipment and workers into sensitive habitat areas; (5) pre-construction training of construction personnel by a qualified biologist to familiarize construction personnel with sensitive species and required protection measures; (6) implementing standard BMPs and erosion control measures to minimize sediment discharge to surrounding aquatic habitats; and other measures. To ensure that the method of repair and maintenance minimizes significant disruption of habitat values consistent with Section 30240(a) of the Coastal Act, the Commission attaches Special Condition 11, which includes requirements that the above feasible measures be incorporated into the construction responsibilities for the project. The condition requires in part that no more than one week prior to commencement of ground disturbance in a particular work area, a qualified biologist shall survey the area for northern red-legged frog and western pond turtle and shall coordinate with the CDFW staff to relocate any animals that occur within the work impact zone to nearby suitable habitats. In addition, Special Condition 5, previously discussed, requires that at least 4 acres of suitable breeding habitat for northern red-legged frog be created as part of the final wetland mitigation plan required by Special Condition 3.

As conditioned in the manner discussed above, the Commission finds that the method of repair and maintenance minimizes significant disruption of habitat values consistent with the requirements of Section 30240(a) of the Coastal Act.

❖ *Clarify the findings in the last paragraph of the CEQA findings on page 66.*

Finally, although the acquisition of legal lots will require no further coastal development permitting, the development of the mitigation sites that will implement the specific performance criteria set forth in this permit ~~and that~~ will be the subject of a future CDP. Both forms of mitigation may qualify for Categorical Exemptions. For example, a Class 13 exemption applies if the mitigation sites are acquired by the Wildlife Conservation Board for fish and wildlife conservation purposes, and a Class 25 exemption applies if the transfer of property is to preserve open space or restore habitat. 13 C.C.R. 15313, 15325. Many properties within Pacific Shores and around Lake Earl are already owned by a mixture of public and private entities. Additionally, a Class 7 exemption applies to actions taken by a regulatory agency to assure the

maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for the protection of the environment such as wildlife preservation activities of the Department of Fish and Wildlife. 13 C.C.R. 15307.

- ❖ ***Change all references to the 12-foot natural breaching elevation of Lake Earl throughout the report findings to 14 feet, since 14 feet is the correct historic breaching elevation according to the California Department of Fish and Wildlife's Lake Earl Management Plan and associated EIR documents.***
- ❖ ***Make minor typographical, grammatical, spelling, and factual corrections to the following pages of the staff report:***
 - a. *page 29 (correct exhibit number),*
 - b. *page 30 (correct footnote number),*
 - c. *page 43 (include reference to Tolowa Dunes State Park for public lands surrounding Pacific Shores Subdivision, along with the CDFW Lake Earl Wildlife Area),*
 - d. *page 43 (grammatical correction),*
 - e. *page 52 (correct the spelling of "timeliness"),*
 - f. *page 56 (add the phrase "high quality" after the words 'net loss' in the last sentence of the first paragraph),*
 - g. *page 57 (correct the spelling of "implementation" and change the word "three" to "multiple" in reference to the tiers of mitigation credit referenced in the top paragraph on the page),*
 - h. *pages 62-63 (reference the appropriate subsections of special condition 11 reflecting the changes to the condition recommended above),*
 - i. *page 63 (correct exhibit numbers)*

IV. Comments and Responses

The Commission received the following comments letters in response to the August 30, 2013 staff report. Each letter is attached to this addendum packet and has been added to the staff report as Exhibit 21.

Letter from Bradford Norman received September 5, 2013

The commenter recommends four mitigation measures for western pond turtle known to occur on and around the airport: (1) require that new fencing and existing fencing provide for turtle passage; (2) require pre-project surveys for turtles; (3) require surveys for turtles during construction; and (4) require that any turtles found in the project area be relocated outside of disturbance areas.

Commission staff agrees that there are additional measures that could be incorporated into the method of repair and maintenance to minimize significant disruption to western pond turtle, consistent with Section 30240 of the Coastal Act. Staff therefore recommends changes to Special

Condition 11 and adding Special Condition 15 to incorporate the commenter's recommendations (recommended changes and additions are shown in part III below). Staff also recommends changes to the related findings on page 60 of the staff report (described in part IV below).

Letter from Chad Roberts, PhD received September 5, 2013

The commenter suggests that staff's "ecoregion," as described in Dr. Dixon's memorandum (Exhibit 16), should actually be subdivided into two separate areas (primary and secondary) based on differences in geological history, soil characteristics, and presumed differences in groundwater hydrology. Dr. Roberts believes that the hydrology in his "primary zone" of the ecoregion corresponds more closely to the hydrology of the impacted wetlands near the airport than does the hydrology in his "secondary zone" that includes Bay Meadows and the rest of the area southeast of Lake Earl. This may be so, although no information regarding ground water hydrology at Bay Meadows has been presented. Dr. Roberts also provides a number of suggestions pertinent to the development of a more detailed wetland mitigation plan for project impacts.

Staff is recommending that mitigation for wetland and other unavoidable ESHA impacts associated with the required improvements at the airport take place within the system of dunes and wetlands within which the airport is located. Dr. Dixon delineates this "ecoregion" to include (1) the band of recently formed sand dunes that extend from the Smith River to an area north of the airport and generally west of Lake Earl, (2) the much older dunes that occur above the sea cliffs near Point St. George and inland of the more recent dunes south of Lake Earl, and (3) the eastern edge of Lake Earl, including a band between the southeast shore and Lake Earl Drive that includes a mosaic of swampy areas and strips of the dune-derived Talawa soil series, portions of which are poorly drained and tend to support wetland plants. Dr. Dixon notes that east of Lake Earl Drive the soils are predominantly of the well-drained Timmons series that typically support coniferous forests. A few strips of these drier soils, upon which most proposed development is located, are interspersed with the wetter soils west of Lake Earl Drive. The airport itself is built upon both recent and ancient dune.

Staff agrees that Dr. Roberts's two suggested sub-regions of staff's larger "ecoregion" are indeed different areas. In fact, one could further subdivide the ecoregion based on more detailed observations. However, the ecoregion as presented by staff encompasses areas of well-functioning wetlands of a type that provides similar ecological services as those impacted, thereby providing opportunities for mitigation that are "in-kind." Dr. Roberts acknowledges that it is likely that wetlands with similar ecological services can be created at Bay Meadows. In addition, Special Condition 5 as recommended in the staff report lists final success criteria for wetland mitigation sites that must be achieved, including evidence of wetland hydrology and successful creation of at least 4 acres of northern red-legged frog breeding habitat (i.e., ponds with the capacity to hold water for at least 15 weeks except during drought years).

Letter and packet of materials received from Connie Morrison on September 6, 2013

The commenter is concerned about barrels of pesticides and associated contamination buried near the project area and the possibility that the proposed project will inadvertently release

contaminants into the environment. The commenter included copies of recorded covenants restricting the use of the property and other documents.

The commenter is correct that the airport property contains a pesticide storage area. However, according to a response to the comment letter provided by the Del Norte County Community Development Department, the proposed project area does not intersect this area or any of its remaining associated contamination.

Letter received from Dolores and Carl Howard on September 9, 2013

The commenters state they would be attending the meeting in person if they would have had adequate notice. They further state that they have no comments or objections to the proposed RSA improvements, but they do object to any action that would impact private properties in the Pacific Shores Subdivision. The commenters own three lots in Pacific Shores and believe that “canals should not be built,” “roads should not be damaged,” and “access to properties should not be inhibited” due to potential exacerbation of flooding problems in the area.

The Commission’s noticing regulations require, in applicable part, that the Commission dispatch notices by first class mail at least 10 days prior to the meeting date to all commission members, all parties to proceedings on the agenda, known interested parties, applicable local government offices, and others who have requested notice. Notices for CDP application 1-13-009, scheduled for the Commission’s September 12, 2013 meeting, were mailed on August 30, 2013 consistent with section 13063 of the Commission’s regulations. In addition to this legally required notice, notice also was provided via publication in the Del Norte Triplicate from August 31 through September 12, 2013.

With respect to specific development activities that may be conducted for mitigation purposes at Pacific Shores and/or elsewhere, the development of the mitigation sites will be the subject of a future CDP. In the review of the future CDP for off-site mitigation, the Commission and/or the County will review the proposal for consistency with the Coastal Act or the LCP, as applicable. In addition, Special Conditions 3 and 7 of this permit specify a number of plans and analyses that must be included as part of the final mitigation plans required to be provided by the applicant prior to commencement of construction of the RSA improvement project. These include, among others, drainage plans; plans demonstrating adequate conveyance of stormwater and/or waters of Lake Earl away from private properties; erosion control plans; on-going maintenance and management plans; and implementation plans. Moreover, Special Conditions 4 and 8 further require that land to be used for mitigation purposes be acquired from willing sellers only, and acquisition and subsequent transfer of the land to an approved accepting entity shall not interfere with the ability of any other private property owner to physically access their property.

Letter received from Michael Silliman on September 9, 2013

The commenter owns property at Pacific Shores and is opposed to the applicant’s proposed acquisition of properties within the subdivision. The commenter implies that the acquisition of properties within the subdivision from willing sellers by the applicant will affect the value of his and other private properties in Pacific Shores. He comments that “this is development” and

though it is unclear to which aspect of the project he is referring, staff interprets his comment to refer to the proposed acquisition of lots at Pacific Shores.

As explained in the staff report, lot acquisitions and transfers of legal lots do not qualify as “development” under Section 30106 of the Coastal Act. Further, the applicant proposes to acquire property only from willing sellers within Pacific Shores and other nearby areas either to use for mitigation purposes or to transfer the acquired land to a public agency or private association for habitat conservation purposes. Any development of the mitigation sites that will implement the specific performance criteria set forth in this permit will be the subject of a future CDP. Finally, those persons voluntarily selling their property at Pacific Shores do so consistent with the CC&Rs for the Pacific Shores Subdivision, which do not contain limitations on the sale or use of the lands within the subdivision for habitat conservation purposes.

Letter received from Maxine Curtis on September 9, 2013

The commenter expresses support for the proposed project and for the proposed mitigation involving acquisition of land from willing sellers and preservation of acquired land. The commenter owns property in the Pacific Shores Subdivision and is in favor of being able to sell her “useless property” for mitigation purposes for this project. The commenter also notes the importance of the RSA improvement project to the economies of Crescent City and surrounding areas.

The comments are noted.

Letter received from Friends of Del Norte and EPIC on September 9, 2013

The commenters express support for RSA improvement project and the staff recommendation, except for one significant issue. The commenters believe a “Gating Plan” is an essential component of any successful mitigation plan. The commenters state that “It doesn’t make sense for the Commission to allow a mitigation credit for acquisition and not protect it.”

The Commission does not have the authority to require that the County develop and implement the recommended Gating Plan on County roads within Pacific Shores or elsewhere, as the County is not an applicant for the permit. The commenters also state that they will not support credit for acquisition of land or lots to satisfy mitigation ratios in the future. The comment is noted.

Letter received from The Smith Firm (Kelly Smith) on September 9, 2013

The commenter states that staff is recommending that the Commission “pre-approve mitigation conditions without any CEQA analysis of very significant environmental impacts...” and the permit would violate CEQA. The commenter also states that the Commission’s action would “take private property for ‘mitigation’ without any clear understanding of the environmental implications of that act.”

As stated above, while the acquisition or transfer of legal lots is not development requiring a CDP, the development of the mitigation sites that will implement the specific performance criteria set forth in the recommended conditions of this permit will be the subject of a future

CDP. Special Conditions 3, 4, 5, 7, 8, 9, 10, and 13 will ensure that feasible mitigation measures will be undertaken to minimize the project's adverse environmental effects on coastal wetlands and other types of ESHA. The Commission has committed itself to specific performance criteria for evaluating the efficacy of these mitigation measures. The conditions also require that the final mitigation plans will be in place prior to commencement of development that would create the impacts being mitigated.

As discussed above in the response to the comment letter from Dolores and Carl Howard, as conditioned, the final mitigation plans required by this permit and the future CDP required to conduct future mitigation will consider and minimize flood hazard risks and other potential impacts that a future mitigation project may pose to surrounding lands. The special conditions of the permit require drainage plans demonstrating adequate conveyance of stormwater and/or waters of Lake Earl away from private properties; erosion control plans; on-going maintenance and management plans; and implementation plans. Moreover, Special Conditions 4 and 8 further require that land to be used for mitigation purposes be acquired from willing sellers only, and that neither acquisition nor subsequent transfer of the land to an approved accepting entity interfere with the ability of any other private property owner to physically access their property.

Finally, as stated above, those persons voluntarily selling their property at Pacific Shores do so consistent with the CC&Rs for the Pacific Shores Subdivision, which do not contain limitations on the sale or use of the lands within the subdivision for habitat conservation purposes.

EXHIBIT 21

PUBLIC COMMENTS RECEIVED AFTER PUBLICATION OF STAFF REPORT

- Letter from Bradford Norman received September 5, 2013
- Letter from Chad Roberts, PhD received September 5, 2013
- Letter and packet of materials received from Connie Morrison on September 6, 2013
- Letter received from Dolores and Carl Howard on September 9, 2013
- Letter received from Michael Silliman on September 9, 2013
- Letter received from Maxine Curtis on September 9, 2013
- Letter received from Friends of Del Norte and EPIC on September 9, 2013
- Letter received from The Smith Firm (Kelly Smith) on September 9, 2013

BRADFORD R. NORMAN

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CALIFORNIA
COASTAL COMMISSION

RECOMMENDATIONS FOR MITIGATION FOR WESTERN POND TURTLE
AT THE PROPOSED AIRPORT RUNWAY SAFETY PROJECT, (Permit # 1-13-009)
2013.

- 1) provide a means whereby the travel of the turtles known to be on site will not be restrained by the existing fencing, the final fencing and/or the final road systems. Ecological passages through the existing and/or final fencing system could be utilized [see especially Bondi 2009; and Sloan 2012 that discuss movements and seasonal variations in Northwestern California populations of *Actinemys marmorata*, formerly known as *Clemmys marmorata* (see Fritz, Schmidt, and Ernst 2011)]. It is important that turtles have access to upland habitats for egg-laying and to permanent ponds for feeding and basking. The present fence may inhibit turtles found on airport lands from reaching suitable egg-laying and/or hibernation sites, while the existing fence may also inhibit turtles from entering the ponds from outside the airport boundary (i.e., recruitment of newly hatched turtles);
- 2) provide for pre-project surveys for turtles that may be present in other wetland areas in the vicinity of the proposed project;
- 3) provide for surveys of turtles while construction proceeds in the project area to ensure no turtles are harmed during the construction, such as Biological Monitor;
- 4) provide for the re-location of any turtles observed to be disturbed or potentially injured during the construction process.

LITERATURE CITED

- Bondi, Cheryl. 2009. A COMPARISON OF WESTERN POND TURTLE (*ACTINEMYS MARMORATA*) MOVEMENTS IN PERENNIAL AND INTERMITTENT PORTIONS OF A NORTHWESTERN CALIFORNIA RIVER SYSTEM. Master's Thesis, Humboldt State University, Arcata, CA.
- Fritz, U., C. Schmidt, and C.H. Ernst, 2011. Competing generic concepts for Blanding's, Pacific and European pond turtles (*Emydoidea*, *Actinemys* and *Emys*)—Which is best? *Zootaxa* 2791: 41–53 (2011).
- Sloan, L.M. 2012. POPULATION STRUCTURE, LIFE HISTORY, AND TERRESTRIAL MOVEMENTS OF WESTERN POND TURTLES (*ACTINEMYS MARMORATA*) IN LENTIC HABITATS ALONG THE TRINITY RIVER, CALIFORNIA Master's Thesis, Humboldt State University, Arcata, CA.

An “Ecological Region” Map for Identifying Mitigation Alternatives for the McNamara Field RSA Proposal

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06 September 2013

Introduction

This brief comment has been prepared for Coastal Commission staff use in preparing for the Commission’s consideration of a proposal to approve a permit for runway safety area improvements at McNamara Field, the regional airport in Del Norte County.¹ In reviewing the submittal package and additional supplementary information for the proposal, I observed a map [Exhibit 2, entitled “VICINITY MAP SHOWING ECO-REGION (DELINEATED)”], based on a memorandum prepared for staff use by Commission Wetland Scientist Dr. John Dixon.

The map identifies a single region in the vicinity of Lake Earl that Dr. Dixon considers a desirable area in which to place mitigation sites for the wetland impacts that will result from the proposed project. I disagree strongly with this conclusion, based on my understanding of the geology, soils, and hydrology present in the Lake Earl region (I am attaching a brief resume to summarize my qualifications for addressing this topic). It’s my considered opinion that the mapped “ecological region” combines two distinctly different regions, based on these factors (and also to a lesser extent on the biota, not addressed in this note), which would likely lead to the Commission to err in evaluating the desirability of mitigation options proposed by the applicant.

In summary, the geology of the project vicinity includes dune environments of two radically different ages. The older dunes are part of the Battery Formation, and largely occur east, southeast, and south of Lake Earl. These older dunes have developed extensive and well-differentiated soils. In addition, all of the mitigation sites proposed for the Battery Formation are located in a region that receives extensive water inflow from outside the site boundaries.

In contrast, the second area of dune environment is the geologically recent dunelands west of Lake Earl, which do not have well-developed soils and which receive no hydrological support from outside their own perimeters. However, data exist that indicate that the groundwater within this region is more than adequate to support wetland development and maintenance.

¹ This comment is a portion of a larger report that I am preparing regarding this project, which is intended to accompany the proposal through reviews of subsequent applications, including the applications to the Coastal Commission, the Regional Water Board, and the US Army Corps of Engineers.

The airport is located south of Lake Earl in a region that includes the boundary between these two zones. However, local conditions indicate that the wetlands on the project site are completely dependent on local rainfall and groundwater for hydrological support. To the extent that the Commission wishes to replace the impacted wetlands "in-kind," the selected mitigation should occur within the region west of Lake Earl, where wetlands are entirely groundwater-supported.

In order to facilitate staff and Commission consideration of the evidence submitted herein, I am attaching also a revision to the "eco-region" map. The modification shows two regions, a "primary" region in which hydrology and substrate conditions match those at the project site, and a "secondary" region with similar conditions, but which conditions are a less-satisfactory match for the underpinning conditions at the airport.

The groundwater-dominant hydrological conditions at the Pacific Shores Subdivision site appear to replicate the groundwater-dominant conditions in the impacted wetlands at McNamara Field. If the Commission's goal is to restore the impacted wetlands at the airport "in-kind," then locating the wetland mitigation within the Pacific Shores Subdivision, or elsewhere in the "Flandrian" dunes west of Lake Earl, constitutes a more suitable mitigation strategy than placing mitigation at any of the sites located in the Battery Formation, where the hydrology differs from that in the impacted wetlands. Wetland mitigation at Pacific Shores could utilize the site's naturally suitable groundwater hydrology to achieve "in-kind" substrate and biotic structure development more rapidly, at lower cost and with less construction impact, than could be achieved at any of the Battery Formation sites (the Bay Meadows, McNamara, or Moore sites).

If (as the staff analysis indicates on page 43) all of the wetland impacts from the RSA project cannot be mitigated at Pacific Shores, then the Bay Meadows site appears to be the best-suited site among those located in the Battery Formation. The Commission should increase the conditions of approval to require an augmented hydrological connection between the Bay Meadows site and Lake Earl. Enhanced connectivity (by increasing the groundwater elevations within the site so that the groundwater surface between the site and Lake Earl rises) will result in wetter depressions and more surface ponding in the area between Bay Meadows and the lagoon. Increasing the elevations of groundwater within Bay Meadows (by, for example, removing existing major drainage improvements on the site, filling excavated drainage ditches, and similar actions) will help achieve the Commission's restoration/mitigation targets for this site by assuring sufficient shallow subsurface water to achieve the necessary hydrology to support wetlands on the site. In addition, I recommend that the Commission require acquisition of the approximately 12-acre "agricultural" parcel within the Bay Meadows site, as it is an important habitat transitional area between the Bay Meadows site and the Lake Earl Wildlife Area; an appropriate ecological enhancement of this 12-acre area should be considered a key step in building the ecological connectivity between Bay Meadows and the Lake Earl Wildlife Area.

Geology and Soils

Geology

The geological setting of the project vicinity is relatively well understood (Figure K). The Del Norte coastal plain (hereafter "platform") is an uplifted marine terrace, apparently fault-bounded on the east. The hillsides east of the platform are composed on Franciscan Formation rocks of Jurassic/Cretaceous age, about 100 million years old. In addition, Franciscan rocks underlie the platform at depths greater than 400 feet. On top of the Franciscan Formation rocks is the Saint George Formation, which is assigned to the Pliocene geological epoch, a period now generally thought to occupy an age range of about 7.5 million years before present (YBP) to about 2.5 million YBP. The difference in the age of these two formations is generally incomprehensible, indicating clearly that a great deal of change could have

occurred (and likely did) between the time the Franciscan rocks were deposited as ocean turbidity currents and the deposition of the Saint George Formation. These rocks generally are unimportant for the subjects covered in this report and can be ignored.

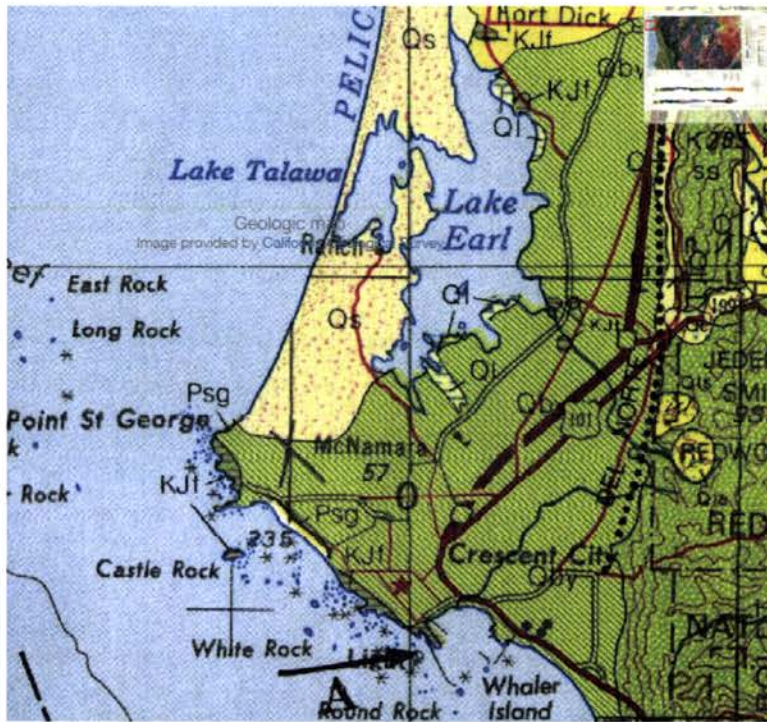


Figure K. Excerpt from the Weed 250,000-scale geologic map (Wagner and Saucedo 1987). "KJf" represent the Franciscan Formation, which composes the hills east of the coastal platform. The Saint George Formation ("Psg") is not clearly evident in the surface of most of the platform. "Qby" (diagonal green lines) is the Battery Formation. The stippled "Qs" formation maps the recent ("Flandrian") sand deposits. "Ql" are Lake Earl-derived sediments. The yellow area north of Lake Earl represents alluvial sediments of the Smith River delta.

Above the Saint George Formation is a group of much less well consolidated sands and clays, called the Battery Formation, which is an uplifted marine terrace, generally considered to be from the Pleistocene epoch, apparently much younger than the Pliocene rocks but older than about 11,000 years. The Battery Formation appears at the surface of the platform in most of the area around Crescent City and northward on the eastern side of Lake Earl (Figure K). The Battery Formation also crops out along the northern margin of the platform.

The central part of the platform is dominated by alluvial sediments that appear to be related to deposition by the Smith River rather than to marine terrace formation (yellow areas in Figure K). These alluvial sediments comprise river terraces and the Smith River delta, and range in age from Pleistocene to recent, indicating that the river has been depositing sediments (and apparently removing Battery Formation sediments) since the platform was uplifted. Lake Earl/Tolowa is generally thought to be a feature related to a prior course of the Smith River (CDFG 2003), which likely would have been associated with the removal of much of the Battery Formation from the surface of the platform in the lake's vicinity (there are also limited sediments derived from sedimentation in the lagoon near the shoreline), which is consistent with the current geology (Figure K).

At the time it was uplifted the Battery Formation lacked vegetative cover. Based on current geomorphology, in the western part of the platform the unconsolidated sands were soon thrown into motion by prevailing coastal winds, and much of the surface of the Battery Formation today is generally represented by old dunes. These old dunes are particularly evident in the Battery Formation east, southeast, and south of Lake Earl, where they extend east at least to Lake Earl Drive and as far south as Washington Boulevard. As noted in Figure K, a large portion of McNamara Field is located in the old dunes of the Battery Formation. It should be noted, however, that the Battery Formation extends all the

way to the base of the Franciscan hillslopes, which has relevant implications for hydrology in the project area.

Understanding the geology of the project area requires attention to one more element. There is a Holocene ("recent") band of sediments along the coastline west of the Smith River Delta and the Battery Formation, extending from the mouth of the Smith River to Point Saint George. These recent sediments make up the dunes along the western margin of the platform. In the project area they occur west of Tolowa Slough and Lake Earl/Tolowa, and extend southwestward to include the northern end of McNamara Field, thus including Tolowa Dunes State Park, the Pacific Shores Subdivision, and the western part of the Lake Earl Wildlife Area, but do not include much of the terrace at Point Saint George. In his 28 August memo to Commission staff (application Exhibit 16) John Dixon identifies these recent deposits as "Flandrian," based on the name of the current interglacial; I largely agree with Dr. Dixon's description of the characteristics of the dunes and their formation and offer no additional commentary on that topic.

The geology underlying the project area plays a significant role in shaping the ecosystems in the vicinity, and particularly so in shaping the formation and subsistence of wetlands in the Lake Earl region. This significant role is compounded of the interrelationship between the sediments and surface water and groundwater, summarized elsewhere in this report.

Soils

In general, "soil" is a composite material that includes mineral material, organic matter, and water, all of which have been acted on by local climate for some period of time (for a technical definition see <http://soils.usda.gov/education/facts/soil.html>).

Soil mapping in the Del Norte coastal plain is in a state of flux. The published soil map for the region (McLaughlin and Harradine 1966) was prepared by University of California soil scientists based on soil science precepts current at the time; it was not, however, prepared using the scientific methodology currently adopted by the USDA Natural Resource Conservation Service (NRCS), the federal agency charged with mapping soils for federal purposes, for identifying, classifying, and mapping soils. NRCS soil scientists have completed a draft soil map for the project area, but the map and accompanying report are still in internal NRCS review (i.e., are not available for general public use); it's not clear that the NRCS will incorporate the soil classification and mapping identified in the 1966 University of California report.

Existing soil mapping for the potential mitigation sites is described in the GHD submittals for the mitigation options (particularly Exhibit 9 for the sites east of Lake Earl). The mapping classifications reflect the development of the identified soil characteristics on the sites east of Lake Earl. The actual conditions are less important than the fact that *there are mapped soils on these sites*, which can only occur under the influence of biota and climate acting on the native sediments through time. This can be contrasted with the identification of "soils" on the recent dunes west of Lake Earl as "sand dunes" or "wet sand areas" (i.e., as areas generally lacking "soils").

Significance for "Ecological Region" Identification

The above dichotomy in soil mapping reflects a fundamental difference between the surface and near-surface conditions in the Battery Formation when compared to the "Flandrian" sand dunes to the west. That is, the surface of the Battery Formation sediment has had many thousands of years (perhaps a million or more) to interact with climate and biota, and as a consequence these sediments have developed "mappable" soils. In contrast the dune sands have been present for less than 10,000 years, and soil development had not progressed sufficiently for the University of California soil scientists to identify the dunes as having mappable soils in the 1966 report.

This difference is ecologically significant: soils in the two areas (Battery Formation on one hand and the “Flandrian” dunes on the other) do not present the same soil conditions. Based on the differences in geological substrate and soils, it appears invalid to include both the Battery Formation and the “Flandrian” dunes in the same “ecological region” (to use Dr. Dixon’s term), a difference that is highlighted and reinforced when hydrology and biota are also considered.

Lumping these two areas together in the same “ecological region” is a distortion of the geology, and of the age and origin of the “soils,” in the two areas. These are quite different, with the Battery Formation’s “ancient dunes” displaying well-developed soils (and more highly developed ecological communities) than the recent dunes west of Lake Earl. Rather than combining the two regions into one, the appropriate interpretation would be that they constitute two regions that are biologically similar but which differ in geology and soils, with mapped boundary lines drawn that separate rather than combine them.² This differentiation of substrate structure and composition will facilitate a focus on and discussion of the far more significant hydrological distinction between the two regions (see below).

Hydrology

Wetlands are formed by hydrology. For example, the current proposed definition of wetland associated with the State Water Board “Wetland Area Protection Policy”³ is:

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater or shallow surface water or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate and; (3) the area either lacks vegetation or the vegetation is dominated by hydrophytes.

(A similar definition is used by federal agencies in applying wetland regulations under the Clean Water Act.) Saturation in the upper 30 to 50 centimeters (12 to 20 inches) of the substrate for a period of approximately 10 days leads to depletion of oxygen in the substrate (providing that certain other conditions are met, such as temperature being above “biological zero”). It is wholly immaterial whether the saturation results from tidal influence, from river or stream flows, from ponding within a depression, or from saturation “from below” by groundwater. In duneland environments saturation in the upper substrate typically results from groundwater (Figure X), which is typically derived from rainfall.

While dune sand is typically relatively permeable, because there is abundant void space between sand grains, it is nonetheless common for water to be retained within dunes. As with all geological and soil substrates much of the “void space” between sand grains is occupied by organic material and finer sediments. In addition, because groundwater is normally already present in the dunes under field conditions, additional water inputs from rainfall are simply added to the top of the water already present. The highest groundwater elevations are usually not far below the substrate surface.

² In addition, the areas of alluvium in the Smith River floodplain are so distinctly different that they should under no circumstances be combined with the dunelands, ancient or modern.

³ See URL http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wrapp/memo2.pdf. This definition, which addresses Porter-Cologne Act concerns for Water Board use, functionally addresses the same three criteria used in Clean Water Act decision-making by the US Army Corps of Engineers and the USEPA. The Coastal Commission generally does not require that all three criteria be satisfied to define a wetland for Commission jurisdiction. This definition is quoted here to emphasize the importance of hydrology for establishing the anaerobic substrate conditions that generally define a wetland.

The dynamics of groundwater movement have been studied extensively by hydrologists (e.g., as described in Winter and others 1998). Groundwater flows in response to hydraulic pressure gradients below the surface, and there are typically several gradients that occur at differing local and regional scales that produce several gradients of groundwater hydraulic pressure and flow. Because groundwater flows tend to move upward toward the bases of slopes and emerge at the surface, the toes of dune slopes and any associated flatter areas tend to be wetter than the dunes faces and dune tops (as portrayed in Figure X). When there is abundant rainfall, groundwater occurs above or close to the land surface over extensive areas, and remains there for prolonged periods (weeks to months).

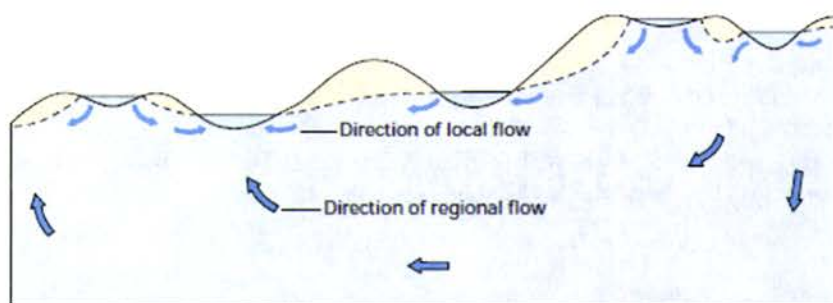


Figure X. Hydrology in dune terrain, where local, intermediate, and regional ground-water flow systems interact with lakes and wetlands. It is not uncommon for wetlands that recharge local ground-water flow systems to be present in lowlands and for wetlands

that receive discharge from local ground water to be present in uplands. (From Winter and others 1998.)

The hydrology in the vicinity of McNamara Field appears to be completely groundwater-dominated, as there are no apparent surface watercourses that enter the airport boundary (one small streamcourse drains southward from the airport to Marhoffer Creek). The wetlands that are adversely affected by the proposed RSA improvements are therefore supported by regionally high groundwater elevations. For example, groundwater elevations have been measured near the former County landfill site (about a mile northeast of the airport) that hover near (and sometimes exceed) 40 feet elevation MSL (Figure Y).⁴ Replicating the hydrology of the wetlands impacted by the proposed RSA improvements should be considered as the hydrological support for these wetlands in seeking mitigation for the wetland impacts. As is evident from observations in the project area and from additional groundwater data described below, the Pacific Shores Subdivision mitigation option does, in fact, replicate the wetland hydrology at the airport, while other sites considered for mitigation do not. That is, both the airport site and the Pacific Shores Subdivision mitigation site have groundwater close to the ground surface, which results in wetland development, and the impacts to wetlands at the airport would be easily mitigated at the Pacific Shores Subdivision where the groundwater is close to the ground surface.

Hydrology in the Battery Formation

As noted in the discussion of geology in the Lake Earl region, the Battery Formation (which includes the Bay Meadows site, the McNamara site(s), and the Moore site) includes evident surface drainage from the uplands east of Lake Earl Drive. The Bay Meadows site is described in Exhibit 9 as having had significant drainage “improvements” made in the past in order to prevent runoff from ponding further on the site, and these improvements are clearly shown on maps of the site in that exhibit. In addition, the Moore site has two prominent drainages across the site, also visible in the maps of the site in Exhibit 9. (I’m not familiar with the McNamara property, and there are no maps of the property included in the application documents; however, I would presume similar hydrological dynamics for this property as for others in the Battery Formation.)

⁴ The data in the figure are part of an extensive set of well monitoring data collected by the Department of Fish and Game for the Lake Earl region. These data were summarized and produced for the *Tolowa Nation* lawsuit, and may be obtained from the Department.

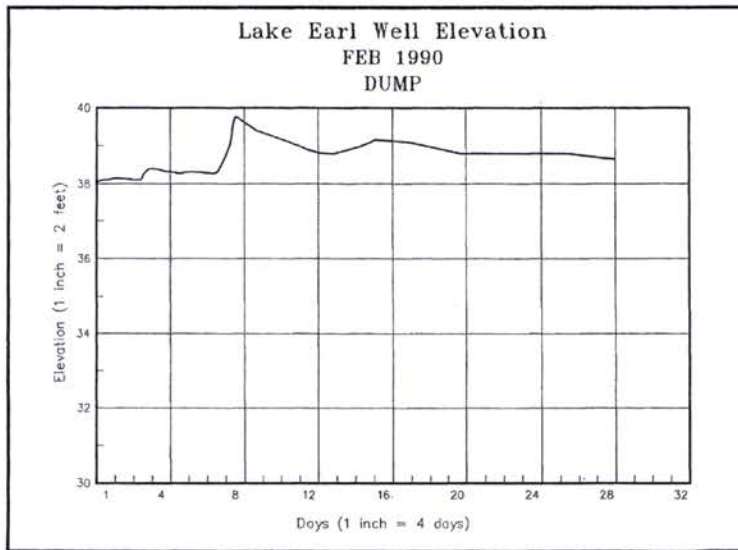


Figure Y. A single page (for the month of February 1990) from a water surface elevation chart for a monitoring well located at the (now-closed) Del Norte County landfill. The solid line tracks the elevation of the water surface inside the well. The landfill was located at high surface elevations in "Flandrian" dunes north of the airport; the water elevation in this well often exceeded 40 feet. Typically the "mound" of groundwater would flow outward toward lower elevations.

It's clear that the hydrology of wetlands in the Battery Formation⁵ can be modified in ways that support wetland enhancement, or that the hydrology will support the development of new wetlands. Purely from the perspective of recreating the wetland services provided by the wetlands impacted at the airport, my impression is that sites closer to the airport and the southern extremity of the Battery Formation dune field south of Lake Earl would be more desirable for mitigation purposes than sites farther away. In this context the Bay Meadows site would be a closer replacement to conditions at the airport than would the McNamara site(s). The Bay Meadows site is certainly more satisfactory as potentially offsetting the expected impacts than the Moore property, which is very far from Lake Earl and which is functionally upland in its eastern end.

If (as the staff analysis indicates on page 43) all of the wetland impacts from the RSA project cannot be mitigated at Pacific Shores, then the Bay Meadows site appears to be the best-suited site among those located in the Battery Formation. Should the Commission accept the proposal for additional mitigation at Bay Meadows, then I recommend that the Commission increase the conditions of approval to require an augmented hydrological connection between the Bay Meadows site and Lake Earl. It would be desirable to establish this enhanced connectivity by increasing the groundwater elevations within the Bay Meadows site so that the groundwater surface between the site and Lake Earl rises, resulting in wetter depressions and more surface ponding in the area between Bay Meadows and the lagoon. There is already a fairly large drainage swale northwest of the Bay Meadows site (Figure Z), continuous with the larger wetland complex in this site, which extends toward the Wildlife Area. Increasing groundwater elevations within the site would enhance wetland conditions within and adjacent to this swale. In order to accomplish this

⁵ I met with a representative of the Hambro ownership. The Hambro properties are also within the Battery Formation, and they also are supported in part by surface water drainages. Some of the properties are previously developed sites included in the Elk Creek valley (i.e., not within the Lake Earl basin). A number of Hambro parcels border the Crescent City marshes inland from Highway 101 (also not within the Lake Earl basin), but potentially desirable nonetheless. However, all of the southern properties other than the mill properties already are dominated by wetlands, and have limited or no restoration/enhancement potential. The only Hambro properties that I would consider suitable for restoration (on account of proximity to the existing marshes) are the three parcels of the mill property. One of the three parcels is vacant and would be an excellent candidate for restoration; however, this parcel is apparently subject to a Coastal Commission cease-and-desist order, and is consequently not available.

landscape connectivity element the Commission should require that the 12-acre agricultural parcel remnant be acquired for mitigation purposes (see below).



Figure Z. This existing surface wetland extends northwest from the "agricultural parcel" in the Bay Meadows site (near side of fence) into the Lake Earl Wildlife Area. If the Bay Meadows site is selected for partially mitigating wetland impacts from the airport project this swale should become an important wetland landscape element connecting the Bay Meadows site and the Lake Earl Wildlife Area.

Increasing the elevations of groundwater within Bay Meadows (by, for example, removing or modifying existing major drainage improvements on the site, filling excavated drainage ditches, and similar actions) will help achieve the Commission's restoration/mitigation targets for this site by assuring sufficient shallow subsurface water to achieve the necessary hydrology to support wetlands on the site.

Should the Commission require the Bay Meadows site as a mitigation option, then the Commission should also explicitly require the acquisition of the 12-acre section with an agricultural use designation in the northwestern part of the site. As noted above and in the Figure Z caption, this piece is functionally needed to establish landscape connectivity between the Bay Meadows site and Lake Earl. While biotic conditions are not a focus of this comment, it is well established that landscape connectivity enhances the value of any site managed for ecological purposes. The most appropriate connections for the Bay Meadows site are clearly with the Department of Fish and Wildlife lands in the Lake Earl Wildlife Area. The connectivity should at minimum include the wetland areas on the Bay Meadows site (including the wetland swale shown in figure Z), as well as associated riparian areas adjacent to the swale and associated upland dune areas.

Hydrology in the "Flandrian" Dunes

The wetlands in the higher dunelands west of Lake Earl are rainwater/groundwater-supported. No surface watercourses carry water into these dunelands (Tolowa Slough is at a much lower elevation and drains directly into Lake Earl). The hydrology of the "Flandrian" dunes at Pacific Shores is exemplary of the model described by Winter et al (1998), summarized in Figure X above. Essentially, rainfall rapidly infiltrates into the surface of the dunelands, where it's added to the top of the groundwater already present. The weight of the groundwater provides pressure to cause the groundwater to percolate through the sand, and the varying ground surface elevations cause deflections in the groundwater flow gradients. The result is that the groundwater surface tends to be similar to the land surface and not far below it.

How do we know that this is happening at Pacific Shores? In a document prepared by GHD (in the Commission's files but not included in the staff report), groundwater and land surface elevations are reported from locations throughout the Pacific Shores site.⁶ GHD installed 23 monitoring wells at locations throughout the subdivision, at a variety of ground surface elevations, ranging from 11.9 feet to 25.6 feet. The wells were monitored between December 2012 and March 2013. During this period the groundwater surface varied in depth below the land surface, from about 1.0 foot (in the well at 21.5 feet ground elevation) to as much as about 4.0 feet (in a well at a surface elevation of 12.5 feet). Generally water that started at about a foot depth stayed in that range and water that started deeper stayed deeper, although all depths to groundwater increased somewhat over the three months of monitoring.⁷

Two salient results can be extracted from these data: (1) the data are consistent with the model of groundwater behavior in dunelands shown in Figure X above, described by Winter and others (1998); and (2) even though none of the monitoring wells was placed in areas of evident surface inundation within the subdivision, the depth to groundwater in numerous wells was within the range identified by the US Army Corps of Engineers (and the State Water Board) as sufficient to cause the development of anoxic conditions in the upper substrate (i.e., to result in the development of hydric substrate conditions and dominance by hydrophytes). That is, the natural groundwater elevations present within Pacific Shores are sufficient to result in the development of anaerobic conditions in the upper substrate and dominance by hydrophytes; i.e., to result in the natural development of wetlands.

These groundwater-dominant hydrological conditions appear to replicate the groundwater-dominant conditions in the impacted wetlands at McNamara Field. If the Commission's goal is to restore the impacted wetlands at the airport "in-kind," then locating the wetland mitigation within the Pacific Shores Subdivision, or elsewhere in the "Flandrian" dunes west of Lake Earl, would be a more suitable mitigation strategy than placing mitigation at any of the sites located in the Battery Formation, where the hydrology differs from that in the impacted wetlands. Wetland mitigation at Pacific Shores could utilize the site's naturally suitable groundwater hydrology to achieve "in-kind" substrate and biotic structure development more rapidly, at lower cost and with less construction impact, than could be achieved at any of the Battery Formation sites (the Bay Meadows, McNamara, or Moore sites).⁸

Significance for "Ecological Region" Identification

As noted elsewhere, the term "ecological region" may be somewhat useful for describing the general region that encompasses both the "Flandrian" dunes and the ancient dunelands of the Battery Formation, based primarily on resemblances in vegetation and substrate. These two regions are, however, completely different hydrologically: one area is dominated by rainfall/groundwater, the other has a major hydrological contribution from surface streams entering the area from more developed areas to the east

⁶ This is Attachment C to a memorandum prepared by Misha Schwartz and sent to James Bernard, dated 18 April 2013, concerning the placement and records of monitoring wells within Pacific Shores (copy provided to Commission staff as an attachment to this report).

⁷ I do not have current data regarding the rainfall patterns in the Crescent City region during this period. The Commission might productively consult with the National Weather Service to see whether the December 2012 – March 2013 period was one of average rainfall, as indications of a less-than-normal rainfall year would amplify the conclusions drawn here about hydrology and the high natural potential for wetland formation at Pacific Shores.

⁸ This conclusion is based on the expectation that achieving the necessary hydrological conditions at Pacific Shores will require no significant construction other than removing or de-compacting road materials. All of the Battery Formation sites will require construction activities such as the need to fill or re-grade drainage channels. Addressing details of any of the sites' biotic restoration is not my intent, and I don't think it's needed; the restoration design documents I reviewed that are included in the application appear sufficient to result in suitable biotic habitat conditions, once appropriate hydrology and substrate composition are assured.

and south. These two regions are not equivalent hydrologically and should not be considered equally acceptable by Commission staff and decision-makers for mitigating the impacts to wetlands at the airport.

Attached is a suggested revision of the “eco-region map” included in the staff report as Exhibit 2. This revised map identifies the “Flandrian” dunes in recent sediments west of Lake Earl, and a small area of “old dunes” in the Battery Formation near the airport which does not receive surface water from other areas, as the primary region in which mitigation for airport-related wetland impacts should be designated. This is the area in the Lake Earl basin in which the hydrology of the impacted wetlands at the airport is most closely approximated, and selecting mitigation sites in this region will come closest to “in-kind” mitigation for the airport wetland impacts. Only if it is not possible to completely mitigate those wetland impacts in the primary mitigation region should use of any site in the secondary region be considered.

In the revised exhibit the secondary region east of Lake Earl is reduced in extent compared to the original. The secondary region in the revised exhibit includes the “old dunes” in the Battery Formation in the southeast corner of the Lake Earl basin, and is explicitly bounded as the region of these dunes that receives surface (and subsurface) drainage from uplands and higher areas of the Battery Formation to the east and south of the region. The secondary mitigation region explicitly excludes areas of Smith River floodplain and lake-derived sediment deposits. This region should be considered for designation of airport wetland mitigation sites only if full mitigation cannot be achieved with the primary mitigation region.

References

- California Department of Fish and Game. 2003. Draft Environmental Impact Report, Lake Earl Wildlife Area management Plan, SCH No. 1989013110. Eureka, CA.
- McLaughlin, JC, and F Harradine. 1966. Soils of western Del Norte County, California. Department of Soils and Plant Nutrition, UC Davis, and County of Del Norte.
- Wagner, DL, and GJ Saucedo. 1987. Geologic map of the Weed quadrangle, California, 1:250,000. California Division of Mines and Geology, Regional Geologic Map 4A, scale 1:250,000.
- Winter, TC, JW Harvey, OL Franke, and WM Alley. 1998. Ground water and surface water – a single resource. US Geological Survey Circular 1139, Denver, CO.

Pacific Shores
Subdivision
mitigation site

REVISED

EXHIBIT NO. 2

APPLICATION NO.

1-13-009 (Border Coast
Regional Airport Authority)

VICINITY MAP SHOWING
ECO-REGION (DELINEATED)

**Primary
Zone for
Wetland
Mitigation**

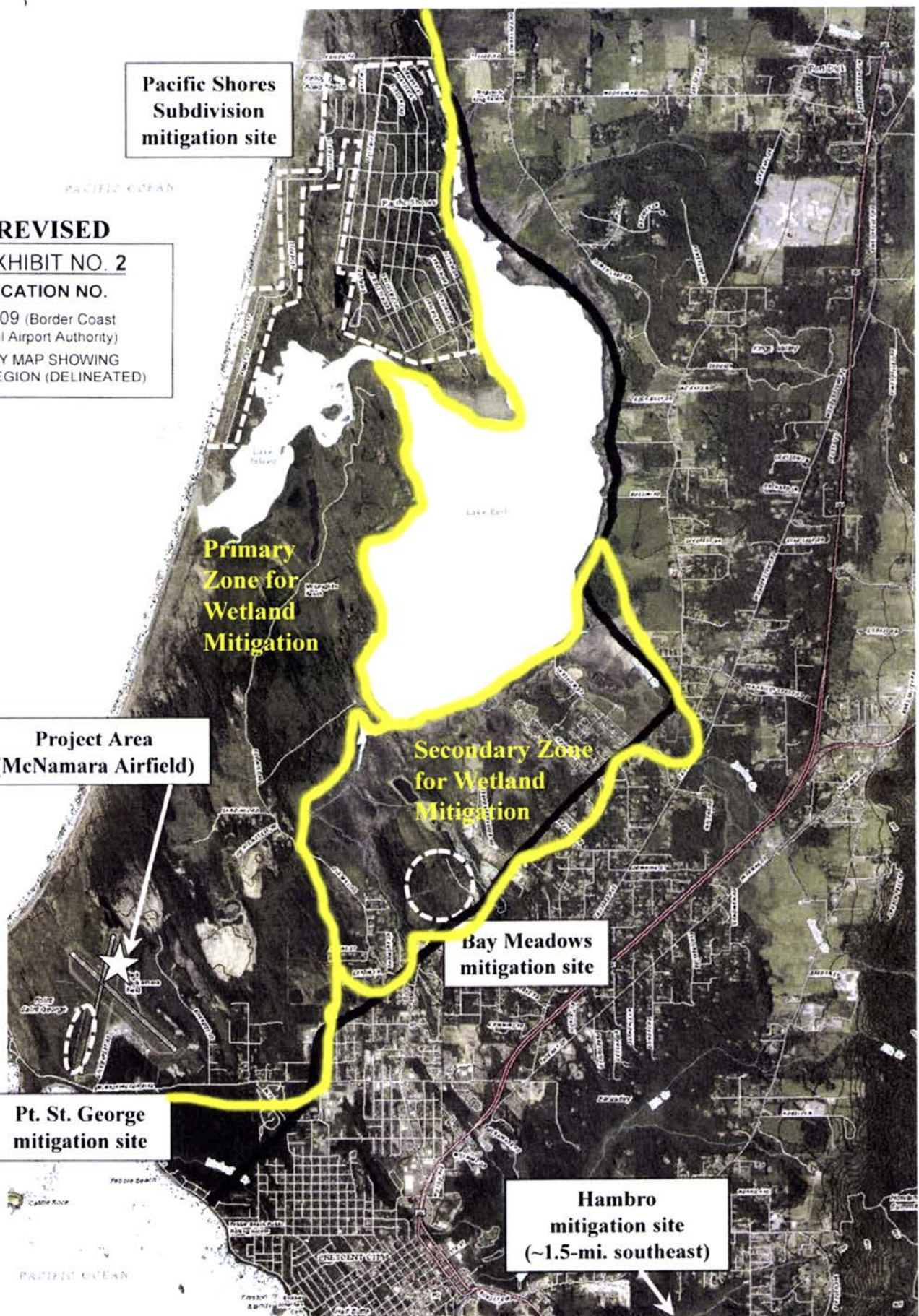
**Project Area
(McNamara Airfield)**

**Secondary Zone
for Wetland
Mitigation**

**Bay Meadows
mitigation site**

**Pt. St. George
mitigation site**

**Hambro
mitigation site
(~1.5-mi. southeast)**





CHAD ROBERTS, PH.D.

Riparian Areas and Wetlands

Dr. Roberts has had more than thirty years of professional engagement in developing and applying ecological and environmental information in decision-making and management contexts.

EDUCATION AND PROFESSIONAL CERTIFICATION

Bachelor of Arts (honors) in zoology; December 1969. Humboldt State College, Arcata, California.

Doctor of Philosophy in ecology; September 1976. University of California, Davis, California.

Senior Ecologist, Ecological Society of America Board of Professional Certification. Certified 1982; recertified 1987; recertified 1992; recertified 1997; recertified 2002; recertified 2007; recertified 2012.

Professional Wetland Scientist (No. 268); certified by the Society of Wetland Scientists Professional Certification Program 1995; recertified 2007; recertified 2012.

PROFESSIONAL EXPERIENCE

ORGANIZATIONAL ENGAGEMENT

Member, Technical Analysis Team (TAT), State Water Board Wetland Policy Development. Workgroup for developing scientific elements (technical memoranda) supporting the Water Board's Policy Development Team pursuant to Resolution 2008-0026 (wetland definition, identification, and delineation procedures; wetland classification; riparian definition; and other elements). November 2008 to present.

Member, Technical Advisory Group for Aquatic Assessment (L2 Committee), California Wetland Monitoring Workgroup. Scientific advisory team for interagency wetland monitoring workgroup, a committee of the SB 1070 Water Quality Monitoring Council. Workgroup purview includes the wetland monitoring, assessment, classification and mapping, and data presentation at statewide, regional, and local scales. July 2008 to present.

Member, Principal Investigator Group, California Rapid Assessment Method (CRAM). Ongoing responsibility for the continuing development, application, and quality assurance of CRAM in California. June 2007 to present.

Planner, Humboldt Bay Harbor, Recreation and Conservation District. The District Planner is an appointed officer of the District, responsible to the Board of Commissioners and the Executive Director for selected environmental and procedural elements of District business. September 2006 to June 2012.

President, Western Chapter, Society of Wetland Scientists (SWS); and *ex officio* voting member, SWS Board of Directors. January 2001 to June 2007.

Chair, California Steering Committee, Pacific Coast Joint Venture, North American Waterfowl Management Plan. May 1991 to July 1999.

Instructor, Resources Planning, Humboldt State University, Arcata, California. Instructed courses covered (a) the application of landscape and conservation ecology to resources planning and (b) environmental documentation practices. January 1997 to May 1998 (previously also September 1982 to June 1983).

PAPERS AND PRESENTATIONS

- Solek, CW, MA Sutula, ED Stein, C Roberts, R Clark, K O'Connor, and KJ Ritter. 2012. ***Determining the health of California's coastal salt marshes using rapid assessment.*** *Wetland Science and Practice* 29:8-28.
- Roberts, RC, RT Huffman, JN Collins, BC Livsey, and CN Harvey. ***Wetland Identification and Delineation.*** Technical Memorandum No. 4, Technical Analysis Team, *Aquatic Science Center, San Francisco Estuary Institute*. Released for public review by the *California State Water Resources Control Board* July 2011.
- Collins, JN, RC Roberts, et al. ***Landscape Framework for Wetlands and Other Aquatic Areas.*** Technical Memorandum No. 3, Technical Analysis Team, *Aquatic Science Center, San Francisco Estuary Institute*. Released for public review by the *California State Water Resources Control Board* June 2010.
- Collins, JN, RC Roberts, RT Huffman, et al. ***Draft Water Board Wetland Definition.*** Technical Memorandum No. 2, Technical Analysis Team, *San Francisco Aquatic Science Center*. Released for public review by *State Water Resources Control Board* October 2009.
- Berg, J, M Felton, L Gecy, A Laderman, C Mayhew, J Mengler, W Meredith, N Read, J Rey, C Roberts, G Sakolsky-Hoopers, W Walton, and R Wolfe. ***Current practices in wetland management for mosquito control.*** White paper prepared by West Nile Virus Working Group for the Society of Wetland Scientists Wetland Concerns Committee. Published online July 2009.
- Sutula, M, JN Collins, R Clark, C Roberts, E Stein, C Grosso, A Wiskind, C Solek, M May, K O'Connor, E Fetscher, JL Grenier, S Pearce, A Robinson, C Clark, K Rey, S Morrisette, A Eicher, R Pasquinelli, and K Ritter. 2008. ***California's Wetland Demonstration Program Pilot – A Final Project Report to the California Resources Agency.*** Tech Rep 572, Southern California Coastal Water Research Project, Costa Mesa, CA.
- Sutula, M, JN Collins, A Wiskind, C Roberts, C Solek, S Pearce, R Clark, AE Fetscher, C Grosso, K O'Connor, A Robinson, C Clark, K Rey, S Morrisette, A Eicher, R Pasquinelli, M May, and K Ritter. 2008. ***Status of perennial estuarine wetlands in the State of California – Final Report to the Surface Water Ambient Monitoring Program, State Water Resources Control Board.*** Tech Rep 571, Southern California Coastal Water Research Project, Costa Mesa, CA.
- Roberts, RC. 2003. ***Reconciliation ecology and wetlands.*** *Bulletin of the Society of Wetland Scientists* 20(3):29-30.
- Hydrology and floodplain ecology, Mill Creek, McKinleyville, Humboldt County.*** Presented session paper at the Riparian Habitat Joint Venture/TWS-Western Section 2001 Riparian Habitat and Floodplains Conference, Sacramento. March 2001.
- Roberts, RC. 1997. ***Planning as if watershed conditions mattered.*** *Watershed Management Council Networker* 7(1): 7, 13.
- The Mill Creek basin, a Humboldt County example of watershed planning issues.*** Presented session at a Eureka, California, workshop sponsored by US Environmental Protection Agency: "Management and Protection of Estuaries and Coastal Waters; Tools for Local Governments." March 1995.
- On using functional values to identify and manage biodiversity in north coast wetlands.*** Presented session paper at the Society of Wetland Scientists' Western Chapter conference, Davis. March 1993.
- Habitat suitability index models for wetland bird guilds.*** Poster session paper, Pacific Seabird Group and the Colonial Waterbird Group meeting, San Francisco. December 1985.
- Ray, D, W Woodroof, and RC Roberts. 1984. ***Management of riparian vegetation in the North Coast region of California's coastal zone.*** Pages 660-672 in: R.E. Warner and K. Hendrix (ed.); *California Riparian Systems*; University of California Press.

REPORTS, ENVIRONMENTAL DOCUMENTS, AND SERVICES

Training in the California Rapid Assessment Method. Provided training to agency staff and consultant personnel in the CRAM assessment methodology; tasks included preparatory fieldwork, revising or developing presentation materials, and classroom and field training. Example courses include: (a) 5-day course emphasizing Riverine and Wet Meadow modules (March 2011, Sacramento and Willits, CA); (b) 3-day course emphasizing Riverine module (May 2011, Sacramento); (c) 3-day course emphasizing Vernal Pool modules (April 2012, Sacramento); (d) 5-day course emphasizing Riverine and Depressional modules (June 2012, Santa Rosa, CA); (e) 3-day specialized training in Riverine CRAM for LSA Associates (September 2012; Point Richmond and Santa Rosa); (f) 5-day course emphasizing Riverine and Depressional modules (May 2013, Eureka, CA).

CRAM Coordinator, Bakersfield-Fresno Section, California High Speed Train Project. Planned and executed wetland condition (CRAM) assessment for a segment of the planned HST Project alignment (field assessments conducted in September 2011 and March 2012); provided technical oversight for CRAM Report and Watershed Evaluation Report (completed in August 2012); trained project segment consultant personnel in CRAM methodology and applications. Services provided for URS, Oakland, CA, and for *California High Speed Rail Authority*. September 2011 to December 2012.

Expert Witness Services – Dwayne B. Smith et al v. California Department of Fish and Game et al. Services, provided for the *California Department of Justice* (representing multiple state defendants), included research, field studies, deposition, and trial testimony, related to a “takings” claim involving wetland management. August 2010 through January 2011.

Field Tests, USA-RAM (Rapid Assessment Method developed by the USEPA for use in the 2011 National Wetland Condition Assessment). Field tests of the evolving methodology were conducted at the Cosumnes River, Sacramento County (October 2009), Coyote Hills Slough (Alameda Creek), Alameda County (July 2010), and Huichica Creek, Napa County (November 2010).

Elverta Specific Plan Project – Summary Report of CRAM Application, Sampling, Data Interpretation, and Quality Assurance. Assessments were conducted for the project site and two reference sites with respect to setting, impacts, and mitigation. Prepared for *Bruce D. Barnett, Ph.D., LLC*, and Sacramento District, US Army Corps of Engineers. June 2010.

Tolowa Dunes State Park Dune Forests and Ponds – A Unique Ecological System; Findings and Recommendations. Report prepared for the California Coastal Commission and the Friends of Del Norte. March 2010.

Final environmental document, Coast Seafoods Mariculture Project, Humboldt Bay. Based on a program initiated in May 1999, the Final environmental document identified potential effects and specified programmatic mitigation for oyster mariculture on approximately 500 acres of Humboldt Bay tidelands. Prepared for *Humboldt Bay Harbor, Recreation and Conservation District*. July 2007.

Environmental document (April 2006) and ***Draft Humboldt Bay Management Plan*** (April 2005). The environmental document and Draft Plan included port-related, recreation, and natural-environment setting and policy sections that provide a 20-year planning framework for Humboldt Bay. Prepared for the *Humboldt Bay Harbor, Recreation and Conservation District*.

Environmental document – Martin Slough Interceptor Project. Project with approximately 16,000 feet of new collector line connecting 16 existing lift stations to a new 11,100-foot gravity interceptor, a new lift station, and approximately 10,000 feet of new force main. The majority of the new pipeline will be located in wetlands in the Martin Slough valley and near Humboldt Bay. Prepared for *City of Eureka Community Development and Engineering Departments*. Document completed in May 2004.

Environmental document – Lake Earl Management Plan. Programmatic environmental document covering the Management Plan’s implementation, which proposed formally adopting a “managed” elevation of eight feet (8’) for the lagoon surface for the 5,600-acre Lake Earl Wildlife Area. Prepared for the *California Department of Fish & Game*. Draft document completed in June 2003.

Wetland delineation and Section 404 ***nationwide permit preconstruction notification*** to the U.S. Army Corps of Engineers, *Elk Valley Road Reconstruction Project*, Crescent City. Prepared for the *County of Del Norte*. January 2003.

Environmental document – *Mad River Water Pipeline Rehabilitation Project*. Project with approximately seven miles of new pipeline in parallel with an existing pipeline in seasonal wetlands adjacent to Humboldt Bay, approximately three miles of new pipeline in uplands, and approximately two miles of pipeline lining in uplands. Services included USACE Section 404 application (May 2002) for approximately 26,000 linear feet of new pipeline in diked former tidelands east of Humboldt Bay. Prepared for *City of Eureka* Community Development and Engineering Departments. Draft document completed in December 2001.

Environmental document – *Airport Business Park*, McKinleyville. The impact assessment for a 53-acre development proposal emphasized mitigation for onsite and offsite biological impacts, including hydromodification and NPS water quality effects, for a major business/industrial park. Prepared for the *Humboldt County Planning Department*. Draft document completed in June 1997.

Report on hydrology and aquatic/floodplain ecology in the Mill Creek watershed, McKinleyville. The report provided hydrological assessments for the basin, natural community descriptions, wetland identifications, and recommendations for maintaining these features. Prepared for the *California Department of Fish & Game*. March 1995.

Wetland Restoration Plan – *Bayshore Way Commercial Site*, Eureka. A plan for removing unauthorized fill and restoring pre-fill wetland conditions. The restoration plan was enacted in February 1995. Prepared for the *U.S. Army Corps of Engineers*. September 1994.

Wetland mitigation plan and reporting – *Ridgewood Subdivision*, Units 2, 3, and 5, McKinleyville. Application documents, plans, specifications, construction inspection, and monitoring reporting (through 1997). Prepared for *Moser Realty* (applicant), the *Humboldt County Planning Department*, and the *U.S. Army Corps of Engineers*. April 1993.

Biological Conditions in the Eel River Delta: a Status Report of Conditions in the Early 1990s. Described wetlands and other habitats, ecological relationships, and functions provided by the 32,000-acre delta. Habitat maps using the National Wetland Inventory classification were prepared, at a scale of 1:4800, based on aerial photo interpretation. Prepared for the *Eel River (now Humboldt County) Resource Conservation District*, the *USDA Natural Resources Conservation Service*, and the *California State Coastal Conservancy*. April 1992.

Biological report, wetland delineation, wetland restoration program, and construction plans and contract specifications – *golf course pressure sewer replacement project*, Eureka. Project services also included a five-year monitoring program for impact mitigation. Prepared for the *City of Eureka* Engineering Department and the *U.S. Army Corps of Engineers*. February 1991.

Wetland delineation, biological study, impact analysis, and mitigation program – *Vita-Sea parcel*, Crescent City. Project included 0.8-acre of wetland and 0.6 acre of coastal duneland impacts. Prepared for the *Fur Breeders Agricultural Cooperative, Inc.* (landowner), the *California Coastal Commission*, and the *US Army Corps of Engineers*. September 1989.

Environmental document – *Sonoma Vineyards Residential Subdivision Project*, Valley of the Moon, Sonoma County; included *Biological Resources Study*. Topics addressed included effects on remnant valley oak riparian forest and hydrological effects for Sonoma Creek and for Malone Creek, a smaller onsite stream. Prepared for the *Sonoma County Planning Department*. Draft document completed in March 1988.

Humboldt Bay wetland mitigation bank design report and enhancement plan, 540-acre Ford Ranch site. Included recommended process for mitigation credit transactions. Prepared for the *Humboldt County Department of Public Works* and the *California State Coastal Conservancy*. December 1985.

Connie Morrison

2990 Alder Rd.

Crescent City, Ca. 95531

(707) 464 6760

RECEIVED
SEP 06 2013
CALIFORNIA
COASTAL COMMISSION

September 5, 2013

California Coastal Commission

North Coast District Office

Attn: Melissa Kraemer

TEL: 707 862 8950

1385 Eighth St, Suite 130

Arcata, Calif. 95521


I am providing you documents I have found that are questionable as to their authenticity and have allowed actions to take place totally contrary to a covenant placed on the property in 2007 and was originally to be placed in 2002.

The original covenant was to protect human and environmental health. I am a retired nurse. I'm concerned about digging that will take place around the airport where thousands of barrels of pesticides have been buried and allowed to contaminate the area.

As the diagnosis and deaths mounts up each year from cancer, I am convinced that due to fraud, greed and corruption, we are not being protected.

Please scrutinize these documents and I hope to see you for my 3 minute public comment on Thursday, September 11th.

Thanking you in advance


Connie Morrison
Sept 5 2013

ENCLOSURES

- Exhibit A Consent Decree originally filed Mar. 4, '02
- Exhibit B Covenant to Restrict Use of Property recorded July 31, 2002 (THE LIE)
- Exhibit C Covenant to Restrict Use of Property recorded 3/20/07
- Exhibit D EPA Summary of Remedial Alternative Selection dated September 30, 1985
- Exhibit E Appendix A Site Inspection Report Jan. 25, '07 Note: Page 34
- Exhibit F - FAA Finding of No Significant Impact dated August 9, 2011
- Exhibit G Hazardous Material, Pollution Prevention and Solid Waste, Appendix F
Dated August 9, 2011

Agenda No. 9b
Application No. 1-13-009
Carl & Dolores Howard
Pacific Shores
Involvement: NO
McNamara Runway
Improvement: YES

RECEIVED

SEP 09 2013

CALIFORNIA
COASTAL COMMISSION

P.O. Box 20
Lewiston, CA 96052
September 6, 2013

California Coastal Commission
North Coast District Office
1385 8th Street, Suite 130
Arcata, CA 95521

RE: Public Hearing Notice on Permit Number 1-13-009 by Border Coast Regional Airport Authority

Dear Commission Members:

We would be attending the meeting in person if we would have had adequate notice. We received your mailer on September 5. Previously, on May 18, 2013, we responded to the US Army Corp of Engineers' Public Notice in a letter addressed to Carol A. Heidsiek.

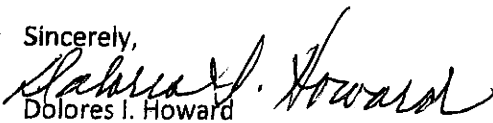
We have no comments or objections to the improvement of the Jack McNamara Field Airport Runway Safety Area.

We do have objections to any action that would impact private properties in the Pacific Shores Subdivision. We are Trustees of the Howard Family Trust dated 2-14-02 and own three lots in the Pacific Shores Subdivision. Canals should not be built. Roads should not be damaged. Access to properties should not be inhibited. The Corps of Engineers' Public Notice called their proposed actions "restoration" when they are actually destruction. We have already been nearly flooded out—our personal property rights totally ignored by the governing agencies.

PACIFIC SHORES PRIVATELY OWNED PARCELS SHOULD NOT BE IMPACTED IN ANY WAY, NO MATTER HOW SMALL, AND THE ROADS SHOULD BE LEFT AS THEY ARE OR IMPROVED FOR ACCESS. LOOK ELSEWHERE FOR MITIGATION PROPERTIES WHERE PROPERTY OWNERS ARE WILLING TO SELL.

If Martha McClure is on your Commission panel for this public hearing and determination, I respectfully suggest she recuses herself because she has been instrumental in the past at trying to implement any and all attempts to remove our subdivision. Her vote should not be allowed; it would be obviously predetermined.

Sincerely,


Dolores I. Howard

Trustee


Carl W. Howard

Trustee

ATTN: Coastal Commission.

CONCERNING. Permit # 1-13-009
Applicant - Airport Authority.

LOCATION/DATE. EUREKA CA. 9/12/13

PLEASE - I MAIL THIS ON FRI - AS I RECEIVED NOTICE ON THURS.
(SUBMIT BY FRI. PRECEDING HEARING?)

THE PROPERTY OWNERS OF PACIFIC SHORES HAVE BEEN
"GETTING THE SHAFT" FOR OVER 30 YRS - SINCE BEING CLASSIFIED
A "GRAY AREA" BY THE ORIGINAL COMMISSION

NEGLECTED BY County SERVICES - POLICE / ROAD / UTILITIES - TAXPAYER^{ETC}
CONSPIRED AGAINST BY FISH + GAME. (NOT WILDLIFE)

ATTACKED BY NEW ALLIANCES WHO MAKE LIVINGS OFF OF
THEIR DESIRE TO ACQUIRE OUR "PRIVATE PROPERTY"

I'M A MEAGER MAN WHO INVESTED YRS. IN MY "LOT".

LEAD ON BY THINGS LIKE THE BOND FOR A SEWER PLANT, YET
SUBJECTED TO MORE + MORE HURDLES - SET BY "STAKEHOLDERS".

WHAT ABOUT OUR SUIT AGAINST FISH + GAME?

I THINK IF THEY CAN HOLD US OFF + GET THIS TO TRANSPIRE
THEY GET WHAT THEY WANT. — FOR CHEAP!

I FEEL CHEATED + ROBBED BY OFFICIALS IN MY OWN
BEAUTIFUL STATE OF CALIFORNIA

WE COULDN'T DEVELOP - THIS IS DEVELOPMENT

FAIR VALUE!

Michael Silliman

MICHAEL SILLIMAN
14127 ETHAWA SPRING RD
MIDDLETOWN CA. 95461.

RECEIVED

SEP 09 2013

CALIFORNIA
COASTAL COMMISSION

PROPERTY OWNER AT PACIFIC SHORES

September 04, 2013

RECEIVED
SEP 09 2013
CALIFORNIA
COASTAL COMMISSION

California Coastal Commission
North Coast District Office
1385 8th Street, Suite 130
Arcata, CA 95521

Agenda No: Th96
Project No: 1-13-009
Maxine D. Curtis
In Favor of project

Re: Costal Permit Application
Border Coast Regional Airport Authority

I fully support the Airport Runway Safety Project at the McNamara Field Crescent City, CA airport.

I believe the subdivision in question is the only place in Del Norte County where the airport could find adequate wetland acreage for their required mitigation.

The wetland in question was set up as a subdivision over 50 years ago and, instead of the community development as promised by Pacific Shores Assoc., it turned into a swampland scam of which I became and still am a victim. I have owned a lot in Pacific Shores for over 20 years and have dutifully paid my taxes every year while hoping for a way out from under this financial burden.

I am writing to defend my right and the right of other lot owners to sell our useless property. All our efforts to put an end to the Pacific Shores project have been met by lawsuits over the past 20 years. Now, again, Kelly Smith's lawsuit is attempting to block our right to dispose of our lots for no logical reason. The application for the permit clearly outlines substantial plans for protecting the dunes, animals and plants that inhabit the area in question.

Furthermore, if the RSA improvements are not allowed, the McNamara Field airport will fail the federally mandated safety standards and will no longer be able to operate as a commercial facility. (semi-quoted from your report). This failure will be a financial blow to the Crescent City community and surrounding areas. It will impact jobs, increase cost of

Page 2

Coastal Permit Application Permit No. 1-13-009
Border Coast Regional Airport Authority

materials and produce that would have to be trucked in from Eureka, CA; Medford, OR or other surrounding airports, eliminate emergency medical flights and have a devastating effect on tourism and community growth.

On behalf of all the victims of the Pacific Shores swampland scam, and for the future of Crescent City and the surrounding areas I am asking you to please approve the Coastal Permit Application and finally put that land to good use for the people of Del Norte County. Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read "Maxine D. Curtis". The signature is fluid and somewhat stylized, with the first name being the most prominent.

Maxine D. Curtis
111 Victoria Way
Central Point, OR 97502

Ph: 541-665-4866



FRIENDS OF DEL NORTE

Committed to Our Environment Since 1973

A non profit, membership based conservation group

Advocating sound environmental policies for our region

P.O. Box 229, Gasquet CA 95543, (707) 951-3020

<friendsdelnorte@yahoo.com>

September 6, 2013

California Coastal Commission
Northcoast District Office
1385 8th Street, Suite 130
Arcata, California 95521

Dear Commissioners:

It may surprise you to hear that environmental organizations support the Border Coast Airport's effort to complete a mandated safety project. Well, we do support it. We want this Airport to stay open. While the destruction of so much high quality wetland is very unfortunate, we have helped seek mitigation solutions. We submitted supportive comments to the Army Corps in June for this project (attached).¹

Your staff has done a great job to help the Airport address its challenges in completing a permit application. The framework for final permitting and the special conditions are the right ones. However, there is one significant issue that still needs to be addressed, and one critical point to be made.

We see a "Gating Plan" as an essential component of any successful Mitigation Plan:

- The failed Pacific Shores Subdivision has been sitting without any plans or permits or legal development for 50 years now. The State of California owns 51 % of all the lots. For this particular permit we do support partial credit for the acquisition of lots, but action must be taken to protect this special mitigation by requiring a gating plan for at least some Subdivision roads, and you must pursue those who commit illegal trespass on all mitigation land. Otherwise the proposed mitigation **will NOT be "the best feasible mitigation possible," as required by the Coastal Act. If the acquired lots and restoration projects are open and unsecured, you cannot conclude that "there are no further feasible mitigation measures,"** as stated in the resolution.

The Subdivision has 27 miles of County road which Off-Road Vehicles (ORVs) use to access private lots as well as State-owned lots. The roads allow trespass directly into the State wetlands and dunes of the Lake Earl Wildlife Area and Tolowa Dunes State Park. People drive into Lake Earl marshes, and all over ESHA dunes and beach. These violations have increased since the Del Norte Board of Supervisors' 2010 attempt to open an ORV Park in the Subdivision.

¹ This Friends of Del Norte et al letter to the U.S. Army Corps dated June 24, 2013 references photographic and other documentation, which we have submitted to the California Coastal Commission staff in the Northcoast office, and is hereby placed in the record for this permit.

As a consequence ORVs are destroying Federally listed and special concern species habitat on private and public Subdivision lots, as well as on adjacent State lands. This includes unrelenting, systematic destruction of formerly productive habitat of Oregon silverspot butterfly, Western snowy plover, Tidewater goby, and Sand dune phacelia.

Most of the remaining private lot owners live far away and few ever visit, but local people with trash and ATVs sure do. If roads were gated, the few lot owners who want access could obtain keys from the County.

Unless you act, the lots to be acquired as mitigation will also be completely unprotected and likely degraded. It doesn't make sense for the Commission to allow a mitigation credit for acquisition and not protect it.

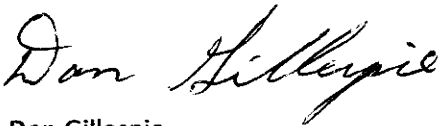
- **I would like to underscore the following point: We will not support credit for acquisition of land or lots to satisfy mitigation ratios in the future.**

The Board of Supervisors has blocked further State acquisition for the past five years. A review of lot owner responses to the one Airport mailing indicates that several hundred lot owners are potentially interested in selling.

Left to their own devices, the Supervisors would restart the operation of an ORV park in the subdivision – I note that they have excluded the ORV area from the mitigation project; the same Supervisors would never allow conservation of the area but would hoard the private lots as coins in a piggy bank to be spent on future development projects.

We support credit for the lot acquisition at Pacific Shores just this one time.

Sincerely yours,



Don Gillespie
President,
Friends of Del Norte

Gary Graham Hughes
Executive Director
Environmental Protection Information Center
145 G Street
Arcata, California 95501

Attachments: Photos of degradation within the Pacific Shores Subdivision and adjacent Tolowa Dunes State Park and Lake Earl Wildlife Area



This is a state-owned lot on the west side Marish Street in the Pacific Shores Subdivision. Until April 2010, this was a pristine meadow and home to one of Del Norte County's largest source populations of federally threatened Oregon silverspot butterfly and ~2,000 of its host violets. After the County opened its OHV trail, experts estimate that one third of the violets were destroyed as well as butterfly larvae.



Illegal camp in trees on state-owned lot, also on west side of Marish Street in Pacific Shores Subdivision. Note ESHA status Coastal pine (*Pinus contorta contorta*) being cut for firewood.



OHV damage to Lake Earl's federally endangered Tidewater goby habitat. Access to this point is directly from one of the un-needed Pacific Shores Subdivision road spurs leading into wetlands.



Destruction of CNPS-listed endangered old growth Sand dune phacelia mats in adjacent Tolowa Dunes State Park. Access to this site is from Pacific Shores Subdivision road.



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<friendsdelnorte@yahoo.com>

June 24, 2013

Ms. Carol Heidsiek
U.S. Army Corps of Engineers (ACOE)
Woodley Island
601 Startare Drive
Eureka, CA 95501
FAX 707 443-7728

CCs:
Jim Bernard
Manager
Boarder Coast Regional Airport Authority (BCRAA)
150 Dale Rupert Road
Crescent City, CA 95531
FAX 707 464-1023

RE: **SUPPORT for granting 404 Permit for Runway Safety Area (RSA) Improvement Project Del Norte County Regional Airport with Mitigations as Proposed, Jack McNamara Field (CEC) (BCRAA applicant), and with minor modifications: ACOE Public Notice # 2006- 301420N.**

Dear Ms. Heidsiek:

We are submitting comments as an alliance of regional environmental protection and restoration organizations based in Del Norte and Humboldt counties. Our six signatory organizations appear on the last page of these comments. Some of our groups have a record of engaging and litigating issues on the north coast for 40 years now. This letter is 11 pages total, plus submitted referenced documents enclosed/attached.

Summary

The destruction of high quality wetlands and sand dunes at the Del Norte Airport is unfortunate, and stems from the equally unfortunate coastal location of the Airport, which was originally chosen by the federal government for military training purposes. Nevertheless, we understand that the purpose of the RSA project is the protection of public safety, and that the Federal Aviation Authority may close this Airport if this safety project is not accomplished. Some of our members fly from this Airport, and many county residents recognize the essential nature of its services for this isolated community.

Given that context, it appears that there is broad general and political support for this project which the Airport in good faith has been pursuing for four years now. The pursuit of alternative mitigation sites has not been fruitful. Indeed the Airport has spent nearly one million dollars¹ of our hard-earned taxpayer money examining alternatives and preparing these specific mitigation plans, of which the subdivision is the central focus. The opposition to this project appears to be a Sacramento-based attorney, Kelly Smith, on behalf of the purported Pacific Shores Property Owners Association (PSPOA), which claims to represent some of the remaining owners with lots in the subdivision where mitigation has been proposed.

Smith has suggested to the ACOE that a "practicable alternative" to this project "exists at the Arcata/Eureka airport" which is located 1.5 hours south on Highway 101.² Smith's clients appear to include at least two Del Norte citizens, but they haven't told him that Highway 101 South is called "last chance grade" because it is in serious danger of falling into the ocean at any time. For the purposes of individual medical evacuation, or in the case of the next inevitable tsunami/earthquake mass disaster, Del Norte county has only two marginal and geologically unstable roaded emergency escape routes -- and it has the Airport. This is also true for all the people who live in bordering Curry County in Oregon.

We accept that certain projects of public safety and necessity must be mitigated somewhere. Attorney Smith and the lot owners he claims to represent (99% of whom do not appear to live in Del Norte) do not realize that our isolated southern Oregon and northwestern California communities cannot lose this regional Airport.

For such a substantial mitigation, which needs to be located in a similar coastal environment, the abandoned Pacific Shores Subdivision (subdivision) is a logical and perhaps the only possible selection in a county that is already 80% public land. For four years now the BCRAA has been investigating various alternative sites for mitigation, and for different reasons no other sites have been possible or promising. We also understand and expect, based on our collective experience and permit precedent, that the California Coastal Commission in its permitting for this project will require mitigation at a ratio of 1:4 wetland replacement and more for impacts to sensitive sand dune habitats. Indeed when it comes to that permit we can anticipate that the Commission will stick to its precedents, because in the past it required 1:4 wetland replacement mitigation from the Santa Barbara and San Diego airports.

For 50 years now the paper subdivision has been sitting undeveloped, essentially a lawless land without zoning status or development permits. Apart from a deteriorating road system, the subdivision is without infrastructure. In its present state the subdivision itself is effecting

¹ Pers. Communication from Jim Bernard BCRAA Manager June 6, 2013.

² Smith Firm letter to ACOE April 9th 2013.

widespread destruction of environmentally sensitive habitats pre-existing on both private and adjacent public properties. Further the subdivision in its present uncontrolled and lawless state is causing a takings of federally threatened and endangered species. We call the remaining private owners as well as the purported PSPOA to account for these takings.

If the open and lawless status of the abandoned subdivision could be resolved, illegal access and various illegal activities damaging to the environment and public health and safety could be better controlled. With better controls, such as gated and/or removed roads, protection for species and habitats might improve, and property values for the remaining owners might actually increase (rather than decrease as Mr. Smith keeps suggesting). Therefore we believe that the BCRAA is helping all involved parties move toward resolution by giving some individual owners an option to sell their private property, an option which has been blocked by the Del Norte County Board of Supervisors since 2008.

There are certainly environmental issues to raise here but attorney Smith is not raising them. We request particular modifications to this project at the end of these comments in the section entitled **Requested Modifications of Permit Mitigation Proposal.**

Status of Pacific Shores Property Owners Association (PSPOA)

Smith says he represents PSPOA which "includes hundreds of private property lot owners." In pending litigation in Sacramento he is indeed representing about 100 lot owner families/individuals controlling a total of 149 half acre lots.³ However there are approximately 1535 private half acre lots in the subdivision, and 51% of these have been sold by willing sellers (or through tax default) to the State of California, and assigned to the California Department of Fish & Wildlife/Lake Earl Wildlife Area for management.⁴ Therefore the State of California owns 750+ lots. Of the remaining ~750 lots, nearly 400 lot owners responded to an Airport survey by signaling their immediate or potential interest in selling. In addition about 200 were not reachable/non-responsive.⁵ Of the relatively small group who have apparently retained Smith, several dozen have also expressed their interest in selling to the BCRAA.

Baseline Subdivision Zoning

Smith maintains that the Airport plan violates NEPA because would increase air traffic; alter land use patterns by promoting casino growth and traffic; and change land use at Pac Shores. However, we would like to point out that the subdivision is 50 years failed now. It has no zoning. There is no official "land use." Even during the years when the Pacific Shores Subdivision Water District had taxing authority to fund environmental studies and apply for permits, they were unable to produce adequate planning documents or resolve fundamental environmental constraints, inherent in the subdivision location in low-lying sand dunes with a high water table. Hence the subdivision has never been awarded status in the Local Coastal Plan (LCP) or zoned by the County; technically it exists as a white hole in the LCP. In 1981 the Coastal Commission denied the portion of the County's Land Use Plan pertaining to the subdivision, and nothing since has been proposed to remedy this lack of status.⁶ Permitting authority is therefore retained by the

³ Review of requested information about lot owner responses to BCRAA survey 2013.

⁴ Pacific Shores Subdivision Ownership Map 2009-10-22 produced for BCRAA and attached.

⁵ Review of requested information about lot owner responses to BCRAA survey 2013.

⁶ Pacific Shores Subdivision Special Study, draft report July 1989, prepared by Winzler & Kelly Engineers

Coastal Commission, whereas in contrast for most of coastal Del Norte the County has been given direct zoning and permitting authority by the Coastal Commission.

The Pacific Shores Subdivision Water District was established, and acquired monies through a taxing authority, to study and fulfill the development potential of the subdivision. After many years of taxing subdivision lot owners without result, this Water District was dissolved in 2008 by the Del Norte County Local Agency Formation Commission.⁷ This action brought to an end what was apparently the best hope for completing required studies and obtaining zoning for the entire paper subdivision area.

Actually the subdivision is entirely "zoned" in the Tsunami run-up and evacuation zone. This is demonstrated to chilling effect by the attached official State of California Tsunami Evacuation Map for Lake Earl/Fort Dick; this map also helps show how the entire subdivision is low-lying.⁸

Unfortunately, as climate change progresses, and sea levels rise, we can anticipate that the environmental hazards of the subdivision location may increase.

Baseline Land Use

So what is the unofficial "land use" Smith and his clients are concerned about retaining? What is their apparent property value that they wish to protect?

If these unfortunate subdivision investors were to visit, during a short tour they would see extensive dumping of trash, including bulky items ranging from mattresses to boats and toxic hazardous wastes. That the dumping of toxic waste is allowed to continue over many years along subdivision streets likely amounts to significant environmental damage to the water table, for which the PSPOA may be responsible. There is also illegal, unsanitary and unsightly housing, some of which the Coastal Commission has already cited for enforcement action because no Coastal Development Permits (CDPs) have ever been approved within the subdivision. The subdivision has also been the site of fires, rapes and threats. We hereby reference all Daily Triplicate newspaper articles about subdivision crime.

We have monitored the subdivision over many years and assembled in depth photo documentation of these environmental, social and health impacts. We have attached a sampling here.⁹

In addition, we have attached documentation, prepared by other organizations, that the subdivision and its roads are the source of extensive Off Highway Vehicle (OHV) damage to private and public lots in the subdivision, as well as to the adjacent public trust lands of Tolowa Dunes State Park (TDSP) and the Lake Earl Wildlife Area (LEWA). This damage has been inflicted on the documented habitat of federally listed and other sensitive species, including the Oregon silverspot butterfly, Western snowy plover and Tidewater goby fish.¹⁰

for Pacific Shores Subdivision California Water District, pgs. 1-1.

⁷ LAFCO Water District Dissolution Report in attachments.

⁸ PSS Tsunami Evacuation Zone Map in attachments.

⁹ Reference attached exhibit of photo files.

¹⁰ Illegal OHV Activity MONITORING REPORT: Del Norte County's Combined Use Roads 2010 – 2011, Powerpoint Presentation Prepared March 2012 by Tolowa Dunes Stewards, in attachments.

We suggest that this acute and cumulative damage amounts to a takings of these species and their habitat.

In addition, access through subdivision roads is the source of illegal breaching of the Lake Earl lagoon. Unfettered access encouraged by the open, lawless nature of the subdivision has played a substantial role in defeating the adopted management plan for the lagoon, providing unrestricted access to the sandbar at the vulnerable mouth/breach area.¹¹

We respectfully ask the remaining lot owners who do not appear to want public agency assistance in resolving this damaging situation: How does controlling and cleaning up some of these roads (and therefore some of this crime and blight) de-value the properties more than they are already de-valued by the subdivision's current baseline status as a lawless area open to all, having no status and no zoning, and dotted with unsanitary trash heaps, Off Highway Vehicle play areas, and squatters/illegal residences?

Status of Subdivision Roads and Drainage Channels

Smith says that the county roads constitute the system of draining the subdivision, and that "a system of drainage channels lines the roads throughout the subdivision."¹² He says the subdivision was designed for water discharge along the roads, so that removal of roads will cause discharge, creation of new wetlands, and additional flooding of properties.¹³

Actually road removal will do the opposite. It will assist with faster drainage of the subdivision, because the soil is primarily sand.¹⁴ The network of roads is lightly compacted material, which in the early 1960s was used to fill in and interrupt the natural northwest to southeast orientation of the pre-existing dune swale wetland pockets. This is obvious in baseline aerial photos and wetland mapping.¹⁵ Removal of some of the roads would likely improve the drainage with less so-called "flooding" because the impermeable road fill through the naturally low-lying areas helps create basins that collect rainwater and groundwater that reaches the surface during winter rains.¹⁶ Removal of some roads restores natural drainage patterns and makes those areas highly permeable sand again, thus accelerating drainage until the water table is encountered.

The drainage channels were never engineered; they were dug in sand and never lined with any material such as concrete. Our attached photos show there are already natural wetlands, due to the naturally high water table which is at the surface or within 3 feet of the surface, even when Lake Earl is open to the ocean, fully drained and tidal.¹⁷ You can see from the attached photos that these drainage channels have filled in with sand and willows, and are of no use for drainage. Sand is highly permeable, so water moves very quickly downward into the water table. This is why sand dunes in the deflation plain (roughly the subdivision location) function like a sponge

¹¹ Attachments labeled Lagoon Illegal breach trench 2011 and 2012. Please note that these were obviously dug by hand with shovel(s).

¹² Smith Firm letter to ACOE April 9, 2013.

¹³ Smith Firm filing of intent to file suit under CEQA transmitted to BCRAA June 2013.

¹⁴ Lake Earl Wildlife Area (LEWA) and region soils map, California Dept. of Fish & Game LEWA Management Plan and CEQA Environmental Impact Report 2003-2004.

¹⁵ PSS Ownership Map 2009-10-22 in attachments.

¹⁶ PSS; Lake Earl Open to the Ocean 2011-01-03 photo series in attachments, photographer S. Jerabek. See also related Kellogg Road 2012-3-31 photo series of low point of Kellogg Road access to the subdivision (constructed with fill through Tolowa Slough, in attachments).

¹⁷ *ibid.*

sucking rainwater into a vast groundwater reservoir. Given that the drainage ditches were simply dug into sand, they would in any case not function to carry rainwater very far away from any property before the water sinks down into the groundwater table and replenishes an already existing reservoir.

Nor were the roads ever engineered. They were only lightly chip sealed and not finished to County standard. Roads would have been brought up to standard during build-out.

Baseline Subdivision Environmental Conditions

Attorney Smith and some of his subdivision investors have been denying the truth of this subdivision location for almost 50 years now. When their own experts attempt to communicate this truth, they hire new experts. Smith most recently in his letters to ACOE and CCC incorrectly contends that this mitigation project will cause "intentional (or unintentional by creating more habitat) spreading of endangered species habitat and wetlands due to restoration." We hereby request that this ACOE legal record include all the surveys and studies produced for the BCRAA during its last five years of attempting to identify and document a mitigation site. This will help to establish the current baseline conditions in the subdivision, and demonstrate that it is in fact -- and always was-- little **BUT** endangered and sensitive habitats and species. The subdivision always had wetlands, and it was always subject to flooding from the Smith River and from Lake Earl water levels.

In the late 1980s some of the lot owners set up the subdivision's Water District, which beginning in 1988 hired experts to conduct a special study and make an effort to get a land use plan adopted. In a well-documented final draft the lead experts told the District board:

"A large portion of the subdivision (237 acres) is mapped as wetland...in the portion of the subdivision intended for half acre development...(and even if it were possible to contest this)...the area of indisputable wetland remaining would likely still be quite large and would represent a significant impediment to development." ¹⁸

On this point the study concludes: "...our experience indicates that if the resource agencies are strongly interested in the wetlands values of an area, as they are at Pacific Shores, the required studies would be costly and would consume many years of field research and litigation, and may not change the ultimate outcome." ¹⁹

The study also warns about development problems due to rare plants and protected sand dunes which exist throughout the subdivision: "Another substantial impediment to development could be that the county's Local Coastal Plan maps the entire subdivision as environmentally sensitive dunes." ²⁰

A letter from one of the District's own consultants working on the Special Study, advises them to

¹⁸ Pacific Shores Subdivision Special Study, draft report, July 1989, prepared by Winzler & Kelly Engineers for Pacific Shores Subdivision California Water District, pgs. 1, 4-1 ¹⁸ Wetland map used is from 1983/1987, before the lagoon was allowed to go higher.

¹⁹ Ibid., pg. 16.

²⁰ Pacific Shores Subdivision Special Study, draft report, July 1989, prepared by Winzler & Kelly Engineers for Pacific Shores Subdivision California Water District, pg. 1.

sell.²¹

However the information about a significant, pre-existing and natural "impediment to development" goes back much earlier. A National Wetlands Inventory map of the subdivision which dates from 1983/1987 illustrates the referenced dense mosaic of wetlands scattered throughout the subdivision due to the high rainfall, sand and the resultant high water table. This was indeed "a significant impediment to development" because Coastal Act policies require large setbacks from any wetland edge, thus doubling or perhaps tripling the practical impact on development of these scattered wetlands throughout the paper grid of half acre lots.²²

The team of experts in the special study also discussed flooding: "The greatest flood around Lake Earl and Lake Talawa occurred in January 1970 when a severe storm struck and the sandbar barrier could not be opened to release floodwater to the ocean. The Smith River did not overflow in this case."²³ The special study further cites that "...the Smith River overflowed to Lake Earl ... nine times during the 110-period from 1861 and 1971, or 8 times per century... During these infrequent overflows, Kellogg Road (the access road to the subdivision) is flooded and impassible by motor vehicle".²⁴

Historic Record re Flooding in the Pacific Shores Subdivision

Smith and his group argue that public agency actions, including road removal, will create wetlands and flooding in the subdivision, implying that otherwise the subdivision would be dry, well drained and not subject to flooding. Actually the historic record available to anyone shows just the opposite. Federal, State, and County agencies have been studying the "flooding problem" at Lake Earl since at least 1909. The California State Legislature has paid for studies several times. The ACOE has been involved. However in the end these agencies in turn refused to fund an engineered solution to prevent flooding. Apparently no one wanted to pay for them, and the County didn't have the funds either. Even though its own County Sanitarian Joe Creisler had called to no avail for permanent flood control structures to be built, this historic record was ignored by Del Norte County when it approved the subdivision. However the record was not ignored in the Department of Real Estate mandated Disclosure given to all purchasers,²⁵ which would have alerted prudent property investors to investigate further before buying subdivision lots.

We have attached a series of public agency letters²⁶ which document the Del Norte County Flood Control District (District) official perspective during the period 1960 through 1975, and thus pre-date the subdivision and environmental laws. (These also pre-date the California Department of

²¹ Letter from Lawrence W. Margler, Winzler & Kelly Consulting Engineers to Paul R. Tande re Pacific Shores Special Study, September 26, 1988, 3 pages.

²² Pacific Shores Subdivision Special Study, draft report, July 1989, prepared by Winzler & Kelly Engineers for Pacific Shores Subdivision California Water District, APPENDIX 1: Biological Resources, National Wetland Inventory Map, Winzler and Kelly Exhibit 3, IV.B.7-0093

²³ Pacific Shores Subdivision Special Study, draft report, July 1989, prepared by Winzler & Kelly Engineers for Pacific Shores Subdivision California Water District, pg. 5-1.

²⁴ *ibid.*

²⁵ Flooding 4 Attachment.

²⁶ See attached series of exhibits named Flooding 1-6.

Fish & Game, i.e. CDFG allowing Lake Earl to fluctuate to higher water level elevations, which began in 1988/89.) Lake Earl is variously referenced as zones 2 & 3 in the District reports.

By letter, the District documents two flooding threats to land around Lake Earl: from the Smith River; and from Lake Earl water elevation rise. In addition, it documents the County's inability (during flood/storm) to breach the sandbar at the mouth of the lagoon. This inability to manage the Lake level during major storm events is one reason why there will always be periodic flooding of lands adjacent to Lake Earl.

Exhibits Flooding 1 and 2 describe issues re Lake levels and flooding. In 1959 and 1960 County Flood Control District sanitarian Creisler recommends assistance from other agencies and further studies, asking for the construction of a wier. "The only feasible method of controlling the Lake level is the construction of a wier...possible loss of the proposed wier could occur when the Smith River floods into Lake Earl."²⁷

Exhibit Flooding 3 is a 1962 letter from California Department of Water Resources discussing all the possible flood control projects that might be employed at Lake Earl (e.g. dikes, channels, wiers) and reviews state and federal studies of same (an ACOE study conducted in 1948 and State of California 1954 study). It concludes that none of these are economically justified, and that even though the local flood control district would like the State to do something, the State declines and says using a bulldozer *when* weather permits is the best option.

Exhibit Flooding 4: California Department of Real Estate required special disclosure dated 1963, which all subdivision landowners received. It has special notes about flooding.

Exhibit Flooding 5: Flood Control District employee Creisler letter January 1972. By 1972 there has been increased development around Lake Earl. This letter notes flooding in January 1972 and confirms that the County approach was simply to provide warnings for people.

Exhibit Flooding 6 Creisler November 1972. No septic tanks with leach lines will be allowed in this subdivision per North Coast Regional Water Quality Control Board. Subdivision property owners who sought more information about the issue were notified by certified letters.

Exhibit Flooding 7 Walters Engineering Report is a summary of the flooding issues and described the rationale and path forward to obtaining permits to build as including 1) creation of a Community Facilities District (funding mechanism) AND 2) the construction of hard fix Lake Earl water level management/flood control structures. As discussed, these were never built. It appears no one ever wanted to pay for them.

Exhibit Flooding 8 ACOE Flood Plain Study. This 1971 document shows that the Smith River at flood stage flows south into Lake Earl as well as into the subdivision, inundating low lying roads and making them temporarily impassable.

²⁷ Flooding 2 Attachment.

Requested Modifications of Permit Mitigation Proposal

- **Regarding Fencing as part of mitigation at Point St. George site:**

To maintain and enhance connectivity, and biological productivity of the Point St. George public lands, it is important to provide passage at regular intervals underneath the fencing, for small water dependent animals, such as River otter and Western pond turtles (species of concern) that move through this area. Otters have been observed crossing the road into the Airport from the forest to the south and attempting to head north, only to encounter the Airport fence line.

- **Wetland Mitigation:**

Although already mentioned, it should be emphasized that Coastal Act wetland mitigation has greater scope and requirements than the ACOE simple replacement formulas. The biological productivity of wetland mitigation has been shown to be inferior to such natural high quality areas, with a high failure rate (recent study from water quality wetland policy review):

http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/mitigation_finalreport_full081307.pdf

- **Protection of Site Restoration/Acquisitions at Pacific Shores Subdivision site:**

The mitigation project should include a plan for protecting the site restoration/acquisition during the monitoring period and beyond. This plan should call for immediate (or eventual post-monitoring) transfer to California Department of Fish & Wildlife (CDFW) for long-term conservation and protection. Because it is the largest adjacent land owner and owner of 51% of the subdivision lots, CDFW is the logical choice. ACOE and U.S. Environmental Protection Agency 2008 rules about the need to protect mitigation sites must be applied here.

As discussed the subdivision is wide open to trespassers and criminals, a lawless land with little control or enforcement. Any mitigation site is likely to be vandalized or destroyed, particularly by trash dumping and OHVs. Please reference the already extensive discussion of this problem and all attached documents as per the section above called Baseline Land Use.

As part of this permit, ACOE should apply its rules and the County should be required to gate the roads that are not closed by the mitigation project. The County must pledge to do this in writing as part of this permit process. Remaining owners of private lots on gated roads can be given keys. The results should be monitored. We predict a significant decrease in trespass, trash dumping and various damage to both private and public lots.

Requested Additions to the Record for this Permit

We ask that the entire record regarding US Army Corps permitting of California Fish and Wildlife (Game) Management Plan and EIR for Lake Earl (2003-2004) be considered a part of this record. There is important habitat value information about Lake Earl that highlights the

9

Comments submitted by environmental groups on June 24, 2013 to the U.S. Army Corps of Engineers regarding SUPPORT for granting 404 Permit for Runway Safety Area (RSA) Improvement Project Del Norte County Regional Airport with Mitigations as Proposed, Jack McNamara Field (CEC) (BCRAA applicant), and with minor modifications: Public Notice # 2006- 301420N

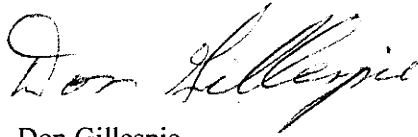
importance of restoring and protecting this area. This record, including all comments and studies regarding the Plan and EIR submitted by the Friends of Del Norte and Lake Earl Coastal Lagoon Alliance, should be considered as part of this permit record.

As already discussed, unfettered access has played a substantial role in defeating the adopted management plan for the lagoon, providing unrestricted access to the vulnerable mouth/breach area.

Also we ask that this record include the entire record developed thus far by the BCRAA consultants for this 404 permit, as well as for the California Coastal Development Permit, and the BCRAA RSA EA and EIR, including environmental studies, wetland and other habitat and biological surveys and analysis, agency comments and analysis.

(Page 11 with signatory groups follows.)

Sincerely Yours,



Don Gillespie
President
Friends of Del Norte
PO Box 229
Gasquet, CA 95543

and signing for:

Jennifer Kalt,
Conservation Director
California Native Plant Society
P.O. Box 1067
Arcata, CA 95518

Diane Fairchild Beck
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Signatories

Signatory and Final Page of Comments submitted by environmental groups on June 24, 2013 to the U.S. Army Corps of Engineers regarding SUPPORT for granting 404 Permit for Runway Safety Area (RSA) Improvement Project Del Norte County Regional Airport with Mitigations as Proposed, Jack McNamara Field (CEC) (BCRAA applicant), and with minor modifications: Public Notice # 2006- 301420N

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September 3, 2013

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California Coastal Commission
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RECEIVED
SEP 09 2013
CALIFORNIA
COASTAL COMMISSION

RE: Renewed Opposition to Coastal Development Permit (CDP) for Del Norte County Jack McNamara Field (CEC), and mitigations, Item 9(b), September 12 agenda

Dear Commissioners:

The directors and members of the Pacific Shores Property Owners Association renew their opposition to the still half-baked CDP application by the Border Coast Regional Airport Authority.¹ Indeed even the engineering plans are marked "50 percent." See the GHD exhibit to the staff report.

Your staff recommends you pre-approve mitigation conditions which condemn Pacific Shores' roads and seed private property with endangered butterflies. What they really want is to use federal airport money to advance the private property grab by Fish & Wildlife from Pacific Shores owners. Don't be complicit.

The recent decision of the United State Supreme Court in *Koontz v. St. Johns River Water Management Dist.* (2013) 133 S.Ct. 2586 rejected "unconstitutional conditions" such as those proposed by your staff.

In *Koontz* an owner's use application was subject to exactions. Here you are asked to force the airport to make unconstitutional exactions from private owners. The bottom line is the same, addressed by our Supreme Court: "Extortionate demands of this sort frustrate the Fifth Amendment right to just compensation, and the unconstitutional conditions doctrine prohibits them." *Id* at 2595.

¹ See Exhibit 17 to your staff report. We renew the objections stated there. Nothing therein has been addressed by the current application or your staff's expansive rationalizations.

Pacific Shores is not "abandoned" as frequently claimed to justify taking property from people who bought it long ago to retire. We refer the Commission to the history of its heavy-handed regulatory efforts to prevent development there.

The Pacific Shores Property Owners Association consists of hundreds of lot owners who have refused to bow to the state's slow stealing of their property.

We refer the Commission members to the court records admitted before Judge De Alba in the inverse condemnation action in which the Pacific Shores owners prevailed, in the face of the state's recalcitrant legal opposition.² That litigation record is in the Commission's files. We raise it in support of our opposition here.

Finally, just to highlight an obvious and fatal shortcoming of your staff's proposal. You are urged to pre-approve mitigation conditions without any CEQA analysis of very significant environmental impacts—to drainage, use, habitat, as spelled out in our earlier letter. Your staff's hokey "qualifying land" formula doesn't even amount to an actual mitigation of the losses. Your action essentially finds significant impacts under 14 CCR §13252 (page 33 of staff report).

Beyond violating CEQA, it should be disturbing that the Commission is called upon to impose a harebrained scheme to take private property for "mitigation" without any clear understanding of the environmental implications of that act.

Such an act, taken in ignorance, will doubtless result in the state once again fouling up Lake Earl's environment. Ask DFW some time why salmon are extinct in Lake Earl, while tidewater gobies, supposedly endangered, swarm Lake Earl without their natural predator.


The Pacific Shores owners respectfully ask the Commission to wait until the facts—or at least final plans—are provided before pre-approving vague "mitigation" conditions.

What's the rush?

The real intent here is not mitigation of the project before you, but rather DFW's scheme to control, if not acquire, the Pacific Shores subdivision, and to depress the price for acquisition with steps such as removing the very roads to the private lots. Take Pacific Shores out of the picture and look at real mitigation for the airport.

Thank you for your attention to this matter.

Sincerely,

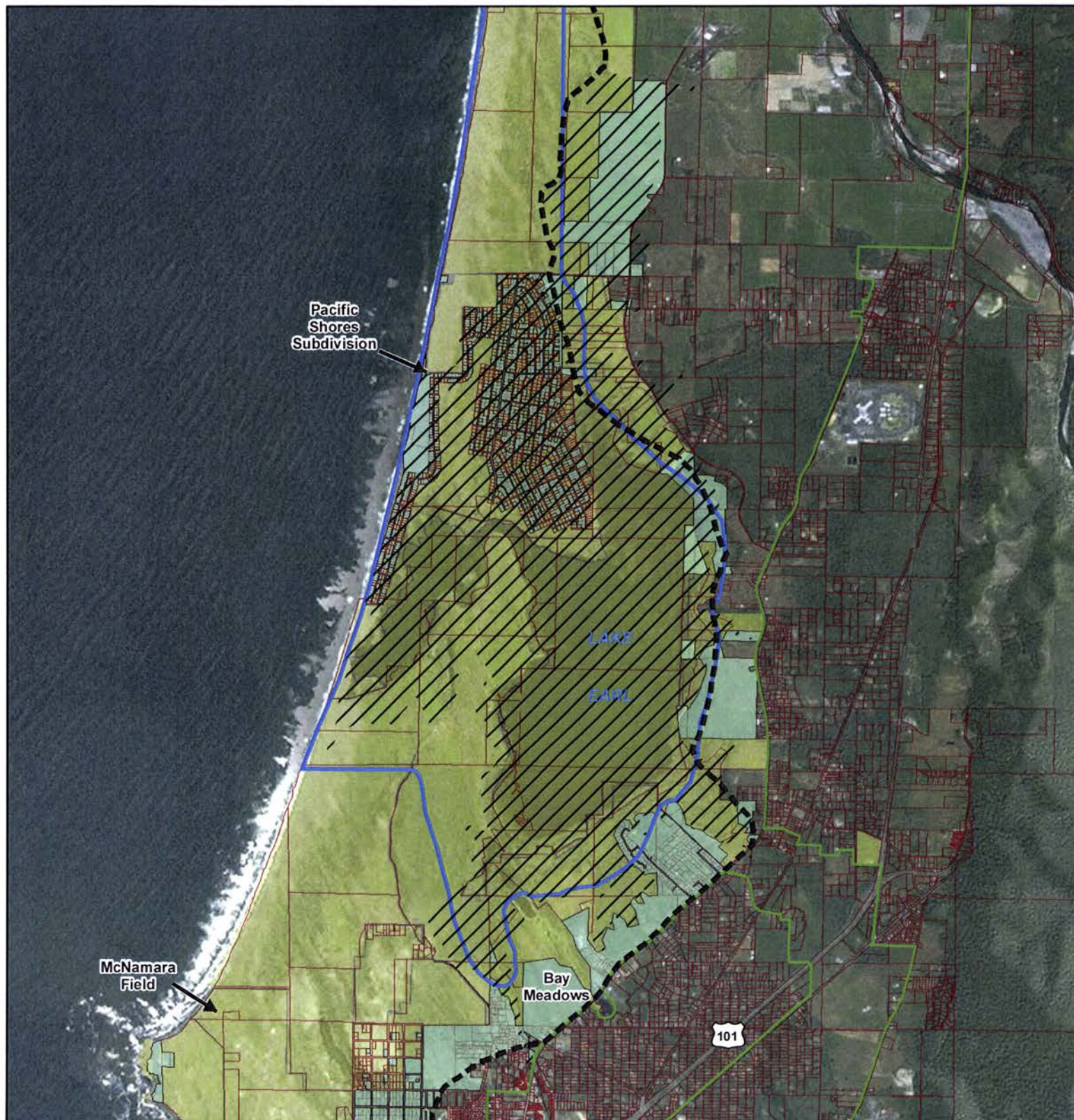


KELLY T. SMITH

² *PSPOA et al v. DFG et al*, Sacramento Superior Court case no 07AS01615; Third DCA case no. C070201.

EXHIBIT 22

RECOMMENDED MITIGATION AREAS



- Coastal Zone Boundary
- - - Ecoregion Available to Conduct Mitigation Restoration
- / / / Area Available for Acquisition
- 1975 DFW Priority Acquisitions
- Privately Owned Parcels
- Public Lands

EXHIBIT NO. 22

APPLICATION NO.
1-13-009 (Border Coast
Regional Airport Authority)
**RECOMMENDED
MITIGATION AREAS**

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
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Th9b

Filed: 8/22/13
180th day: 2/18/14
Staff: M. Kraemer-A
Staff Report: 8/30/13
Hearing Date: 9/12/13

STAFF REPORT: REGULAR CALENDAR

Application No.: 1-13-009

Applicant: Border Coast Regional Airport Authority

Agent: GHD Inc.

Location: Jack McNamara Field, Del Norte County Regional Airport (CEC), 150 Dale Rupert Rd., approximately 2 miles northwest of Crescent City, Del Norte County.

Project Description: (1) Maintain airport in compliance with FAA standards by constructing runway safety areas; and (2) perform mitigation work on-site and at off-site locations within the region which may include Pacific Shores, Point Saint George, Bay Meadows, and other locations in Del Norte County.

Staff Recommendation: Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

The Del Norte County Regional Airport, Jack McNamara Field (CEC), a non-hub commercial service airport operated and maintained by the Border Coast Regional Airport Authority (BCRAA, the applicant) and owned by Del Norte County, is located two miles northwest of Crescent City and 15 miles south of the California/Oregon border (Exhibit 1). The airport is

situated at the pinnacle of a prominent headland landform known as Point Saint George, an uplifted marine terrace that protrudes into the Pacific Ocean southwest of the coastal water bodies known as Dead Lake, Lake Earl, and Lake Talawa. The existing airport facility, which first opened in 1942, encompasses approximately 575 acres of land owned by Del Norte County containing forested, lacustrine, and emergent wetlands, riparian vegetation, and coastal dune and prairie habitats on the periphery of the actively used portions of the airfield.

The proposed development is a repair and maintenance project because it does not involve an addition to or enlargement or expansion of the airport facility. The runways are not being extended or expanded, and the project will not in any way increase the capacity of the airport or the ability to accommodate larger or different aircraft. Rather, the proposed RSA improvements are necessary to maintain the continued commercial use of the existing airport, which is currently substandard with respect to federally mandated safety requirements. Unless the airport brings its existing runways and security fencing into compliance with federally mandated safety standards by the end of 2015, the airport will lose its federal certification to operate as a commercial facility.

In considering a permit application for a repair or maintenance project pursuant to Section 30610(d) of the Coastal Act and Section 13252 of the Commission administrative regulations, the Commission reviews whether the proposed method of repair or maintenance – not the underlying use of the development – is consistent with the Chapter 3 policies of the Coastal Act.

The airport is located at a site that contains significant wetland areas and significant environmentally sensitive dune and rare plant habitat. Because of a lack of feasible less environmentally damaging alternatives, the project would result in a large amount of wetland fill: 16.9 acres. Wetland mitigation cannot be provided onsite at the airport, because of FAA safety restrictions against creating or enhancing wetland habitat at airports that would increase the presence of birds that could collide with aircraft. In addition, the project would displace 4.5 acres of coastal dune habitat and affect populations of three rare plants (Del Norte buckwheat, sand dune phacelia, and short-leaved evax).

To mitigate for these impacts, the applicant proposes mitigation at various locations. The applicant's mitigation plan describes some locations where wetland creation and acquisition of lands might occur, but does not propose a final list of mitigation sites for several reasons, including federal funding limitations and litigation that has been filed about one of the mitigation sites under consideration. Instead, the applicant proposes to submit a final mitigation plan for review by Commission staff after project approval by the Commission and after further study of potential mitigation areas.

Staff recommends that the Commission allow the applicant to determine the exact location of the mitigation sites as part of the final approved mitigation plan only if: (1) the mitigation sites are located within the same ecoregion as the habitat that would be impacted; (2) the final mitigation plan meets specified performance criteria, including criteria that determines whether specific property qualifies as a mitigation site; (3) qualifying mitigation involving acquisition of property is confined to the portion of the ecoregion encompassing Pacific Shores, its surrounding area and

the historic footprint of Lake Earl; and (4) the final mitigation plan is submitted and approved prior to commencement of any development that would create the impacts being mitigated.

Staff believes that in this case, a combination of wetland creation and acquisition of lands in certain areas at an overall ratio of 4:1 for wetland impacts would best mitigate for the wetland fill impacts of the project. The staff recommends that offsite mitigation for the wetland fill impacts be provided in the form of both wetland creation of at least 16.9 acres of wetlands within the same coastal dune ecoregion where the airport exists to ensure no net loss of wetlands, with the balance of the acreage being provided either in the form of additional wetland creation and/or the acquisition of lands within the portion of the ecoregion that encompasses Lake Earl and other lands within the historic footprint of Lake Earl.

Similarly, staff believes the impacts to 4.5 acres of coastal dune habitat be mitigated at an overall ratio of 3:1 in the form of direct restoration of at least 4.5 acres of coastal dune habitat, with the balance of the mitigation provided in the form of acquisition for preservation of other dune habitat in the ecoregion. Acquisition of lands for preservation as mitigation for either wetland or dune impacts would be given varying degrees of credit for mitigation proportional to the amount of wetland or dune habitat that exists within a given parcel acquired.

The special conditions recommended by staff would require the submittal of final mitigation plans prior to the commencement of construction of the repair and maintenance project that provide for wetland and dune habitat restoration and the acquisition for preservation of certain other lands at varying degrees of credit in the manner described above and discussed in detail in the following report.

Commission staff recommends **approval** of coastal development application 1-13-009 subject to the attached recommended special conditions.

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APPENDICES

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EXHIBITS

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Exhibit 3 – Vicinity map showing land ownership
Exhibit 4 – Site plan
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Exhibit 12 – Pacific Shores habitat memo
Exhibit 13 – Pacific Shores ownership map and lots currently available for acquisition from willing sellers, with sample purchase and sale agreement for lot acquisition

- Exhibit 14 – County waiver request and Bay Meadows conceptual mitigation plan
- Exhibit 15 – DFG 1975 proposed acquisition map
- Exhibit 16 – Memorandum from John Dixon, PhD.
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- Exhibit 19 – Comments from Friends of Del Norte
- Exhibit 20 – Comments from Chad Roberts, PhD.

I. MOTION AND RESOLUTION

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve coastal development permit 1-13-009 pursuant to the staff recommendation.

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment:** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration:** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation:** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.
4. **Assignment:** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land:** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. **North Coast Regional Water Quality Control Board Approval.** PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall provide to the Executive Director a copy of a Water Quality Certification and/or other necessary approval issued by the North Coast Regional Water Quality Control Board ("RWQCB"), or evidence that no certification or other approval is required. The permittee shall inform the Executive Director of any changes to the project required by the RWQCB. Such changes shall not be incorporated into the project until the permittee obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
2. **U.S. Army Corps of Engineers Approval.** PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall provide to the Executive Director a copy of a permit issued by the U.S. Army Corps of Engineers ("Corps"), or letter of permission, or evidence that no permit or permission is required. The permittee shall inform the Executive Director of any changes to the project required by the Corps. Such changes shall not be incorporated into the project until the permittee obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
3. **Revised Final Wetland Mitigation Plan**
 - A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall submit, for the review and written approval of the Executive Director, a revised final Wetland Mitigation Plan prepared by a qualified wetland biologist or ecologist. The revised final plan shall substantially conform, in applicable part, to the plans and concepts provided in the project description included in the July 2013 CDP application update and in the plans entitled "Runway Safety Area Mitigation and Monitoring Plan, Option 1: Pacific Shores Road Removal" (dated June 2013) and "Runway Safety Area Conceptual Mitigation and Monitoring Plan" (dated August 2013), all prepared by GHD for the Border Coastal Regional Airport Authority, except the revised final plan shall be revised to include, at a minimum, the following:
 - i. **Wetland mitigation ratios and credits:** The revised final wetland mitigation plan shall incorporate the wetland mitigation ratios, criteria, and credits detailed in Special Condition 4 and provide for wetland mitigation consistent with those wetland mitigation ratios, criteria, and credits.
 - ii. **Final design plans:** The final plan shall include final designs and analyses for reestablishing or creating wetland habitat as required by this condition, including: (1) goals, objections, and performance standards for the mitigation; (2) dimensioned, to-

scale mapping of compensatory wetlands sites, including the on-site wetland restoration areas; (3) baseline ecological assessments of the mitigation areas; (4) existing and proposed hydrologic, soil, and vegetative conditions at the mitigation and restoration sites; (5) engineering/grading plans and schedule; (6) drainage plans, including, if applicable, plans demonstrating adequate conveyance of stormwater and/or waters of Lake Earl away from private properties; (7) erosion control plans and schedule; (8) weeding plans and schedule; (9) planting plans and schedule; (10) short- and long-term irrigation needs; (11) on-going maintenance and management plans; (12) implementation plans demonstrating there is sufficient scientific expertise, supervision, and financial resources to carry out the proposed project and monitoring program in a specified and realistic time frame; (13) provisions for submittal of initial as-builts within 30 days of completion of the initial mitigation/restoration work; (14) monitoring, reporting, and remediation plans consistent with the requirements of Special Condition 3.

- iii. **Evidence of sufficient property interest to perform wetland reestablishment or creation:** The final plan shall include evidence, for each proposed wetland reestablishment or creation site, that the permittee has obtained sufficient property interests in the site(s) to be able to perform the proposed wetland reestablishment or creation and subsequent monitoring and maintenance of the wetland(s) as conditioned herein.
- iv. **Protection of mitigation sites:** Evidence, in a form and content acceptable to the Executive Director, that the owner of each identified wetland reestablishment or creation site(s), other than the 3.9-acre wetland reestablishment site on the airport property along the sides of the runways, has either transferred the property in fee to the California Department of Fish and Wildlife's Wildlife Conservation Board or executed an irrevocable offer to dedicate, to a public agency or private association acceptable to the Executive Director, an easement for habitat restoration, habitat maintenance, open space, and habitat protection over the mitigation site, either alternative consistent with the recordation requirements of Special Condition 13.
- v. **Coastal development permit approvals:** The final plan shall include evidence that all necessary coastal development permit authorizations from Del Norte County and/or the Commission have been obtained for each proposed wetland reestablishment or creation site, except for development of the 3.9-acre wetland area to be reestablished on-site along the sides of the existing runways, which is authorized herein pursuant to the specific performance criteria identified in Special Condition 5.
- vi. **Other approvals:** The final plan shall include evidence that all necessary approvals from other agencies and local governments have been obtained for development of each of the wetland reestablishment or creation sites.
- vii. **Evidence of acquisition of qualifying land for mitigation acquisition:** The final plan shall identify the location and size of each property acquired as qualifying land to be applied to satisfying the total required wetland mitigation acreage and provide a legal description and map of the property and provide evidence that title to the property has been acquired by the permittee.
- viii. **Wetland delineations of qualifying land for mitigation acquisition.** The final plan shall include a wetland delineation of each property acquired as qualifying land to be applied to satisfying the total required wetland mitigation acreage that documents the

percentage of each property that delineates as coastal wetland as determined by evidence of wetland hydrology and a preponderance of hydrophytes.

- ix. **Provisions for transfer of qualifying land for mitigation acquisition.** The final plan shall include provisions for transfer of qualifying land acquired for use as qualifying mitigation acreage to the approved accepting entity for long-term protection and management consistent with Special Conditions 4 and 13 within one year of acquisition for property that will not be used for mitigation creation and within one year of completion of wetland creation for property that will be utilized for wetland creation. This one-year deadline may be extended by the Executive Director for good cause.
 - B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
4. **Wetland Mitigation Ratios, Qualifying Mitigation Acreage, and Credits.** The permittee shall provide wetland mitigation for the wetland impacts of the approved development consistent with the following mitigation ratios, qualifying criteria, and credits:
- A. **Mitigation ratios:** The following wetland mitigation ratios, as defined herein, shall apply to authorized wetland impacts, provided that the wetland mitigation plan required by Special Condition 3 is implemented within two years of construction impacts:
 - i. A minimum 4:1 ratio of qualifying mitigation acreage to permanent impact acreage shall be provided for wetland impacts resulting from RSA improvements at and near the existing runway ends and for the fence post displacement impacts associated with the new security fencing (resulting in 52 acres of mitigation for a total of 13 acres of wetland impacts);
 - ii. A minimum 2:1 ratio of qualifying wetland mitigation acreage to wetland impact acreage shall be provided for wetland impacts resulting from RSA grading and other improvements along the sides of existing runways where (1) wetland hydrology is improved and wetlands reestablish within two years of completion of construction (resulting in 7.8 acres of mitigation for 3.9 acres of wetland impacts), and (2) on-site restoration areas are planted with an appropriate mix of native wetland plant species similar in species composition and density/cover to existing palustrine emergent wetlands in the project area. The wetland area to be reestablished along the sides of the existing runways may qualify as part of the required 2:1 mitigation, subject to the restrictions and requirements specified herein;
 - iii. A minimum 1:1 ratio of qualifying mitigation acreage to impact acreage shall be provided for temporary wetland vegetation impacts resulting from installation of airport security fencing (resulting in 0.3 acres of mitigation for 0.3-acre of security fencing wetland vegetation impacts). The wetland vegetation to be reestablished along the fenceline may qualify as the required 1:1 mitigation, subject to the restrictions and requirements specified herein;
 - iv. If the wetland mitigation plan is not implemented within two years of construction impacts, the applicant shall submit a revised or supplemental mitigation program to compensate for the additional temporal loss of habitat associated with the delay in

implementing the wetland mitigation plan. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required;

- v. If a minimum of 3.9 acres of palustrine emergent wetlands do not reestablish along the sides of the main runway within two years of completion of construction of the RSA improvements along the runway consistent with the requirements of Special Condition 5, the applicant shall submit a revised or supplemental mitigation program to compensate for the additional temporal loss of habitat associated with the delay in achieving successful wetland reestablishment. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required; and
- vi. If a minimum of 0.3-acres of wetland vegetation required to be established along the fenceline does not reestablish in place within one year of fence installation consistent with the requirements of Special Condition 5, the applicant shall submit a revised or supplemental mitigation program to compensate for the additional temporal loss of habitat associated with the delay in achieving successful vegetation reestablishment. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

B. Criteria for qualifying mitigation acreage:

- i. The qualifying mitigation acreage shall include the reestablishment or creation of a minimum of 16.9 acres of palustrine emergent coastal wetlands, assuming that the 3.9 acre portions of the palustrine emergent wetlands reestablish on-site at the airport as proposed and subject to the requirements of Special Condition 5. **The minimum of 16.9 acres of reestablished or created wetlands shall be within the same coastal dune ecoregion that extends from the mouth of the Smith River to Point Saint George as generally depicted on Exhibit 2.** Qualifying mitigation acreage involving reestablishment or creation of wetlands shall meet the following criteria:
 - (a) The wetland mitigation shall not result in the conversion of agricultural lands to nonagricultural uses;
 - (b) The wetland mitigation site(s) shall be located adjacent to, or shall be capable of being functionally connected to, existing natural wetlands;
 - (c) The wetland mitigation shall not interfere with the ability of surrounding private property owners to physically access their properties; and
 - (d) The wetland mitigation site(s) shall not result in the conversion of any existing environmentally sensitive habitat area or wetland. Existing wetlands may be enhanced, but only the portions of the wetland mitigation site(s) that do not contain existing wetlands shall be credited towards the required mitigation reestablishment or creation acreage.
- ii. The balance of the qualifying mitigation acreage beyond that provided in the form of reestablishment or creation of palustrine emergent coastal wetlands may include additional creation of qualifying palustrine emergent coastal wetlands as set forth above or the acquisition of qualifying land based on the credits listed in subsection (C) below. Qualifying land for mitigation acquisition shall meet the following criteria:

- (a) Located within or immediately adjacent to the Pacific Shores Subdivision or within the historic footprint of Lake Earl within the 12-foot contour. Only the portions of parcels actually within the 12-foot contour of Lake Earl maybe credited as qualifying land;
 - (b) Locally designated and zoned for uses other than agriculture, public access, natural resources, visitor serving, or coastal dependent uses;
 - (c) Acquired from willing sellers only and for transfer to an entity approved by the Executive Director for long-term protection and management within one year of acquisition or whatever additional time may be granted by the Executive Director for good cause; and
 - (d) Acquisition and subsequent transfer of the land to the approved accepting entity shall not interfere with the ability of any other private property owner to physically access their property.
- C. **Credits for use of acquired “qualifying land” as qualifying mitigation:** The acquisition of qualifying land shall be applied to satisfying the total wetland mitigation acreage required to be provided by subsection (A) above according to the following set of credits:
- i. Acquisition of qualifying land that is approximately one-half acre in size and which delineates as greater than 75% coastal wetlands by area shall be credited at half (50%) of qualifying mitigation acreage such that for each acquired half-acre of qualifying land that contains at least 75% coastal wetlands by area, one-quarter-acre of mitigation credit shall be applied to the calculation of the target mitigation acreage required;
 - ii. Acquisition of qualifying land that is approximately one-half acre in size and which delineates between >50% to 75% coastal wetlands by area shall be credited at 40% of qualifying mitigation acreage;
 - iii. Acquisition of qualifying land that is approximately one-half acre in size which delineates between >25% to 50% coastal wetlands by area shall be credited at 30% of qualifying mitigation acreage;
 - iv. Acquisition of qualifying land that is approximately one-half acre in size and which delineates between 5% and 25% coastal wetlands by area shall be credited at 20% of qualifying mitigation acreage;
 - v. Acquisition of qualifying land that is approximately one-half acre in size and which delineates <5% coastal wetlands by area shall be credited at 20% of qualifying mitigation acreage if land is contiguous with larger wetlands outside the parcel; and
 - vi. Acquisition of qualifying land that is larger than approximately one-half acre in size shall be credited at one fifth (20%) of qualifying mitigation acreage.

5. Wetland Monitoring, Reporting, and Remediation Plans

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall submit, for the review and written approval of the Executive Director, final wetland monitoring, reporting, and remediation plans, prepared by a qualified wetland biologist or ecologist, for monitoring the final wetland mitigation plan sites required pursuant to Special Condition 3. The final plans shall include the following:

- i. Provisions for assessing the initial biological and ecological status of each “as-built” wetland reestablishment or creation site within 30 days of establishment of the mitigation site(s) in accordance with the approved mitigation plan.
- ii. A plan for monitoring and maintenance of each wetland creation site, including the following:
 - (a) A schedule;
 - (b) Interim performance standards;
 - (c) A description of field activities;
 - (d) A minimum 5-year monitoring period;
 - (e) Provisions for submittal of annual reports of monitoring results to the Executive Director for the duration of the required monitoring period, beginning the first year after submittal of the “as-built” report. Each report shall be cumulative and shall summarize all previous results. Each report shall document the condition of the restoration with photographs taken from the same fixed points in the same directions. Each report shall also include a “Performance Evaluation” section where information and results from the monitoring program are used to evaluate the status of the restoration project in relation to the interim performance standards and final success criteria specified below;
 - (f) Identification and description, including photographs and the results of quantitative sampling, of at least three high functioning, relative undisturbed reference sites for comparison to the mitigation site in (i) below;
 - (g) Final success criteria for the 0.3-acre of wetland vegetation reestablishment along the airport security/wildlife fenceline, including, at a minimum, plant species diversity and native vegetative cover similar to adjacent undisturbed vegetation;
 - (h) Final success criteria for the 3.9 acres of on-site wetland reestablishment at the airport, including, at a minimum:
 - (1) Plant species diversity similar to the diversity present prior to disturbance by the proposed repair and maintenance activities;
 - (2) At least 80% native vegetative cover;
 - (3) No more than 10% non-native vegetative cover; and
 - (4) Annually, at least 14 continuous days of inundation or soil saturation in the upper 12 inches of the soil.
 - (i) Final success criteria for the remaining wetland mitigation sites, including, at a minimum, all of the following:
 - (1) Plant species diversity similar to that at the reference site;
 - (2) Total ground cover of native vegetation similar to that at the reference sites;
 - (3) No more than 10% ground cover of nonnative species;
 - (4) Annually, at least 14 continuous days of inundation or soil saturation in the upper 12 inches of the soil column; and
 - (5) Presence of ponds appropriate for breeding by northern red-legged frogs (with the capacity to hold water for at least 15 weeks except during drought years) and approved by the California Department of Fish and Wildlife with a cumulative area of 4 acres.
- iii. A description of the method by which “success” will be judged, including:

- (1) Type of comparison;
 - (2) The field sampling design to be employed, including a description of the randomized placement of sampling units and the planned sample size;
 - (3) Detailed field methods;
 - (4) Where a statistical test will be employed, a statistical power analysis to document that the planned sample size will provide adequate statistical power to detect the maximum allowable difference. Generally, sampling should be conducted with sufficient replication to provide 90% power with $\alpha = 0.10$ to detect the maximum allowable difference;
 - (5) A statement that final monitoring for success will occur after at least 3 years with no remediation or maintenance activities other than weeding;
- iv. Provisions for the submittal of a final monitoring report to the Executive Director at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified restoration ecologist. The report must evaluate whether the restoration site(s) conforms to the goals, objectives, and performance standards set forth in the approved final restoration program. The report must address all of the monitoring data collected over the five-year period.
- B. If the final report indicates that the mitigation project has been unsuccessful, in part, or in whole, based on the approved performance standards, the permittee shall submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
- C. The permittee shall monitor and remediate the wetland mitigation site(s) in accordance with the approved monitoring program. Any proposed changes to the approved monitoring program shall be reported to the Executive Director. No changes to the approved monitoring program shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

6. Revised Final Western Lily Habitat Enhancement Plan

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall submit, for the review and written approval of the Executive Director, two copies of a revised final plan for implementing western lily habitat enhancement activities on Point Saint George to address partial mitigation for coastal prairie impacts associated with the development authorized under this CDP. The revised final plan shall be a stand-alone document with associated figures, maps, and plans and shall include provisions for all of the following:
- i. Specification that vegetation removal enhancement activities within 5.2 acres of “mixed tree-shrub thicket” habitat as mapped in Exhibit 7 shall be the only enhancement acreage of the 14-acre enhancement area applied to satisfying the required 3-to-1 coastal prairie ESHA mitigation ratio, and it shall be applied at a mitigation credit of 50%, such that for each acre of vegetation removal enhancement activities within “mixed tree-shrub thicket” habitat, one-half-acre of mitigation credit shall be applied to the calculation of the target 3:1 mitigation acreage;

- ii. Specification that vegetation removal using hand tools is the only habitat enhancement method authorized by this coastal development permit. Implementation of any other habitat enhancement methods or vegetation treatment methods in the area shall not occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
 - iii. Submittal to the Executive Director of final mitigation and monitoring plans for initial and long-term vegetation removal enhancement measures approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife;
 - iv. As recommended by the U.S. Fish and Wildlife Service and consistent with the applicant's proposed project, establishment of a conservation easement consistent with the requirements of Special Condition 13 to allow for the long-term resource management and conservation of the habitat area.
 - v. Annual submittal to the Executive Director, prior to initiation of vegetation removal activities in the area in any given year of the enhancement program, of survey results, completed by a qualified botanist approved by the U.S. Fish and Wildlife Service and California Department of Fish and Game, identifying areas with western lily and/or western lily suitable habitat to be flagged for buffer and avoidance pursuant to subsection (v) below during vegetation removal activities;
 - vi. Establishment, using temporary flagging, of a minimum 25-foot-radius buffer area around any western lily plants or western lily potential habitat identified in the pre-treatment surveys discussed in subsection (iv) above prior to commencement of vegetation removal activities in any given year of the enhancement program;
 - vii. Submittal to the Executive Director of a long-term vegetation maintenance plan for the western lily enhancement area agreeable to the U.S. Fish and Wildlife Service, California Department of Fish and Game, the airport's maintenance operations, and Del Norte County
 - viii. Submittal to the Executive Director of a revised Airport Layout Plan labeling the 14-acre western lily enhancement area as an environmentally sensitive area unavailable for development and restricted from vegetation clearance except as authorized under this approved final plan;
 - ix. Submittal to the Executive Director of all survey and mapping results associated with the approved mitigation activities by December 31 of each year throughout the duration of the 5-year mitigation and monitoring period; and
 - x. Submittal to the Executive Director of a final monitoring report at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified botanist or ecologist. The report must evaluate whether the mitigation site conforms to the goals, objectives, and performance standards set forth in the approved final mitigation program. The report must address all of the monitoring data collected over the five-year period.
- B. If the final report indicates that the planned removal of woody vegetation project has been unsuccessful, in part, or in whole, based on the approved performance standards, the applicant shall submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program shall be processed as an amendment to this

coastal development permit, unless the Executive Director determines that no amendment is legally required.

- C. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

7. Revised Final ESHA Mitigation Plan

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall submit, for the review and written approval of the Executive Director, a revised final ESHA Mitigation Plan prepared by a qualified biologist or ecologist to address partial mitigation for coastal dune and coastal prairie impacts associated with the development authorized under this CDP. The revised final plan shall substantially conform, in applicable part, to the plans and concepts provided in the project description included in the July 2013 CDP application update and in the plans entitled “Runway Safety Area Mitigation and Monitoring Plan, Option 1: Pacific Shores Road Removal” (dated June 2013) and “Runway Safety Area Conceptual Mitigation and Monitoring Plan” (dated August 2013), all prepared by GHD for the Border Coastal Regional Airport Authority, except the revised final plan shall be revised to include, at a minimum, the following:

- i. **ESHA mitigation ratios and credits:** The revised final mitigation plan shall incorporate the mitigation ratios, criteria, and credits detailed in Special Condition 8 and provide for ESHA mitigation consistent with those mitigation ratios, criteria, and credits.
- ii. **Final design plans:** The final plan shall include final designs and analyses for reestablishing and/or enhancing coastal dune and coastal prairie habitats at and/or around Pacific Shores and/or other sites within the ecoregion, if feasible, including, as applicable, the following: (1) goals, objectives, and performance standards for the mitigation; (2) baseline ecological assessment(s) of the mitigation area(s); (3) existing and proposed hydrologic, soil, and vegetative conditions at the mitigation and restoration sites; (4) engineering/grading plans and schedule; (5) erosion control plans and schedule; (6) weeding plans and schedule; (7) planting plans and schedule; (8) short- and long-term irrigation needs; (9) on-going maintenance and management plans; (10) implementation plans demonstrating there is sufficient scientific expertise, supervision, and financial resources to carry out the proposed project and monitoring program in a specified and realistic time frame; (11) provisions for submittal of initial as-builts within 30 days of completion of the initial mitigation/restoration work; (12) monitoring, reporting, and remediation plans consistent with the requirements of Special Condition 9.
- iii. **Evidence of sufficient property interest to perform ESHA reestablishment or enhancement activities:** The final plan shall include evidence, for each proposed ESHA reestablishment or enhancement site, that the permittee has obtained sufficient property interests in the site(s) to be able to perform the proposed reestablishment or enhancement and subsequent monitoring and maintenance of the habitat(s) as conditioned herein.

- iv. **Protection of mitigation sites:** Evidence, in a form and content acceptable to the Executive Director, that the owner of each identified ESHA restoration or enhancement site(s), except for the rare plant and dune enhancement sites proposed on the airport property and required pursuant to the special conditions herein, has either transferred the property in fee to the California Department of Fish and Wildlife's Wildlife Conservation Board or executed an irrevocable offer to dedicate, to a public agency or private association acceptable to the Executive Director, an easement for habitat restoration, habitat maintenance, open space, and habitat protection over the mitigation site, either alternative consistent with the recordation requirements of Special Condition 13.
 - v. **Coastal development permit approvals:** The final plan shall include evidence that all necessary coastal development permit authorizations from Del Norte County and/or the Commission have been obtained for each proposed reestablishment or enhancement site, except for development of the western lily enhancement project on Point Saint George, which is authorized herein pursuant to Special Condition 6, and rare plant and dune enhancement activities on the airport property, which is authorized herein pursuant to Special Conditions 7 and 10.
 - vi. **Other approvals:** The final plan shall include evidence that all necessary approvals from other agencies and local governments have been obtained for development of each of the reestablishment or enhancement sites.
 - vii. **Evidence of acquisition of qualifying land for mitigation acquisition:** The final plan shall identify the location and size of each property acquired as qualifying land to be applied to satisfying the total required ESHA mitigation acreage and provide a legal description and map of the property and provide evidence that title to the property has been acquired by the permittee.
 - viii. **Vegetation assessments of qualifying land for mitigation acquisition.** The final plan shall include a vegetation assessment of each property acquired as qualifying land to be applied to satisfying the total required ESHA mitigation acreage that documents the relative ground cover of native flowering plants on each property.
 - ix. **Provisions for transfer of qualifying land for mitigation acquisition.** The final plan shall include provisions for transfer of qualifying land acquired for use as qualifying mitigation acreage to the approved accepting entity for long-term protection and management consistent with Special Condition 8 within one year of acquisition for property that will not be used for mitigation creation and within one year of completion of wetland creation for property that will be utilized for wetland creation. This one-year deadline may be extended by the Executive Director for good cause.
- B. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
8. **ESHA Mitigation Ratios, Qualifying Mitigation Acreage, and Credits.** The applicant shall provide ESHA mitigation for the coastal dune and coastal prairie impacts of the approved development consistent with the following mitigation ratios, qualifying criteria, and credits:

A. **Mitigation ratios:** The following ESHA mitigation ratios, as defined herein, shall apply to authorized coastal dune and coastal prairie impacts, provided that the ESHA mitigation plan required by Special Condition 7 is implemented within two years of construction impacts:

- i. A minimum 3:1 ratio of qualifying mitigation acreage to impact acreage shall be provided for ESHA impacts resulting from RSA improvements at and near the existing runway ends and for the fence post displacement impacts associated with the new security fencing (resulting in 13.5 acres of mitigation for 4.5 acres of RSA ESHA impacts); and
- ii. A minimum 1:1 ratio of qualifying mitigation acreage to impact acreage shall be provided for coastal prairie vegetation impacts resulting from installation of airport security fencing (resulting in 1.1 acres of mitigation for 1.1 acres of security fencing vegetation impacts). The vegetation to be reestablished along the fenceline may qualify as the required 1:1 mitigation, subject to the restrictions and requirements specified herein.
- iii. If the ESHA mitigation plan is not implemented within two years of construction impacts, the applicant shall submit a revised or supplemental mitigation program to compensate for the additional temporal loss of habitat associated with the delay in implementing the ESHA mitigation plan. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
- iv. If a minimum of 1.1 acres of primarily native coastal prairie vegetation does not reestablish along the fenceline within one year of completion of fence installation, the applicant shall submit a revised or supplemental mitigation program to compensate for the additional temporal loss of habitat associated with the delay in achieving successful ESHA reestablishment. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

B. **Criteria for qualifying mitigation acreage:**

- i. The qualifying mitigation acreage shall include the substantial restoration or enhancement of a minimum of 4.5 acres of coastal dune and/or coastal prairie habitats on the airport property and Point Saint George, subject to the requirements of Special Conditions 6 (revised final western lily enhancement plan) and 10 (final rare plant mitigation plan). Qualifying mitigation acreage involving reestablishment or creation of wetlands shall meet the following criteria:
 - (a) The dune/prairie mitigation shall not result in the conversion of agricultural lands to nonagricultural uses;
 - (b) The dune/prairie mitigation site(s) shall be located adjacent to existing natural dune and/or prairie habitat;
 - (c) The dune/prairie mitigation sites shall not result in the conversion of existing forest ESHA; and
 - (d) The mitigation shall not interfere with the ability of surrounding private property owners to physically access their properties;
- ii. The balance of the qualifying mitigation acreage beyond that provided in the form of reestablishment or enhancement of coastal dune and prairie habitats may include the

acquisition of qualifying land based on the credits listed in subsection (C) below.

Qualifying land for mitigation acquisition shall meet the following criteria:

- (a) Located within or immediately adjacent to the Pacific Shores Subdivision or within the historic footprint of Lake Earl within the 12-foot contour. Only the portions of parcels actually within the 12-foot contour of Lake Earl may be credited as qualifying land;
- (b) Locally designated and zoned for uses other than agriculture, public access, natural resources, visitor serving, or coastal dependent uses;
- (c) Acquired from willing sellers only and for transfer to an entity approved by the Executive Director for long-term protection and management within one year of acquisition or such additional time that the Executive Director may grant for good cause; and
- (d) Acquisition and subsequent transfer of the land to the approved accepting entity shall not interfere with the ability of any other private property owner to physically access their property.

C. Credits for use of acquired “qualifying land” as qualifying mitigation: The acquisition of qualifying land shall be applied to satisfying the total ESHA mitigation acreage required to be provided by subsection (A) above according to the following set of credits:

- i. Acquisition of qualifying land that is approximately one-half acre in size and which contains greater than 75% native flowering plants relative cover shall be credited at half (50%) of qualifying mitigation acreage such that for each acquired half-acre of qualifying land that contains at least 75% native flowering plants relative cover, one-quarter-acre of mitigation credit shall be applied to the calculation of the target mitigation acreage required by subsection (a) herein;
- ii. Acquisition of qualifying land that is approximately one-half acre in size and which contains between >50% to 75% native flowering plants relative cover shall be credited at 40% of qualifying mitigation acreage;
- iii. Acquisition of qualifying land that is approximately one-half acre in size which contains between >25% to 50% native flowering plants relative cover shall be credited at 30% of qualifying mitigation acreage;
- iv. Acquisition of qualifying land that is approximately one-half acre in size and which contains between 5% and 25% native flowering plants relative cover shall be credited at 20% of qualifying mitigation acreage; and
- v. Acquisition of qualifying land that is approximately one-half acre in size and which contains 5% native flowering plants relative cover shall be credited at 20% of qualifying mitigation acreage if land is contiguous with larger dune or prairie habitats outside the parcel;
- vi. Acquisition of qualifying land that is larger than approximately one-half acre in size shall be credited at one fifth (20%) of qualifying mitigation acreage.

9. ESHA Monitoring, Reporting, and Remediation Plans

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the permittee shall submit, for the review and written approval of the Executive Director, final wetland monitoring, reporting, and remediation plans, prepared by a

qualified wetland biologist or ecologist, for monitoring the final wetland mitigation plan sites required pursuant to Special Condition 7. The final plans shall include the following:

- i. Provisions for assessing the initial biological and ecological status of each “as-built” ESHA reestablishment or enhancement site within 30 days of establishment of the mitigation site(s) in accordance with the approved mitigation plan.
- ii. A plan for monitoring and maintenance of each ESHA restoration/enhancement site, including the following:
 - (a) A schedule;
 - (b) Interim performance standards;
 - (c) A description of field activities;
 - (d) A minimum 5-year monitoring period;
 - (e) Provisions for submittal of annual reports of monitoring results to the Executive Director for the duration of the required monitoring period, beginning the first year after submittal of the “as-built” report. Each report shall be cumulative and shall summarize all previous results. Each report shall document the condition of the restoration with photographs taken from the same fixed points in the same directions. Each report shall also include a “Performance Evaluation” section where information and results from the monitoring program are used to evaluate the status of the restoration project in relation to the interim performance standards and final success criteria specified below;
 - (f) Identification and description, including photographs and the results of quantitative sampling, of one or more reference sites with relatively undisturbed habitat of the type referred to in (g), below;
 - (g) Final success criteria for the ESHA mitigation sites, including, at a minimum, all of the following:
 - (1) Native plant species diversity similar to the reference sites based on a statistical comparison;
 - (2) Native vegetative cover similar to the reference sites based on a statistical comparison; and
 - (3) No more than 10% non-native vegetative cover.
 - (h) Final success criteria for the 1.1 acres of coastal prairie vegetation reestablishment along the airport security/wildlife fenceline, including, at a minimum, plant species diversity, average height of the vegetation, and native and non-native vegetative cover similar to adjacent undisturbed vegetation based on a statistical comparison.
- iii. A description of the method by which “success” will be judged, including:
 - (1) Type of comparison;
 - (2) The field sampling design to be employed, including a description of the randomized placement of sampling units and the planned sample size;
 - (3) Detailed field methods;
 - (4) Where a statistical test will be employed, a statistical power analysis to document that the planned sample size will provide adequate statistical power to detect difference 10% difference between the mitigation and references sites. Sampling should be conducted with sufficient replication to provide 90% power with $\alpha = 0.10$ to detect a 10% difference;

- (5) A statement that final monitoring for success will occur after at least 3 years with no remediation or maintenance activities other than weeding;
- iv. Provisions for the submittal of a final monitoring report to the Executive Director at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified restoration ecologist. The report must evaluate whether the restoration site(s) conforms to the goals, objectives, and performance standards set forth in the approved final restoration program. The report must address all of the monitoring data collected over the five-year period.
- B. If the final report indicates that the mitigation project has been unsuccessful, in part, or in whole, based on the approved performance standards, the permittee shall submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
- C. The permittee shall monitor and remediate the wetland mitigation site(s) in accordance with the approved monitoring program. Any proposed changes to the approved monitoring program shall be reported to the Executive Director. No changes to the approved monitoring program shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

10. Rare Plant Mitigation Plan

- A. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the applicant shall submit, for the review and written approval of the Executive Director, a rare plant mitigation plan that compensates for the loss of 0.3-acre of short-leaved evax (*Hesperis matronalis* var. *brevifolia*), sand dune phacelia (*Phacelia argentea*), and Del Norte buckwheat (*Eriogonum nudum* var. *paralinum*) within the project footprint. The plan shall demonstrate and include the following:
 - i. An updated preconstruction rare plant survey estimating number of rare plant individuals to be impacted by construction activities;
 - ii. Quantitative and qualitative success standards that assure achievement of the approved mitigation goals and objectives of eradicating *Ammophila arenaria* from an approximately 0.4-acre on the airport property immediately north of runway 29 and east of runway 17 and for salvaging, relocating, reestablishing, and planting native dune plants and seeds in the enhancement area, including short-leaved evax, sand dune phacelia, and Del Norte buckwheat. Success standards shall include the following:
 - (1) For perennial species, at least three times the number of individuals lost shall be present at the mitigation site,
 - (2) For annual species, the cumulative number of flowering adults with viable seed present during the 5-year monitoring period shall be at least three times the number of individuals lost;
 - (3) For each species, there shall be evidence of natural recruitment by the end of the 5-year monitoring period;
 - (4) Plant species diversity and native vegetative cover shall be similar to undisturbed areas of dune mat vegetation.

- iii. Methodologies for (1) weed eradication, (2) plant salvaging from impact areas, storage, and relocation, and (3) planting and seeding of supplemental native dune plants in the area;
 - iv. A requirement to obtain supplemental plantings from local sources;
 - v. Provisions for implementing the *Ammophila* removal and revegetation activities in a manner that avoids impacts to adjacent dune, forest, wetland, and rare plant ESHA;
 - vi. Provisions for implementing the *Ammophila* removal activities prior to commencement of or concurrent with RSA construction to maximize the use of salvaged native plant material and rare plants from RSA improvement sites;
 - vii. Provisions assessing the initial biological and ecological status of the enhancement site within 30 days of establishment of the mitigation site in accordance with the approved mitigation plan;
 - viii. Provisions for monitoring the mitigation site annually for a minimum of 5 years for, at a minimum, the following attributes: (1) invasive species cover, (2) native plant diversity, (3) native plant cover, (4) population size and density of restored populations of Del Norte buckwheat, sand dune phacelia, and short-leaved evax, and other criteria as appropriate.
 - ix. Submittal to the Executive Director of a long-term vegetation maintenance plan for the rare plant and other enhancement areas;
 - x. Submittal to the Executive Director of a revised Airport Layout Plan labeling the rare plant and other enhancement areas as environmentally sensitive areas unavailable for development and restricted from vegetation clearance, grading, and other development except as authorized under this approved final plan;
 - xi. Provisions for the submittal of annual reports of monitoring results to the Executive Director for the duration of the required monitoring period, beginning the first year after submission of the “as-built” assessment. Each report shall also include a “Performance Evaluation” section where information and results from the monitoring program are used to evaluate the status of the wetland mitigation project in relation to the performance standards; and
 - xii. Provisions for the submittal of a final monitoring report to the Executive Director at the end of the five-year reporting period. The final report must be prepared in conjunction with a qualified biologist or ecologist. The report must evaluate whether the mitigation site conforms to the goals, objectives, and performance standards set forth in the approved final mitigation program. The report must address all of the monitoring data collected over the five-year period.
- B. If the final report indicates that the mitigation project has been unsuccessful, in part, or in whole, based on the approved performance standards, the applicant shall submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program shall be processed as an amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.
- C. The permittee shall undertake development in accordance with the approved final plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Commission

amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

- 11. Construction Responsibilities.** The authorized development shall be implemented consistent with the following construction-related responsibilities. PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the applicant shall submit, for the review and written approval of the Executive Director, evidence that all of the following construction-related water quality and wildlife protection measures have been incorporated into the final Stormwater Pollution Prevention Plan (SWPPP) and erosion and sediment control plans for the project:
- A. Vegetation clearing and ground disturbance associated with the authorized fence installation on the west side of the airport shall be minimized;
 - B. Fence installation shall be restricted the dry season and to periods when the ground is driest to minimize wetland soil compaction during installation activities;
 - C. Alaska violet plants and other identified rare plants adjacent to the fence construction area as shall be flagged for avoidance by a qualified botanist prior to commencement of installation of the new securing/wildlife fencing;
 - D. Soil stabilization BMPs shall be implemented on graded or disturbed areas as soon as feasible where there is a potential for soil erosion to lead to discharge of sediment off-site or to coastal wetlands or waters;
 - E. Any construction vehicle or equipment cleaning, fueling, and/or maintenance conducted on site shall take place only at a designated areas located at least 100 feet from coastal wetlands and waters, drainage courses, and storm drain inlets;
 - F. Construction vehicle and equipment fueling areas shall be designed to fully contain any spills of fuel, oil, or other contaminants. Equipment that cannot be feasibly relocated to a designated fueling area (such as cranes) may be fueled and maintained in other areas of the site, provided that procedures are implemented to fully contain any potential spills;
 - G. Stockpiled materials shall be stored a minimum of 100 feet from coastal wetlands, waters, concentrated stormwater flows or drainage courses, and storm drain inlets;
 - H. Disturbed areas shall be revegetated and/or reseeded with native plants only and with species that currently occur in the Point Saint George ecoregion. No plant species listed as problematic and/or invasive by the California Native Plant Society, the California Invasive Plant Council, or as may be identified from time to time by the State of California, shall be employed or allowed to naturalize or persist on the site. No plant species listed as a “noxious weed” by the governments of the State of California or the United States shall be utilized for erosion control, revegetation, landscaping, or other purposes;
 - I. The use of rodenticides containing any anticoagulant compounds, including but not limited to, Warfarin, Bromadiolone, Brodifacoum, or Diphacinone, is prohibited; and
 - J. To minimize wildlife entanglement and plastic debris pollution, the use of temporary rolled erosion and sediment control products with plastic netting (such as polypropylene, nylon, polyethylene, polyester, or other synthetic fibers used in fiber rolls, erosion control blankets, and mulch control netting) is prohibited. Any erosion-control associated netting shall be made of natural fibers and constructed in a loose-weave design with movable joints between the horizontal and vertical twines.

- K. Construction activities are restricted to the access, staging, stockpiling, and other work sites identified on the approved plans (Exhibits 5-7) to avoid impacts to adjacent environmentally sensitive habitat areas that occur on and around the airport property

12. Area of Archaeological Significance

- A. If an area of archaeological deposits is discovered during the course of the project, all construction shall cease and shall not recommence except as provided in subsection (B) hereof; and a qualified archaeological resource specialist shall analyze the significance of the find.
- B. A permittee seeking to recommence construction following discovery of the archaeological deposits shall submit a supplementary archaeological plan for the review and approval of the Executive Director.
 - i. If the Executive Director approves the Supplementary Archaeological Plan and determines that the Supplementary Archaeological Plan's recommended changes to the proposed development or mitigation measures are *de minimis* in nature and scope, construction may recommence after this determination is made by the Executive Director.
 - ii. If the Executive Director approves the Supplementary Archaeological Plan but determines that the changes therein are not *de minimis*, construction may not recommence until after an amendment to this permit is approved by the Commission.

13. Habitat Conservation Easement or Transfer in Fee Title

- A. No development, as defined in section 30106 of the Coastal Act shall occur within any mitigation site required by the special conditions herein except for:
 - i. The authorized development that is approved by this permit; and
 - ii. The following development, if approved by the applicable local government or as applicable, the Coastal Commission as an amendment to this coastal development permit: (a) additional habitat enhancement and restoration activities such as grazing or fire treatments, and (b) mitigation activities approved under Special Conditions 3, 5, 6, 7, 9 and 10.

PRIOR TO COMMENCEMENT OF ANY DEVELOPMENT AUTHORIZED BY THIS PERMIT, the applicant shall execute and record a document in a form and content acceptable to the Executive Director, irrevocably offering to dedicate to a public agency or private association approved by the Executive Director an open space and conservation easement for the purpose of habitat restoration, habitat maintenance, open space, and habitat protection. Such easement shall be located over the mitigation areas required pursuant to Special Conditions 3, 6, and 7, other than the 3.9-acre wetland reestablishment site on the airport property along the sides of the runways. The recorded document shall include legal descriptions and graphic depictions prepared by a licensed surveyor of both the applicant's entire parcel and the easement area. The recorded document shall also reflect that development in the easement area(s) is restricted as set forth in this permit condition. The offer shall be recorded free of prior liens and encumbrances which the Executive Director determines may affect the interest being conveyed.

- B. The offer shall run with the land in favor of the People of the State of California, binding all successors and assignees, and shall be irrevocable for a period of 21 years, such period running from the date of recording.
- C. The recorded document shall: (1) permit the applicant, its agents, and/or the accepting agency to enter the property when necessary to create and maintain habitat, revegetate portions of the area, and fence the newly created/revegetated area in order to protect such habitats; and (2) permit the Coastal Commission staff to enter and inspect for purposes of determining compliance with Coastal Development Permit 1-13-009.
- D. As an alternative to the Conservation Easement Required in Subsection B above, the permittee may provide evidence, subject to the review and approval of the Executive Director, that the particular mitigation site will be transferred in fee to the California Department of Fish and Wildlife, Wildlife Conservation Board for the purposes identified in the applicable Special Conditions 3, 6 and 7 and consistent with all conditions of this permit and the statutory requirements governing Wildlife Conservation Board acquisitions.

14. Liability for Costs and Attorneys' Fees. By acceptance of this coastal development permit (CDP), the Applicant/Permittee agrees to reimburse the California Coastal Commission in full for all Coastal Commission costs and attorneys' fees (including (1) those charged by the Office of the Attorney General, and (2) any court costs and attorneys' fees that the Coastal Commission may be required by a court to pay) that the Coastal Commission incurs in connection with the defense of any action brought by a party other than the Applicant/Permittee against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this CDP. The Coastal Commission retains complete authority to conduct and direct the defense of any such action against the Coastal Commission.

IV. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. PROJECT LOCATION AND EXISTING DEVELOPMENT

The Del Norte County Regional Airport, Jack McNamara Field (CEC), is located in close proximity to the Pacific Ocean approximately two miles northwest of Crescent City and 15 miles south of the California/Oregon border (Exhibit 1). The airport is situated at the pinnacle of a prominent headland landform known as Point Saint George, an uplifted marine terrace that protrudes into the Pacific Ocean southwest of the coastal water bodies known as Dead Lake, Lake Earl, and Lake Talawa. The existing airport facility, which first opened in 1942, encompasses approximately 575 acres of land owned by Del Norte County containing forested, lacustrine, and emergent wetlands, riparian vegetation, and coastal dune and prairie habitats on the periphery of the actively used portions of the airfield.

CEC is a non-hub commercial service airport operated and maintained by the Border Coast Regional Airport Authority (BCRAA, the applicant) and owned by the County. The five member

entities of the BCRAA include the City of Crescent City, County of Del Norte, Elk Valley Rancheria, City of Brookings, Oregon, and the County of Curry, Oregon.

The airfield's existing facilities include two intersecting runways, runway 11/29 and runway 17/35, with full-length parallel taxiways. Runway 11/29 is considered the primary runway, with precision instrument approach capability (Instrument Landing System/Distance Measuring Equipment) and three non-precision instrument approach procedures. Runway 17/35 is the crosswind runway, with two non-precision instrument approach procedures. The pavement for both runways is designed to accommodate a 43,000-pound, dual-wheel aircraft. Each runway is approximately 5,000 feet long and 150 feet wide. Other existing facilities at the airport include aircraft hangars and other facilities directly associated with aircraft operations, a 2,020-square-foot terminal building constructed in 1950, an adjacent 980-square-foot double-wide modular building placed in 2002 to accommodate TSA screening facilities and a small secure passenger hold room, 85 short- and long-term parking spaces for passengers, visitors, and employees, an Airport Rescue and Fire Fighting (ARFF) facility that includes an ARFF vehicle and associated equipment, and security/deer fencing.

In May of 2010 the Commission approved, with special conditions, a coastal development permit (CDP) for the development of a new 17,867-square-foot passenger terminal complex with ancillary aircraft apron, domestic and firefighting water supply utilities, onsite sewage disposal system, consolidated public and employee off-street parking lots, and round-about based access roadway facilities.¹ The approved development has not yet commenced. The Executive Director recently approved a time extension for the terminal replacement permit,² and the development is planned to be undertaken as early as 2015.

B. PROPOSED PROJECT

(1) PROJECT PURPOSE AND NEED

The 2006 federal Department of Transportation Appropriations Act requires that airport sponsors that own or operate commercial airports certified under 49 U.S. Code Sec. 4706 ensure that Runway Safety Areas meet current Federal Aviation Administration (FAA) design standards required by Federal Aviation Regulations by December 31, 2015. A Runway Safety Area (RSA) is a defined surface surrounding a runway that enhances the safety of and reduces the risk of damage to airplanes in the event of an undershoot (aircraft landing short of the runway), an overshoot (aircraft landing on the runway but not able to stop on the runway), or an excursion from the runway (aircraft moving off the runway to the right or left). RSAs provide accessibility for firefighting and rescue equipment responding to such locations. The requirement for RSA compliance was instigated by aircraft accidents that resulted in passenger and crew injuries and fatalities and millions of dollars in property damage.

¹ Findings for approval of A-1-DNC-09-048: <http://documents.coastal.ca.gov/reports/2010/5/W15c-5-2010.pdf>.
Related findings for substantial issue hearing: <http://documents.coastal.ca.gov/reports/2010/4/Th16a-4-2010.pdf>.

² Time extension notification: <http://documents.coastal.ca.gov/reports/2013/7/W6-7-2013.pdf>.

The FAA has determined that the existing RSAs at CEC do not meet current FAA design standards. The required RSA dimensions are based on the Airport Reference Code (ARC) of each of the runways. Runway 11/29 is classified as an ARC C-III runway. Runway 17/35 is currently classified as an ARC B-II runway. Neither runway meets FAA standards and requirements for size (length) or terrain. Unless the airport brings its RSAs into compliance with federally mandated standards by the end of 2015, the airport will lose its federal certification to operate as a commercial facility.

(2) PROPOSED PROJECT DESCRIPTION

RSA improvements. The applicant evaluated seven alternatives for achieving compliant RSAs involving relocating, shifting, or realigning runways, reducing runway lengths, implementing a combination of runway relocation, shifting, grading, realignment, or reduction, and various other alternatives. The proposed project (“Alternative G”), determined under CEQA to be the environmentally preferred alternative, involves the following: (1) extending, grading, and filling areas beyond the existing paved ends of runway 11/29 an additional 1,000 feet in length by 500 feet in width at the northwest end of the runway and an additional 1,000 feet in length by 500 feet in width at the southeast end of the runway; (2) extending, grading, and filling area beyond the existing paved ends of runway 17/35 an additional 300 feet in length by 150 feet in width at the southward end of the runway and an additional 150 feet in length by 150 feet in width at the northward end of the runway; and (3) stabilizing soils, filling and grading uneven terrain, and improving drainage along the lengths and widths of both existing runways to achieve allowable gradients and other RSA terrain standards. Project plans are attached as Exhibits 4-6.

Implementation of the project as proposed would involve significant cut, fill, and grading activities, including an estimated 47,200 cubic yards of cut and 52,500 cubic yards of fill. Fill import material would come from the Crescent City harbor area and would stockpiled in areas indicated in Exhibit 7.

The proposed construction is planned to be completed by November 2015. The existing airport facility would remain operational during construction. Construction of the RSAs would be completed within one or two dry seasons, likely between May and October.

Fence replacement. The BCRAA is required by Federal Aviation Regulations (FAR) to replace the remaining portions of temporary and non-compliant perimeter security/deer fencing at the existing airport. This temporary security fencing is not currently in compliance with FAA and TSA regulations. Federal regulations require that the security/deer fencing at the airport incorporate the following:

- 10-12 foot chain link fencing with three strand barbed wire outriggers to keep intruders and deer/elk off of aircraft movement areas;
- Obstruction clear zone setbacks to satisfy FAR Part 77 airspace protection regulations, which require all permanent non-frangible structures to be setback a defined distance from runways and taxiways.
- Setbacks for metal objects of 550 feet from the Navigational Aid (VORTAC) to avoid any signal interferences.

The fence is intended to provide adequate airport perimeter security and to keep wildlife clear of the airport operations area to maintain aviation safety. The last section of temporary and non-compliant airport perimeter fencing exists on the airport's western property boundary adjacent to the Point St. George Management Area (described in more detail in Finding IV-C below). The existing, temporary and non-compliant perimeter fencing has been in place since approximately 1972, with additional temporary fencing installed in 2009 to restrict access to the airfield by black-tailed deer and Roosevelt elk. The existing non-compliant fencing consists of four-strand barbed wire cattle fencing on the airport boundary, some of which has fallen. The temporary fencing is a combination of 8-foot plastic and wire fencing installed in 2009 (under County permit number B30766C) inside the airport boundary as an emergency measure to stop deer and elk incursions into the field.

Approximately 3,874 linear feet of 10-foot-high chain link fencing would be placed across portions of Point Saint George to Pebble Beach Drive and then southeast to connect with existing airport fencing. Two airport controlled gates would be installed, one along Pebble Beach Drive to allow for responsible party access and a second one near the VORTAC to allow for search and rescue access onto Point Saint George (Exhibit 5). A 16-foot-wide swath of vegetation along the proposed fence alignment would be cleared to ground level to facilitate fence installation (for a total clearing of ~1.42 acres).

Improvements to the agricultural road. This CDP application does not include planned improvements to the agricultural road (Ag Road) other than application of a thin (4-6 inch deep) layer of gravel "top dressing" to facilitate construction access to the project area. Planned road improvements, including widening associated with culvert installation, were authorized under CDP A-1-DNC-09-048 for the airport terminal replacement project in May of 2010.¹ Proposed changes to the approved road improvements must be addressed under a separate permit amendment request for A-1-DNC-09-048, as such proposed development would be functionally related to the development authorized under that CDP.

Proposed mitigation measures. The final EIR adopted for the project in 2011 details various mitigation measures to protect northern red-legged frogs, nesting and migratory birds, special-status plants, archaeological and paleontological resources, water quality, and wetlands. The applicant proposes to revegetate disturbed areas with native species (see Exhibit 5), to implement various erosion control measures and construction best management practices (see Exhibit 6), and to mitigate for permanent project impacts to wetlands and other environmentally sensitive dune habitats (impacts are summarized in Finding IV-C below, and proposed wetland and ESHA mitigation is discussed in detail in Findings IV-G below). Exhibits 8-11 describe the proposed mitigation, summarized below:

- **Point Saint George:** One component of the project proposed as partial mitigation for the project's projected impacts to environmentally sensitive habitats involves implementing habitat enhancement activities across 14 acres of County property immediately west of runway 35. The purpose of the proposed enhancement activities is to improve habitat quality for the state and federally endangered western lily (*Lilium occidentale*) population that occurs in the area. Proposed enhancement activities would involve the hand removal

(using hand tools such as a chainsaw) of approximately 5.2 acres of woody vegetation from former coastal prairie habitat, plus removal of additional sporadic woody vegetation for existing coastal prairie and marsh habitats (see map in Exhibit 7). Vegetative spoils would be removed from the area and chipped or burned adjacent to the enhancement site.

- **Pacific Shores:** To compensate in part for the proposed project's wetland and other sensitive habitat impacts, the applicant proposes to conduct some mitigation activities in the Pacific Shores area (referred to as "option 1," Exhibit 8), including a combination of (1) acquiring privately-owned half-acre lots from willing sellers and transferring acquired lots to a responsible public agency, possibly the California Department of Fish and Wildlife to add to the Lake Earl Wildlife Area, (2) removing certain segments of asphalt roads (to be acquired from the County) to reestablish³ palustrine emergent wetland habitats, (3) removing certain invasive species from certain areas, and (4) planting native flowering plants in certain areas to enhance habitat for the federally endangered Oregon silverspot butterfly. Exhibits 8-13 include additional details on this mitigation plan.
- **Other mitigation sites:** The applicant also proposes establishment of wetlands at other sites both within and outside of the coastal zone of Del Norte County, as detailed in a proposed conceptual mitigation and monitoring plan (Exhibit 9). In addition to "option 1" (described more fully in the plan referenced above), the conceptual mitigation plan proposes "option 2" and "option 3." Option 2 would involve wetland establishment (creation)³ at one or more sites other than Pacific Shores, lot acquisition (from willing sellers) and preservation at Pacific Shores, habitat enhancement on Point Saint George, and potentially dune and rare plant enhancement activities on the airport property itself. Option 3 would be the same as option 2 except without any proposed lot acquisition at Pacific Shores. Exhibits 9 and 14 include details on proposed conceptual mitigation.

Additional details on proposed mitigation are discussed in Finding IV-G below.

C. ENVIRONMENTAL SETTING

The project area is situated on a relatively flat coastal terrace about 50 to 60 feet above the Pacific Ocean. Annual rainfall, on average, exceeds 80 inches of precipitation. The airport is bordered to the north and northwest by the Tolowa Dunes State Park and to the west and southwest by the lands of Point Saint George. Excluding the airport and a former U.S. Coast Guard facility that is now privately owned, much of the land at the Point is within the Point Saint George Management Plan Area, a county-owned and maintained area managed pursuant to a County and State Coastal Conservancy management plan (adopted in 2004). The management area provides public access opportunities for bird watching, clamming and fishing, surfing, beachcombing, hiking, and botanizing. There are three archaeological resources located within the Point Saint George Management Area that are listed on the National Register of Historic Places. Land uses to the south and southeast of the airport are generally light industrial in nature.

³ As referenced from here on, "wetland reestablishment" or "wetland restoration" means the reestablishment of wetland characteristics and functions at a site where they have ceased to exist through the replacement of wetland hydrology, vegetation, or soils. "Wetland creation" or "wetland establishment" means the physical and biological establishment of a wetland where a wetland did not formerly exist.

Rural residential uses are located to the east of runway 29. The nearest residential property is located approximately 1,100 feet east of the RSA for runway 29.

From a regional ecological perspective, the Point Saint George headland “...occurs within a matrix of related habitats: headlands and offshore rocks, the near-shore marine environment, coastal duneland and prairie, wetlands, shore pine and spruce forests that harbor species more common in Alaska than in California, and, just to the north, the largest coastal lagoon system in California...”⁴ The extensive dune and wetland complex in which the project site is located extends from Point Saint George north about 11 miles to the Smith River estuary (for a discussion of the ecological region, see Exhibit X). In the midst of this dune stretch is the largest coastal lagoon complex on the Pacific coast south of Alaska – Lake Earl, a primarily freshwater lagoon, and its western, smaller, brackish lobe, Lake Talawa. Historically connected to the Smith River drainage, the ~5,000-acre (60-mile perimeter) lagoon system with its associated freshwater and brackish aquatic habitat and marshlands and surrounding dune habitats support at least 15 federally or state-listed species, or rare and endemic species, including, but not limited to, bald eagle, peregrine falcon, brown pelican, western snowy plover, sand dune phacelia, Oregon silverspot butterfly, seaside hoary elfin and greenish blue butterflies, tidewater goby, green sturgeon, coho salmon, steelhead, and coast cutthroat trout. The U.S. Fish and Wildlife Service has characterized Lake Earl and Lake Talawa as comprising “one of the most unique and valuable wetland complexes in California.” Tolowa Dunes State Park and Lake Earl Wildlife Area comprise much of the lands of this ecologically diverse and dynamic dune-wetland complex.

Much of the land on Point Saint George itself also consists of a dynamic mosaic of different types of wetlands and intervening dune ridges forming an environmentally sensitive wetland complex. The majority of the wetlands on the headland are palustrine⁵ emergent, including wet meadows, swales, and coastal freshwater marsh habitats. These wetlands are seasonally inundated or saturated and dominated by low-growing grasses and other herbaceous hydrophytic (wetland-oriented) vegetation. There also are palustrine scrub-shrub wetlands, dominated by woody hydrophytes such as willows and other species, and palustrine forested wetlands, dominated by Sitka spruce and to a lesser extent beach pine. Finally, the headland supports natural pond wetlands with year-round standing water and herbaceous aquatic plants and associated hydrophytes along pond margins. Intervening dune ridges consist primarily of dune mat and coastal prairie habitats. This complex, dynamic wetland-upland dune-prairie-forest mosaic is generally reflective of the natural processes associated with vegetative succession, particularly in areas without human disturbance.

The wetland-upland dune-prairie-forest mosaic described above supports several species of plants and animals listed as rare, threatened, or endangered on state and/or federal lists. Listed sensitive species with known occurrences on or adjacent to the airport include northern red-

⁴ County of Del Norte and State Coastal Conservancy 2004.

⁵ As defined by the U.S. Fish and Wildlife Service in its classification of wetlands and deepwater habitats of the United States (Cowardin et al. 1979), a palustrine emergent wetland is a non-tidal wetland that lacks flowing water and is characterized by erect, rooted, herbaceous, usually perennial wetland plants (hydrophytes). Other types of palustrine wetlands include scrub-shrub wetlands (dominated by hydrophytic shrubs and/or small trees less than 6 m. in height) and forested wetlands (dominated by woody hydrophytes greater than 6 m. in height).

legged frog (*Rana aurora*), western pond turtle (*Emys marmorata*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), Aleutian cackling goose (*Branta hutchinsii leucopareia*), western lily (*Lilium occidentale*), short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), sand dune phacelia (*Phacelia argentea*), Del Norte buckwheat (*Eriogonum nudum* var. *paralinum*), Alaska violet (*Viola langsдорфii*), seaside pea (*Lathyrus japonicas*), Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*), and others. Various other more common species also known from the airport property include, but are not limited to, river otter, beaver, porcupine, coastal black-tailed deer, and Roosevelt elk.

Features of the airport property itself include a fenced airfield with paved runways, paved and unpaved maintenance roads, and extensive natural vegetation, which in some areas is regularly mowed. The majority of the subject property originally was cleared of vegetation prior to airport construction in the early 1940s, and the area has been maintained for airport safety since that time. Despite this history of disturbance and routine vegetation maintenance, significant expanses of the environmentally sensitive wetland-upland dune-prairie-forest complex described above occur within the proposed project area.

The project as proposed would result in significant direct adverse impacts to coastal wetlands, rare plant habitat, and other types of environmentally sensitive coastal dune and prairie habitats. Table 1 summarizes the direct habitat impacts of the project as proposed.

Table 1. Habitat⁶ impacts associated with the proposed RSA improvement project.

Type of Habitat Area	Impact Area ⁷
Palustrine emergent wetlands⁴	16.9 acres
Runway 11 end (fill)	7.16 acres
Runway 29 end (fill)	5.79 acres
Runway 17 end	0
Runway 35 end (fill)	0.02-acre
Runway 11-29 sides (cut)	3.90 acres
Other ESHAs⁸ (all within upland areas)	4.5 acres
Disturbed Beach bursage-Beach knotweed/dune mat	2.77 acres
Disturbed shrub/dune mat	0.005-acre
Salt rush/stabilized dune	1.44 acres
Area with Short-leaved evax plants	11,271 sq. ft.
Area with Del Norte buckwheat plants	1,044 sq. ft.
Area with Sand dune phacelia plants	50 sq. ft.

In addition to the impacts summarized above, the proposed security fencing will result in the clearing of approximately 1.42 acres of vegetation along the proposed fence alignment near the western airport boundary. As shown on figures included in Exhibits 8 and 9, the vegetation in

⁶ The habitat types listed are as characterized in studies and maps prepared by the applicant's agent and submitted with the CDP application materials.

⁷ Totals are rounded to the nearest tenth of an acre.

⁸ Environmentally sensitive habitat areas (ESHA) are described in detail in Finding IV-G below.

this area has been mapped by the applicant as “Coastal prairie upland” (1.12 ac.), “Slough sedge marsh” (0.26-ac.), “Willow shrub wetland” (0.04-ac.), “Palustrine Scrub shrub wetland” (0.001-ac.), and “Mixed tree-shrub thicket” (0.001-ac.). In addition to the clearing impacts, the proposed fence posts would permanently displace 11 square feet of coastal prairie habitat and 3 square feet of wetland habitat. All of these habitats are considered environmentally sensitive (ESHA), as discussed in Finding IV-G below.

D. STANDARD OF REVIEW

The proposed project area is bisected by the boundary between the retained CDP jurisdiction of the Commission and the CDP jurisdiction delegated to Del Norte County by the Commission through the County’s LCP. The portions of the project within the Commission’s retained jurisdiction include portions of the proposed Western Lily Management Project on Point Saint George (portion of one of the proposed mitigation areas, described in more detail in Finding IV-G below), west of end of runway 35, and the proposed mitigation area within the Pacific Shores subdivision on the north side of Lake Earl. The remainder of proposed project areas, including all proposed RSA improvement areas and other proposed mitigation sites, are within the CDP jurisdiction of Del Norte County.

Section 30601.3 of the Coastal Act authorizes the Commission to process a consolidated coastal development permit application when requested by the local government and the applicant and approved by the Executive Director for projects that would otherwise require coastal development permits from both the Commission and from a local government with a certified LCP. In this case, the Del Norte County Board of Supervisors adopted a resolution (#2008-072), and both the applicant and the County submitted letters requesting consolidated processing of the coastal development permit application by the Commission for the subject project, which was approved by the Executive Director.

The policies of Chapter 3 of the Coastal Act provide the legal standard of review for a consolidated coastal development permit application submitted pursuant to Section 30601.3. The local government’s certified LCP may be used as guidance.

E. OTHER AGENCY APPROVALS

Del Norte County. As discussed above, the project area in part falls within the CDP jurisdiction of the County, but as the Executive Director has agreed to the permit consolidation requests received from the County and the applicant, no further County approvals are necessary, except that the County will need to process future CDPs for off-site mitigation that itself constitutes development.

California Department of Fish and Wildlife (CDFW). The proposed project requires a Streambed Alteration Agreement (SAA) pursuant to Section 1603 of the California Fish and Game Code because the CDFW determined that the project could substantially adversely affect existing fish or wildlife resources. On May 30, 2013 the CDFW issued SAA No. 1600-2012-0334-R1 for the proposed work at the CEC and SAA No. 1600-2013-0051-R1 for proposed mitigation work at Pacific Shores on the north shore of Lake Earl. Both agreements require the

implementation of numerous avoidance and minimization measures to protect northern red-legged frog, various fish, and other aquatic species.

North Coast Regional Water Quality Control Board (RWQCB). The RWQCB regulates the proposed project pursuant to Section 401 of the federal Clean Water Act and/or California Porter-Cologne Water Quality Control Act authority. The regional board must issue a water quality certification for the project. [Special Condition 1](#) is included to require that the applicant submit a copy of the board's approved WQC to the Executive Director prior to permit issuance. The RWQCB also is responsible for ensuring that the project complies with the state's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit) Order No. 2009-0009-DWQ. The applicant has prepared a Stormwater Pollution Prevention Plan (SWPPP, dated May 2013) to comply with the state general permit. The SWPPP addresses pollutants and their sources, all non-stormwater discharges, and site BMPs effective to result in the reduction or elimination of pollutants in stormwater and authorized non-stormwater discharges.

U.S. Army Corps of Engineers (Corps). The proposed project requires a permit (Individual Permit) from the Corps under Section 404 of the Clean Water Act. [Special Condition 2](#) is included to require that the applicant submit a copy of the Corps' approved permit to the Executive Director prior to commencement of construction and to inform the Executive Director of any changes to the project required by the Corps' permit. The condition prohibits such changes from being incorporated into the project until the applicant obtains an amendment to this coastal development permit.

U.S. Fish and Wildlife Service (FWS). The FWS prepared a biological opinion (BO) for the proposed mitigation work at Point St. George and Pacific Shores due to its potential effects on the Oregon silverspot butterfly (*Speyeria zerene hippolyta*), which is listed as a threatened species under the federal Endangered Species Act. The BO also informally addressed the project's potential effects (though not likely adverse effects) on western snowy plover, tidewater goby, and western lily. The document identifies various conservation measures and recommendations that must be incorporated into the project to avoid adverse effects to listed species.

Federal Aviation Administration (FAA). The FAA is the lead agency for the project for National Environmental Policy Act (NEPA) purposes. The FAA completed a final Environmental Assessment (EA) and adopted a Finding of No Significant Impact (FONSI) for the project in on August 1, 2012. The FAA also has provided conditional approval of the Airport Layout Plan that depicts the RSAs as planned under the proposed project.

F. PERMITTING AUTHORITY, EXTRAORDINARY METHODS OF REPAIR & MAINTENANCE

Coastal Act Section 30610(d) generally exempts from Coastal Act permitting requirements repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities. However, the Commission retains authority to review certain extraordinary methods of repair and maintenance that involve a risk

of substantial adverse environmental impact, as enumerated in Section 13252 of the Commission regulations.

Section 30610 of the Coastal Act provides, in relevant part, the following:

Notwithstanding any other provision of this division, no coastal development permit shall be required pursuant to this chapter for the following types of development and in the following areas: . . .

(d) Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities; provided, however, that if the commission determines that certain extraordinary methods of repair and maintenance involve a risk of substantial adverse environmental impact, it shall, by regulation, require that a permit be obtained pursuant to this chapter. [Emphasis added]

Section 13252 of the Commission administrative regulations (14 CCR 13000 et seq.) provides, in relevant part, the following (emphasis added):

(a) For purposes of Public Resources Code section 30610(d), the following extraordinary methods of repair and maintenance shall require a coastal development permit because they involve a risk of substantial adverse environmental impact:...

(3) Any repair or maintenance to facilities or structures or work located in an environmentally sensitive habitat area, any sand area, within 50 feet of the edge of a coastal bluff or environmentally sensitive habitat area, or within 20 feet of coastal waters or streams that include:

(A) The placement or removal, whether temporary or permanent, of rip-rap, rocks, sand or other beach materials or any other forms of solid materials;

(B) The presence, whether temporary or permanent, of mechanized equipment or construction materials.

All repair and maintenance activities governed by the above provisions shall be subject to the permit regulations promulgated pursuant to the Coastal Act, including but not limited to the regulations governing administrative and emergency permits. The provisions of this section shall not be applicable to methods of repair and maintenance undertaken by the ports listed in Public Resources Code section 30700 unless so provided elsewhere in these regulations. The provisions of this section shall not be applicable to those activities specifically described in the document entitled Repair, Maintenance and Utility Hookups, adopted by the Commission on September 5, 1978 unless a proposed activity will have a risk of substantial adverse impact on public access, environmentally sensitive habitat area, wetlands, or public views to the ocean....

The proposed development is a repair and maintenance project because it does not involve an addition to or enlargement or expansion of the airport facility. The runways are not being extended or expanded, and the project will not in any way increase the capacity of the airport or the ability to accommodate larger or different aircraft. Rather, the proposed RSA improvements

adjoining the ends and sides of the existing runways and the additional security fencing are necessary to maintain the continued commercial use of the existing airport, which is currently substandard with respect to federally mandated safety requirements. Unless the airport brings its existing runways and security fencing into compliance with federally mandated safety standards by the end of 2015, the airport will lose its federal certification to operate as a commercial facility.

Although certain types of repair and maintenance projects are exempt from coastal development permit requirements, as cited above Section 13252 of the regulations requires a CDP for extraordinary methods of repair and maintenance enumerated in the regulation. The proposed development involves the placement of construction materials and the removal and placement of solid materials within ESHA and within sand areas. Therefore, the proposed project requires a CDP under Sections 13252(a)(1) of the Commission's regulations.

In considering a permit application for a repair or maintenance project pursuant to the above-cited authority, the Commission reviews whether the proposed method of repair or maintenance is consistent with the Chapter 3 policies of the Coastal Act. The Commission's evaluation of such repair and maintenance projects does not extend to an evaluation of the conformity with the Coastal Act of the underlying existing development.

The applicant proposes to maintain the existing airport facility in part by grading, filling, stabilizing soils, and improving drainage in areas beyond the existing paved ends and sides of the runways. In addition, the applicant proposes to bring the airport's security fencing into compliance with federal regulations by constructing approximately 3,874 linear feet of 10-foot high chain-link fencing with two access gates on the western side of the property. The project's habitat impacts are summarized in Table 1 above. If not properly undertaken with appropriate mitigation, the necessary airport maintenance activities could have adverse impacts on coastal resources, in this case coastal wetlands, rare plant habitats, and other types of environmentally sensitive habitats (e.g., dune mat and coastal prairie).

While the applicant has proposed some mitigation measures to protect coastal resources, more specific measures are needed to further minimize the project's expected and potential impacts on wetlands, ESHA, and water quality. The conditions required to ensure that these measures are part of the project are discussed in the following findings relevant to water quality, wetlands, and ESHA. Therefore, as conditioned in these Findings, the Commission finds that the proposed repair and maintenance development is consistent with all applicable Chapter 3 policies of the Coastal Act.

G. WATER QUALITY, WETLANDS, AND ESHA

Section 30230 of the Coastal Act states the following:

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 30231 of the Coastal Act states the following:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30233 of the Coastal Act states, in applicable part, the following:

(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 feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(6) Restoration purposes.

(7) Nature study, aquaculture, or similar resource dependent activities.

...

(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. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

...

Section 30108 of the Coastal Act defines “feasible” as follows:

‘Feasible’ means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

Section 30240 of the Coastal Act states the following:

(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.

Section 30107.5 of the Coastal Act defines “environmentally sensitive area” as follows:

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

As discussed in Finding IV-F above, in considering a permit application for a repair or maintenance project pursuant to Section 30610(d) of the Coastal Act and Section 13252 of the Commission administrative regulations, the Commission reviews whether the proposed method of repair or maintenance – not the underlying use of the development – is consistent with the Chapter 3 policies of the Coastal Act. As such, the applicable provisions of Sections 30230, 30231, 30233, and 30240 of the Coastal Act cited above require that the method of proposed repair and maintenance: (1) use the least environmentally damaging feasible alternative; (2) provide feasible mitigation measures to minimize adverse environmental effects; (3) minimize disruption of habitat values; (4) protect the biological productivity and the quality of coastal wetlands and waters; and (5) protect adjacent environmentally sensitive habitat areas and park and recreation areas against any significant disruption of habitat values.

(1) SUMMARY OF WETLAND AND ESHA IMPACTS

(a) Wetland impacts

As summarized in Table 1 above, the proposed method of repair and maintenance is expected to result in fill impacts to approximately 13 acres of delineated palustrine persistent emergent wetlands, primarily at the ends of runways 11 and 29, and cut impacts (lowering of ground surface elevation) to 3.9 acres of palustrine persistent emergent wetlands along the sides of the main (11/29) runway. The applicant anticipates that the latter wetlands will recover functionality in time, since ground elevations will be designed low enough to support a wetland hydrology regime. Exhibit 7 shows wetland impact areas.

The wetlands to be impacted, as described in the 2009 wetland delineation completed by URS,⁹ primarily are dominated by herbaceous vegetation with little to no shrub or tree cover. Some of the dominant species include slough sedge, salt rush, Pacific silverweed, bird's-foot trefoil, velvet grass, and toad rush. These wetlands generally are seasonal, ponding in the winter months from rainfall and rainwater running off the runways. They provide breeding habitat for, among other wildlife, northern red-legged frog (*Rana aurora*), a state-listed species of special concern that has been detected in the wetlands near the end of runway 29.¹⁰ They also provide foraging and/or dispersal habitat for several other species of wildlife, such as porcupine, river otter, other mammals, and various birds, which move from and between the forested areas on and around the property. Lacustrine-associated scrub-shrub wetlands, dominated by Hooker's willow, California blackberry, and some of the other wetland species mentioned above, occur near the end of runway 17, though the proposed project will avoid impacts to these wetlands. In the multiple wetland studies completed for the proposed application, the majority of the palustrine emergent and scrub-shrub wetlands exhibited evidence of all three wetland indicators (wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation), had documented significant coverage by native plants, and generally are considered of high quality and biological productivity.¹¹ In addition to palustrine emergent wetlands, the project also will impact about 722 square feet vegetated drainage channel wetlands along the north side of runway 11/29.

(b) Rare plant impacts

The proposed method of repair and maintenance will impact approximately one third of an acre of occupied rare plant habitat. Table 1 above summarizes the rare plant habitat impacts and Exhibit 7 depicts rare plant impact areas. Rare plants that are within the project area footprint include short-leaved evax (*Hesperis matronalis* var. *brevifolia*), sand dune phacelia (*Phacelia argentea*), and Del Norte buckwheat (*Eriogonum nudum* var. *paralinum*). Short-leaved evax has a California Rare Plant Rank of 1B.2, sand dune phacelia of 1B.1, and Del Norte buckwheat of 2B.2.^{12,13} Each of these California Rare Plant Ranks indicate that the species meet the state definitions of "endangered" and "threatened" (Sections 2062 and 2067 of the California Department of Fish and Game Code) and are eligible for listing under the California Endangered Species Act. All three rare plant species are located in upland dune or prairie habitats within the project footprint near the end of runway 11.

(c) Coastal dune and prairie impacts

⁹ URS 2009 (see Appendix A for list of substantive file documents).

¹⁰ Personal communication, Michael van Hattem, California Department of Fish and Wildlife, August 21, 2013.

¹¹ See for example, wetland descriptions in URS 2009 documenting soils, hydrology, and vegetation characteristics and describing approximately half of the acreage of wetlands to be impacted (i.e., wetlands off the end of runway 11) as "representative of the natural wetland vegetation that likely existed on site before the creation of CEC's runways" (URS 2009, page 4-3).

¹² Plants with a California Rare Plant Rank of 1B are rare throughout their range with the majority of them endemic to California. Except for being common beyond the boundaries of California, plants with a rank of 2B would have been ranked 1B. The CNPS Threat Rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened ("seriously threatened") and 3 being the least threatened. See <http://www.cnps.org/cnps/rareplants/ranking.php> for more information.

¹³ California Native Plant Society. 2013. Inventory of Rare, Threatened, and Endangered Plants of California (online edition, v8-02). CNPS, Sacramento, CA. Accessed on Friday, July 12, 2013.

Other types of environmentally sensitive areas within the project area include elements of coastal dune and coastal prairie habitats. The applicant has assigned certain habitat and vegetation classifications to these ESHA impact areas, including dune mat (labeled “Disturbed Beach Bursage-Beach Knotweed/Dune Mat” and “Disturbed Shrub/Dune Mat” by the applicant’s agent on Exhibit 7), stabilized dunes (labeled “Salt Rush Grassland/Stabilized Dune”) and remnant coastal prairie. As described above, the habitats in the airport area are part of a dynamic mosaic of different types of wetlands and intervening uplands forming an environmentally sensitive wetland-upland complex supporting a rich diversity of native flora, fauna, and natural habitats, including several rare, threatened, and endangered species. The proposed methods of repair and maintenance will impact approximately 4.5 acres of non-wetland dune mat and coastal prairie habitats, both of which are considered ESHA under the Coastal Act.

Coastal sand dunes constitute one of the most geographically constrained habitats in California. They only form in certain conditions of sand supply in tandem with wind energy and direction. Dunes are a dynamic habitat subject to extremes of physical disturbance, drying, and salt spray, and support a unique suite of native plant and animal species adapted to such harsh conditions. Dune mat, named for its low-growing mat-like vegetation, consists of characteristic native dune species, many of which are becoming increasingly uncommon. Even where degraded, the Coastal Commission has typically found this important and vulnerable habitat to meet the definition of ESHA due to the rarity of the physical habitat and its important ecosystem functions, including that of supporting sensitive species.¹⁴

Coastal prairie habitat generally refers to stands of perennial grasses and forbs¹⁵ with at least 10% native plant relative cover located on cool, foggy coastal bluffs, headlands, and seeps along the central and northern coasts of the state.¹⁶ Native grasses commonly associated with coastal prairie habitats, all of which occur on the airport property or surrounding Point, include Pacific reed grass, California oat grass, tufted hair grass, and red fescue. Coastal prairies often support a high diversity of native flowering plants and animals, including several rare, threatened, and endangered species (such as the state- and federally endangered western lily, which occurs in coastal prairie habitat immediately adjacent to runway 35). Much of the coastal prairie habitat in California has been destroyed or significantly degraded over the past 100+ years by various means, including coastal development, habitat fragmentation, invasive weed encroachment (especially by nonnative perennial grasses, such as velvet grass), intensive livestock grazing and other agriculture uses, fire suppression, and colonization by woody vegetation. Even where remaining coastal prairie stands are small and fragmented, the Commission has found this important and vulnerable coastal habitat to meet the definition of ESHA due to its rarity and ongoing risk of degradation.¹⁷

(d) Security/wildlife exclusion fencing

¹⁴ E.g., see CDPs 3-11-020, 1-09-026, and A-1-HUM-05-040.

¹⁵ A forb is a herbaceous (non-woody) flowering plant other than a grass.

¹⁶ Sawyer et al. 2008

¹⁷ E.g., see CDPs A-2-MAR-10-022 and A-1-MEN-09-023.

The proposed security/wildlife exclusion fencing is also necessary to safely maintain the airport facility consistent with applicable federal regulations. The proposed method of maintenance will result in the clearing to ground level of approximately 1.42 acres of vegetation along the proposed fence alignment near the western airport boundary. The vegetation in this area has been mapped by the applicant's agents as "Coastal prairie upland" (1.12 ac.), "Slough sedge marsh" (0.26-ac.), "Willow shrub wetland" (0.04-ac.), "Palustrine Scrub shrub wetland" (0.001-ac.), and "Mixed tree-shrub thicket" (0.001-ac.). A rare plant survey also was completed for the proposed fencing impact zone (GHD August 19, 2013), which documents the presence of the rare Alaska violet (*Viola langsdorfii*)¹⁸ adjacent to the impact area (~1,450 individuals), as well as two additional species considered important to the endangered Oregon silverspot butterfly (western dog violet and gum plant).¹⁹

The proposed fence maintenance will remove the vegetation within the 3,874-foot-long by 16-foot-wide proposed fence alignment. The applicant proposes that these vegetation impacts will be "temporary," because following fence installation, the area is expected to naturally revegetate. As discussed above, the Commission finds that the prairie and wetland habitats that will be impacted throughout the proposed fence corridor to be ESHA, and significant vegetation clearing in these habitats could easily disturb or degrade them by, for example facilitating the spread of invasive exotic weeds known to occur in the area, such as Spanish heath, pennyroyal, and velvet grass,²⁰ all of which are listed by the California Invasive Plant Council as causing negative ecological impacts on physical processes, plant and animal communities, and vegetation structure.²¹ In addition to the clearing impacts, the proposed fence posts would permanently displace 11 square feet of coastal prairie habitat and 3 square feet of wetland habitat.

(2) LEAST ENVIRONMENTALLY DAMAGING FEASIBLE ALTERNATIVE

As previously discussed, the applicable provisions of Sections 30231, 30233, and 30240 of the Coastal Act that the Commission must consider in its review of the methods of proposed repair and maintenance require that the proposed methods be the least environmentally damaging feasible alternative. The proposed alternative for this airport repair and maintenance project involves the following:

- Extending, grading, and filling areas beyond the existing paved runway ends an additional 300 feet to 1,000 feet in length and 150 feet to 500 feet in width;
- Implementing declared distances and displaced thresholds for runway 17/35, effectively reducing the length of the existing runway by 150 feet, to avoid lacustrine wetland impacts north of the runway end while still achieving fully compliant RSAs;
- Stabilizing soils, filling and grading uneven terrain, and improving drainage along the lengths and widths of both existing runways to achieve allowable gradients and other RSA terrain standards; and

¹⁸ Alaska violet has a California Rare Plant Rank of 2B.1.

¹⁹ Gum plant (*Grindelia stricta* var. *platyphylla*) is a known nectar resource for the butterfly, and western dog violet (*Viola adunca* ssp. *adunca*) is a larval host plant. According to the U.S. Fish and Wildlife Service (2009), Alaska violet may also serve as a secondary host plant for butterfly larvae.

²⁰ Documented, for example, in URS 2009, among other biological/wetland studies of the area.

²¹ See <http://www.cal-ipc.org/ip/inventory/index.php#inventory>

- Adjusting the existing runway lighting systems and instrument landing systems to account for the proposed changes in grade.

There are several alternatives to the proposed project that were explored in the final EIR adopted for the project and in a separate alternatives analysis prepared for this CDP application. As described below, the proposed method of repairing and maintaining the airport facility through the combination of grading, filling, displacing runway thresholds, and declaring distances to create the federally mandated RSA improvements is, as conditioned, the least environmentally damaging feasible alternative. Other alternatives are discussed below.

(a) Extend, fill, and grade RSAs to meet FAA standards

Under this alternative, the lengths of the two runways would be maintained at 5,002 feet. To develop a fully compliant RSA off the end of runway 17, approximately 0.18-acre of lacustrine and scrub-shrub wetlands (dune slack ponds and associated riparian habitat) would be filled. This significant impact to this relatively unique, biologically rich, high quality wetland habitat will be avoided under the proposed project, which proposes to displace the runway 17 threshold (which signifies the beginning and ends of runway areas available for aircraft takeoffs and landings) 150 feet south (effectively reducing the length of the usable runway) and implement declared distances to achieve the necessary fully compliant RSA. Therefore, this alternative is not a less environmentally damaging feasible alternative to the proposed project, as conditioned.

(b) Relocate, shift, or realign runways

The only areas available on the airport property for runway relocation, shifting, or realignment, such as north of the existing runways, contain significant expanses of environmentally sensitive wetland and dune habitats. Relocating the entire airport facility to an offsite location, if such a location were available, would significantly increase the scope of the project, as terminal buildings, hangars, parking lots, and other airport facilities all would have to be rebuilt. Relocating or realigning runways would involve substantially more construction (grading, cutting, and filling activities) than proposed, resulting in substantially greater impacts to wetlands, dunes, prairie, and other habitats and would be significantly more expensive (by tens of millions of dollars) than the “maximum feasible cost” estimated for RSA improvements (~\$21 million). Finally, shifting the runways via implementing displaced thresholds on all of the runways in lieu of physically moving the runway ends would reduce the effective lengths of the runways. This in turn would restrict the kinds of aircraft that could operate at the airport beyond what’s currently allowed and decrease the airport’s already somewhat limited level of service to the traveling public (e.g., potentially reducing the number and types of flights offered at the airport). Therefore, this alternative is not a less environmentally damaging feasible alternative to the proposed project, as conditioned.

(c) Reduce runway lengths

This alternative would involve physically reducing the lengths of both runways to allow for RSAs to be located reduction areas. As a result, the areas available for aircraft takeoff, landing, acceleration, and deceleration within each runway would be reduced such that the primary

runway (11/29) would be shortened to about 3,800 feet in length, and the cross-runway (17/35) would be shortened to about 4,850 feet in length (both existing runways are about 5,000 feet in length). Runway 11/29 would have to be shortened a greater amount because the standard RSAs for Runway 11/29 are longer in length than those required for Runway 17/35. This difference affects how the runways are categorized under FAA regulations. Although this alternative would achieve the goal of obtaining federally compliant RSAs and would be less expensive to construct than the proposed project, it would result in a reduction of runway lengths to a standard that is less than that needed to support existing airport uses. For example, reducing the runway length of Runway 11/29 to 3,802 feet could severely restrict, if not eliminate, existing Air Taxi/Commuter operations using C-111 aircraft, and place limitations on future aviation operations at the airport due to runway use constraints. Under this alternative, the airport's level of service and capability would decrease below the already somewhat limited service provided by existing airport facilities. Therefore, this alternative is not a less environmentally damaging feasible alternative to the proposed project, as conditioned.

(d) Implement declared distances and displaced thresholds

Similar to the runway length reduction alternative discussed above, this alternative would effectively reduce the lengths of existing runways to create enough clearance to achieve compliant RSAs within a more constrained area than under the proposed project. Implementing declared distances would involve officially declaring certain portions of runways as being available for takeoffs and landings. Implementing displaced thresholds would involve locating runway thresholds at points on the runways other than the designated beginning of runways (usually designated at the beginning of full-strength pavement). Together, implementing declared distances and displaced thresholds would achieve the goal of obtaining federally compliant RSAs and would be less expensive to construct than the proposed project. However, this alternative would result in reduction of runway lengths to 3,670 feet (runway 11/29) and 4,785 feet (runway 17/35), which would not sustain existing airport uses. Under this alternative, the airport's level of service and capability would also decrease below the already limited service provided by existing airport facilities. Therefore, this alternative is not a less environmentally damaging feasible alternative to the proposed project, as conditioned.

(e) Install engineered materials arresting systems

This alternative would involve installing Engineered Materials Arresting System (EMAS) beds at the ends of runway 11/29 in lieu of standard RSAs. According to the FAA, as cited by the applicant's consultant, an EMAS is composed of "high energy absorbing materials of selected strength, which will reliably and predictably crush under the weight of an aircraft." The purpose of an EMAS is to stop an aircraft that overruns the end of a runway. The size of the EMAS bed must be based on its ability to slow and stop the type of aircraft that would place the greatest demand on the EMAS. In the case of the existing airport, the EMAS beds for the ends of runway 11/29 would need to be at least 600 feet by 200 feet. The level of disturbance and impacts to wetlands and ESHA from constructing EMAS beds off the existing runway ends would be similar to the proposed project. In addition, construction of an EMAS bed off the end of runway 17 would create significantly greater adverse wetland and ESHA impacts than the proposed project, and construction of an EMAS bed off the end of runway 35 is not physically possible.

due to property boundary and terrain constraints. Finally, this alternative would involve significantly greater construction and maintenance costs. Therefore, this alternative is not a less environmentally damaging feasible alternative to the proposed project, as conditioned.

(f) “No project” alternative

The no-action or no project alternative would not bring the airport into compliance with applicable federal operational and air security regulations. The 2006 federal Department of Transportation Appropriations Act requires that airport sponsors that own or operate commercial airports certified under 49 U.S. Code Sec. 4706 ensure that RSAs meet current FAA design standards required by Federal Aviation Regulations by December 31, 2015. Unless the airport brings its RSAs into compliance with federally mandated standards by the end of 2015, the airport will lose its federal certification to operate as a commercial facility. Such a loss would significantly impact Del Norte County given the level of use of the existing airport and lack of commercial airport alternatives for the region. According to the applicant, the existing airport supports approximately 12,000 deplanements per year. Alternate airports for the region include Eureka/Arcata, located approximately 70 miles south of Crescent City (about an hour and a half drive), and Medford, located 109 miles northeast of Crescent City (about a two and a half hour drive). Decertification of the subject airport for this alternative is not a less environmentally damaging feasible alternative to the proposed project, as conditioned.

Conclusion

In conclusion, based on the alternatives analysis above, the Commission finds that there are no less environmentally damaging feasible alternatives to the proposed project as conditioned.

(3) FEASIBLE MITIGATION MEASURES

The Commission must ensure that the method of repair and maintenance (a) minimizes adverse environmental wetland effects consistent with Section 30233; (b) minimizes significant disruption of habitat values consistent with Section 30240(a); (c) protects the biological productivity and the quality of coastal wetlands consistent with the requirements of sections 30230-30231; and (d) protects adjacent environmentally sensitive habitat areas and park and recreation areas from impacts that would significantly degrade those areas consistent with Section 30240(b). As previously discussed, the proposed method of repair and maintenance will impact significant expanses of environmentally sensitive wetland, dune, and prairie habitats, and will occur in areas immediately adjacent to additional areas of wetlands, dunes, prairie, and a park and recreation area (Point Saint George Management Area). As proposed, the method of repair and maintenance could have several significant adverse environmental effects, including: (a) a net loss of wetlands resulting from grading and filling wetland areas along the ends of the runways and substantial degradation of wetlands resulting from cutting and grading wetland areas along the sides of the runways; (b) impacts to coastal dune and coastal prairie habitats within the RSA improvement area; (c) adverse effects to rare plant species within the RSA improvement area; (d) impacts to sensitive species and habitats within the new security fence alignment; (e) water quality impacts; and (f) impacts to adjacent ESHAs and park and recreation areas. The potential adverse environmental impacts and feasible mitigation measures to minimize those adverse impacts are discussed in the following sections.

(a) Impacts to 16.9 acres of coastal wetlands

The applicant has prepared two mitigation and monitoring plans (MMPs, Exhibits 8 and 9), which together outline a “package” of mitigation options to, in part, offset 13 acres of unavoidable permanent wetland fill impacts associated with the project (the two MMPs also discuss mitigation for coastal dune, coastal prairie, and rare plant impacts, discussed in more detail in subsections (b) and (c) below). As discussed below, the Commission finds that the plans as proposed are inadequate to ensure that feasible mitigation measures will be undertaken to minimize adverse environmental effects on coastal wetlands, specifically to compensate for the permanent loss of 13 acres of high quality wetland habitat, as required by Section 30233 of the Coastal Act. As further discussed below, the Commission therefore attaches [Special Conditions 3, 4, 5, and 13](#) to require that the applicant prepare and submit a revised final wetland mitigation and monitoring program that, among other things, adequately compensates for wetland impacts. The special conditions specify criteria and performance standards that must be met for qualifying mitigation lands and require that the applicant obtain separate approvals for the development of the mitigation sites. For the reasons discussed herein, the Commission finds that it is feasible for the applicant to provide sufficient mitigation to achieve the required performance standards as conditioned by this CDP.

Proposed mitigation “option 1.” Proposed wetland mitigation “option 1” (Exhibit 8), developed to the 50% design stage, principally involves the proposed removal of certain segments of 24-ft-wide asphalt roads at the undeveloped Pacific Shores Subdivision, located on the north side of Lake Earl (the subdivision is discussed in more detail below), to restore functional palustrine wetland habitat associated with adjacent wetland and dune habitats of the CDFW Lake Earl Wildlife Area. This mitigation option necessarily includes a property acquisition component to acquire the vacant, undeveloped, mostly privately-owned lots adjacent to mitigation areas from willing sellers to facilitate mitigation feasibility and success. The applicant believes that there currently are approximately 173 half-acre lots totaling approximately 86.5 acres available for purchase from various sources, including those with purchase agreements signed as of July 2013 (see Exhibit 13). Based on the configuration of lots available for acquisition at this time, a preliminary assessment of their habitat characteristics (e.g., whether or not existing wetlands are present on lots, e.g., Exhibit 12), and the access rights of surrounding private properties, the applicant estimates that approximately six acres of wetlands potentially could be restored in the area through removal of select roadway segments (asphalt and roadbed rock) adjacent to existing wetlands, excavating, grading, and scarifying compacted soils to loosen compacted material, and revegetating areas with regionally appropriate native wetland plants. In addition, in wetland areas adjacent to dunes, frog ponds may be excavated to mimic northern red-legged frog breeding habitat. The applicant has stated that with additional outreach efforts to lot owners within the subdivision, it may be possible to gain signed purchase agreements from several additional willing sellers, which potentially could increase wetland mitigation opportunities in the area.

Since it is not possible to locate all of the necessary mitigation sites at Pacific Shores to achieve the required mitigation ratios, the proposed plan provides for additional wetland establishment to be undertaken at one or more alternate wetland mitigation sites currently under investigation, all

of which are located within the County and some of which are located outside the airport ecoregion (i.e., outside of the wetland-upland dune-prairie ecosystem located between the mouth of the Smith River and Point Saint George, Exhibit 2). No specific plans have been submitted for alternate wetland restoration/creation mitigation sites.

Based on Commission staff discussions with the applicant to date, the most likely alternate mitigation site is Bay Meadows (APN 110-020-081), a privately owned property located within the airport ecoregion approximately 2.5 miles northeast of Crescent City and about a mile south of Lake Earl that is designated and zoned for “Planned Community” uses under the Del Norte County certified LCP. The western half of the property contains disturbed forest uplands adjacent to existing wetlands, which the applicant would convert to palustrine emergent wetland habitat through drainage modifications and grading activities. The conceptual plan posits that approximately 12 to 17 acres of new wetland habitat could be established on the property in conjunction with the development of single-family and multi-family residential dwelling units elsewhere on the property. The County Board of Supervisors has written a letter to the Commission’s Executive Director stating that the property supports adequate area for both future residential development and implementation of the conceptual wetland mitigation plan with adequate buffers to protect mitigation wetlands (Exhibit 14). The applicant has also submitted evidence that the property owner will allow the applicant to acquire the rights to use the property for the proposed wetland creation mitigation.

In addition to proposed wetland restoration at Pacific Shores, MMP option 1 also proposes that mitigation credit be awarded for the acquisition of lots acquired from willing sellers, which would be transferred to a responsible public agency for long-term protection (possibly the California Department of Fish and Wildlife for incorporation into the Lake Earl Wildlife Area). Finally, option 1 also involves invasive species removal and native plant revegetation activities at Pacific Shores across about 3 acres of upland dunes to enhance habitat for the federally endangered Oregon silverspot butterfly (*Speyeria zerene hippolyta*), which is known to inhabit the area and where critical habitat has been designated by the U.S. Fish and Wildlife Service.

Proposed mitigation “option 2” and “option 3.” Because litigation has been filed against the applicant and the FAA by certain property owners at the Pacific Shores Subdivision related to the acquisition of property and proposed use of Pacific Shores for mitigation, the applicant recently produced a second MMP. Dated August 2013 (Exhibit 9), this conceptual plan describes two additional mitigation proposals referred to as “option 2” and “option 3.” Option 2 would limit activities at Pacific Shores only to acquisition of parcels from willing sellers and subsequent transfer of acquired parcels to a responsible public agency (such as CDFW) for long-term protection with no wetland restoration or enhancement activities. Other mitigation sites outside of Pacific Shores would be utilized for creating mitigation wetlands, such as Bay Meadows and other sites within and outside of the ecoregion. In sum, mitigation plan option 2 uses a combination of off-site wetland creation outside of Pacific Shores and lot acquisition and preservation within Pacific Shores to achieve the required mitigation ratio.

Due to the uncertainty associated with the ongoing litigation related to the proposed mitigation plans, the applicant has proposed a third conceptual mitigation proposal. Option 3 involves conducting all needed wetland creation and enhancement activities at one or more sites inside

and outside of Pacific Shores, such as at Bay Meadows and other sites within and outside the ecoregion. There would no proposed activities of any kind at Pacific Shores, including no proposed lot acquisition from willing sellers for subsequent transfer to a responsible public agency. Like option 2, proposed option 3 also is a conceptual plan.

Proposed mitigation ratios. Both plans propose to mitigate for 13 acres of permanent wetland fill impacts that are a result of the proposed method of repair and maintenance at the ends of the existing 11/29 runway and for the security/wildlife exclusion fence at a ratio of 4-to-1 using a combination of mitigation options (i.e., wetland reestablishment or creation to achieve “no net loss” of wetlands, wetland enhancement, and lot acquisition and preservation). Given the size of the wetland areas affected, the proximity of the wetland impact areas to other environmentally sensitive areas and park and recreation areas (e.g., lacustrine wetlands, coastal dune and coastal prairie habitats associated with the Point Saint George Management Area, environmentally sensitive Sitka spruce-shore pine forests), the ecological significance of the affected habitat (e.g., habitat for northern red-legged frog and other sensitive species), the significant temporary losses to habitat associated with the lag in establishing the compensatory wetlands, and the uncertainty that valuable habitat conditions impacted by the proposed development can be fully reestablished at the mitigation site(s),²² the Commission finds that mitigation at the proposed 4:1 ratio is appropriate to sufficiently mitigate for the filling of these high quality wetlands. The Commission has required mitigation at a 4-to-1 replacement ratio for wetland impacts both at the subject airport (CDP A-1-DNC-09-048 approved in May of 2010²³) and elsewhere statewide, where warranted.²⁴

As proposed, the method of repair and maintenance will impact 3.9 acres of palustrine emergent wetlands and drainage channels located along the sides of the main (11/29) runway. These wetlands will not be filled, as is proposed for the 13 acres of wetlands off the ends of the main runway (discussed above), but rather they will be graded and the ground surface lowered to create the more even terrain mandated by federal RSA design standards. The proposed MMPs discussed above propose to include mitigation for these wetland impacts at a 2-to-1 wetland mitigation replacement ratio using the same “package” of mitigation options discussed above. The plans propose that an equivalent or greater area of wetlands of similar type (in-kind) will reestablish in place following completion of construction due to an increase in wetland hydrology from the proposed grading design elevations. However, the project plans do not include a proposed timeframe for expected wetland reestablishment, specific revegetation plans for on-site wetland reestablishment areas, or provisions for confirming the success of the wetland reestablishment.

The Commission finds that as the proposed project will enhance the wetland hydrology of 3.9 acres of wetlands along the sides of the main runway and that the wetlands will reestablish relatively quickly, the temporal loss of the wetland habitat will be much less than for the other fill associated with the project. Therefore, a 2-to-1 wetland replacement mitigation ratio, as proposed, is appropriate to compensate for the proposed wetland grading impacts provided that

²² E.g., see Ambrose et al. 2007.

²³ Findings for approval accessible at <http://documents.coastal.ca.gov/reports/2010/5/W15c-5-2010.pdf>.

²⁴ E.g., see CDPs 4-06-097, 1-07-013, 3-10-056, E-11-002, E-12-006, A-1-MEN-09-034, and 5-10-106, and CC-058-01, among others.

(1) a minimum of 3.9 acres of wetlands reestablish on-site within two years of completion of construction, and (2) on-site restoration areas are planted with an appropriate mix of native wetland plant species similar in species composition and density/cover to existing palustrine emergent wetlands in the project area. [Special Condition 4](#) includes this requirement.

Deficiencies in the proposed mitigation plans. Although the conceptual ideas and techniques presented in the proposed MMPs will help accomplish the mitigation goals of reestablishing wetland habitat and compensating for the project's wetland impacts, each proposed plan is deficient. Neither plan goes far enough to ensure that adequate mitigation will be provided, as provided by Section 30233. MMP option 1 proposes in part to reestablish or create a total of 16.9 acres of wetland habitat both within the ecoregion, at Pacific Shores and Bay Meadows, and outside of the ecoregion, such as at the Moore Tract, the Hambro site adjacent to the Crescent City Marsh, and/or other potential sites, for a total mitigation replacement ratio of 1:1 for the 16.9 acres of wetland fill impacts. However the plan does not demonstrate that the applicant has sufficient property interest in all of the subject mitigation lands to be able to perform the proposed mitigation, nor does it include provisions for the long-term management of the restored habitat. MMP option 1 also proposes to acquire and preserve about 86 acres of land within the ecoregion, at and around Pacific Shores, through the acquisition of privately owned lots from willing sellers and transfer of acquired lands to a responsible public agency for long-term conservation and management. However, the plan lacks critical information on the lands targeted for acquisition, such as whether or not the lots contain existing wetland habitat, and lacks assurances that the land will be transferred to a responsible accepting entity within a specific timeframe. The other conceptual plan presenting options 2 and 3 discusses the possibility of establishing up to 28 acres of wetlands at various sites within and outside of the ecoregion, including in part outside of the County's coastal zone. Because the plan is only conceptual however, it lacks critical details on ecological site assessments, design plans, evidence of property interest, site protective measures, and evidence of other necessary approvals for implementing the mitigation, such that it fails to ensure that sufficient mitigation will be provided to compensate for the filling and grading of 16.9 acres of high quality wetland habitat at the airport.

The applicant has identified practical considerations that prevented the complete formulation of mitigation measures prior to submittal of the permit application. First, as previously mentioned, litigation filed by certain owners of property in the Pacific Shores Subdivision against the applicant and the FAA related to the acquisition of subdivision lots has necessitated a supplemental examination of and search for additional mitigation sites. Second, federal law requires that compliant RSAs be developed by the end of 2015, and construction of RSAs at the Crescent City airport is expected to take more than one year to complete due to weather-related abbreviated construction seasons. Third, the FAA requires that all necessary permits for the RSA development, including the applicable CDP, be in place for the applicant to be eligible to receive additional grant funding for both the project construction and for mitigation work. Finally, the development of the mitigation sites will itself require CDPs.

Location of approved mitigation. As discussed more specifically below, the Commission finds that in this case, a combination of wetland creation and acquisition of lands in certain areas would best mitigate for the wetland fill impacts of the project. The Commission finds that offsite

mitigation for the wetland fill impacts of the project must be provided in the form of both wetland creation of at least 16.9 acres of wetlands within the same coastal dune ecoregion where the airport exists to ensure no net loss of wetlands, with the balance of the acreage being provided either in the form of additional wetland creation and/or the acquisition of lands within the portion of the ecoregion that encompasses Lake Earl and other lands within the historic footprint of Lake Earl. Similarly, the Commission finds that the impacts to 4.5 acres of coastal dune habitat must be mitigated in the form of direct restoration of at least 4.5 acres of coastal dune habitat, with the balance of the mitigation provided in the form of acquisition for preservation of other dune habitat in the ecoregion. Acquisition of lands for preservation as mitigation for either wetland or dune impacts shall be given varying degrees of credit for mitigation proportional to the amount of habitat that exists within a given property acquired, as discussed in more detail below.

Regarding the location for this required mitigation, the wetlands and associated natural resources of Lake Earl were identified by the Department of Fish & Game (now CDFW) in 1974 as one of the 19 coastal wetlands included in a report entitled “Acquisition Priorities for Coastal Wetlands of California” in recognition of its extraordinary habitat values. As noted in the Commission’s ecologist’s, Dr. John Dixon’s memorandum attached as Exhibit 16 of this report, the dune-wetland complex that defines this ecological region is exceptional in its biological diversity, supporting over 250 species of birds, 50 species of mammals, and at least 16 species of reptiles and amphibians. The area is especially critical for the many thousands of wading birds and shorebirds that rely on the resources of the Lake Earl Wildlife Area during the annual migration.

The Pacific Shores Subdivision is part of the dune-wetland complex associated with Lake Earl. The habitat that exists on the undeveloped lands within the Pacific Shores Subdivision is ecologically extremely valuable and a salient part of the dune-wetland ecosystem. Many of the surrounding lands and a patch-work of more than half of the 1,500+ half-acre lots within the Pacific Shores Subdivision have already been acquired and included within the CDFW’s Lake Earl Wildlife Area. Other surrounding lands have been acquired and included within Tolowa Dunes State Park. The Commission finds that the acquisition for preservation of a significant number of the remaining private lots within Pacific Shores would consolidate protected lands into a more continuous habitat area, thereby enhancing its overall habitat values and enabling comprehensive management of the area together with the existing lands at the Lake Earl Wildlife Area and Tolowa Dunes State park to maximize habitat values. The Commission also finds that acquisition of lands below the 12-ft elevation within the historic footprint of Lake Earl would protect the significant area of existing wetlands, many of which have been disturbed over time, and would provide potential over time for the restoration of degraded wetlands and surrounding areas below the 12-foot contour to lagoon habitat. Therefore, given the unique biological resources of the Lake Earl dune-wetland complex and the existing land management framework in the area provided by the Lake Earl Wildlife Area and Tolowa Dunes State Park, the Commission finds that the acquisition for preservation of lands within the heart of the Lake Earl dune-wetland complex at Pacific Shores and within the historic footprint of Lake Earl (lands below 12-ft elevation) would provide extraordinary habitat preservation benefits that would be suitable for mitigating for the temporal loss of habitat values between the time of project impact and the creation of the minimum of 16.9 acres of wetlands required to ensure no net loss of wetlands. The special conditions of this permit require the submittal of final mitigation plans,

prior to the commencement of construction of any development, which provide for wetland restoration and the acquisition for preservation of certain other lands in the locations prescribed above.

Acquisition of property as mitigation. As proposed, the plan would directly compensate for the 16.9 acres of wetland fill with only a minimum of 16.9 acres of wetlands reestablishment or creation. The remainder of the mitigation, or 42.9 acres $[(13 \times 4) + (3.9 \times 2) = 59.8$ acres of total mitigation required minus 16.9 acres of direct wetland creation to be provided leaving a balance of 42.9 acres] would be made up with acquisition of property at Pacific Shores at various credit levels. The large amount of wetland fill is a result of the location of the airport runways within an area surrounded by wetlands and other sensitive habitats, the size of the RSA areas that are required, and the lack of feasible alternatives as discussed above. The applicant has indicated to staff that compensating for the entire 59.8 acres of mitigation required with wetland creation based on the 4:1 and 2:1 mitigation ratios employed will be challenging due to the large size of the needed mitigation area and the resulting difficulties in acquiring suitable lands within the Del Norte County coastal zone for mitigation that (a) have a water source and appropriate physical conditions that would allow the lands to be successfully converted to wetlands, (b) are not already under public ownership and obligated to other uses or already planned for restoration purposes, (c) are designated and zoned for land uses where wetland mitigation is permissible, and (d) have a willing seller. Therefore, the applicant is proposing property acquisition at Pacific Shores as a component of the mitigation plan in addition to 1:1 wetland creation.

When an applicant proposes to restore or create a wetland as mitigation for impacts, the Commission must determine if the quantity and quality of proposed mitigation will adequately compensate for the wetland area lost. The Commission requires additional acreage beyond that lost because of interim losses in wetland acreage and because the success and resulting value of compensatory mitigation is uncertain. The acquisition of property would not result in the direct creation of additional wetland habitat to offset the temporal loss or to ensure that sufficient new wetland has been created to compensate for the loss of wetlands should the wetland creation mitigation not be as successful as planned. However, acquisition of property at and surrounding the Pacific Shores Subdivision and within the historic footprint of Lake Earl would yield extraordinary habitat benefits.

The ecoregion in which the airport project is located includes a coastal dune/prairie/wetland complex extending from the mouth of the Smith River to Point Saint George (Exhibits 2 and 16). In the midst of this 11-mile-long stretch is the largest coastal lagoon complex on the Pacific coast south of Alaska – Lake Earl, a primarily freshwater lagoon, and its western, smaller, brackish lobe, Lake Talawa. As previously discussed, the ~5,000-acre (60-mile perimeter) lagoon system with its associated freshwater and brackish aquatic habitat and marshlands and surrounding dune habitats support numerous rare, threatened, and endangered plant and animal species.^{25,26} The region's vast expanses of wetland vegetation play a special role in the ecosystem in making this stretch of the Del Norte coastline a particularly important resting and wintering area of the Pacific Flyway. Visited by, or home to, over 300 species of birds, this region is considered a

²⁵ Bauer et al. 1974

²⁶ http://www.smithriveralliance.org/watershedprotection/landacq/landacq_lakeearl.html

“globally important bird area” by the National Audubon Society,²⁷ hosting as many as 100,000 birds during seasonal migrations. Because of the extremely high fish and wildlife values of the lagoons and adjacent wetlands, CDFW (formerly DFG) included Lake Earl as one of the 19 coastal wetlands identified in the 1974 report entitled “Acquisition Priorities for Coastal Wetlands of California.”

The CDFW and the California Department of Parks and Recreation (CDPR) own and manage more than 5,000 acres of land within or adjacent to Lake Earl and Lake Talawa (Exhibit 3). An additional 2,600+ acres of land is leased from the State Lands Commission by the CDFW. Today, over 5,600 acres of land and water area under management by CDFW lies within the boundaries of the Lake Earl Wildlife Area. To better manage the wildlife and fisheries resources in and around the lagoon, CDFW has for at least two decades purchased property within the Pacific Shores Subdivision and elsewhere around Lake Earl from willing sellers who own land around the lagoon that is below 10 feet mean sea level (and therefore subject to periodic flood hazards). To date the CDFW’s Wildlife Conservation Board, through the Smith River Alliance serving as its outreach intermediary, and in coordination with the Coastal Conservancy, has purchased 779 of the 1,524 half-acre lots within Pacific Shores. Less than 300 acres of land below the 10-foot contour remain in private hands, about a third of it within Pacific Shores. The CDFW’s efforts to acquire property from willing sellers around the lakes ended in June of 2008 due to County opposition to the voluntary acquisition program.

As discussed above, the Pacific Shores Subdivision, located on the northern shores of Lakes Earl and Talawa, comprises a total of 1,524 roughly half-acre lots platted over a 1,486-acre area in the early 1960s. Approximately 27 lineal miles of roadway was offered for dedication and subsequently accepted by the County and constructed with paved, chip-sealed, and/or gravel surfaces shortly after the subdivision was approved in 1963. However, except for the road system, the subdivision remains essentially undeveloped. Since 1963, infrastructure improvements within Pacific Shores have been minimal, consisting primarily of a system of roadways and an electrical power line corridor. Only the main north-to-south access road, Tell Boulevard, and several other cross streets has been maintained (i.e., vegetation clearing, minor drainage improvements). One permanent residence has been developed within the bounds of the subdivision. The residence was developed prior to the 1972 Coastal Initiative (Proposition 20) and therefore did not require a coastal development permit. Most lots contain wetlands and/or other types of ESHA, such as rare plant habitat, dune mat, critical habitat for the federally threatened Oregon silverspot butterfly, or other types of ESHA. The subdivision is identified as an Area of Deferred Certification (ADC) in the County’s LCP. The Commission’s most recent (2011) LCP Status Update notes that the unresolved issues for this ADC are natural hazards, water quality, environmentally sensitive habitat areas, public works, and location of new development.

The Commission finds that it is appropriate for the mitigation activities to be concentrated within the ecoregion, as is proposed within the Pacific Shores area, for the following reasons. First, the majority of the lands within the project ecoregion already are in public ownership (Tolowa Dunes State Park, Lake Earl Wildlife Area, and the Point Saint George Management Area), and Pacific Shores is the largest area of private land within the ecoregion where such a large mitigation area could feasibly be accomplished. The area includes a patchwork of unevenly

²⁷ See <http://netapp.audubon.org/iba/site/42>.

distributed privately and publicly owned half-acre lots clustered along an extensive complex of paved County roads, select segments of which offer wetland mitigation opportunities, based on 50% design plans prepared and submitted by the applicant. The County stated its support for the mitigation proposal in an action taken at a public meeting held on March 13, 2012. Second, concentrating mitigation activities within the ecoregion will increase the chance that the mitigation will successfully provide the appropriate wetland habitat and functions with maximal benefit to the affected organisms and resources. Pacific Shores supports suitable habitat for many of the rare species to be impacted by the project (e.g., Del Norte buckwheat, sand dune phacelia, short-leaved evax, and northern red-legged frog), plus several additional rare species and habitats. The Commission finds it preferable that proposed mitigation wetlands be located adjacent to existing functioning wetlands (and Pacific Shores is located on the north shores of Lakes Earl and Talawa) to provide a higher probability of success and a higher chance of sustaining maximum function and values (e.g., proximity of seed sources and facilitation of the migration and dispersion of wetland flora and fauna).

In the interest of concentrating mitigation activities within the project ecoregion coupled with the fact that (a) the majority of the lands within the ecoregion already are in public ownership and therefore unavailable for mitigation purposes, and (b) the lands of the Pacific Shores area are, in general, of high habitat quality for wetland resources associated with the Lake Earl ecosystem, the Commission finds that in this particular case it is appropriate to allow the applicant to apply the acquisition of certain lots in the ecoregion as mitigation towards the 3:1 target wetland mitigation ratios, as proposed. Acquisition from willing sellers of lots and subsequent transfer of acquired lots to an approved accepting entity for long-term protection will help reduce the patchy public/private land ownership pattern in the area and facilitate a more cohesive land management strategy to benefit the wildlife and fisheries resources in and around the lagoon ecosystem.

The Commission further finds that it only is appropriate to award mitigation credit for the proposed lot acquisition at a less than acre-for-acre value. For example, each acre of land in Pacific Shores that is acquired and preserved for mitigation purposes will count as less than one acre of credit towards the required mitigation ratios for wetland fill impacts. This is because only active wetland reestablishment or wetland creation in which every acre of wetland area is reestablished or created has been considered compensatory in counting towards target mitigation acreage needed for wetland impacts. Acquiring lots from willing sellers as proposed in the MMPs, without mitigation wetland creation is of different mitigation value than acquiring lots and actively implementing wetland creation activities on those acquired properties. The Commission finds that the amount of mitigation credit that should apply to the proposed Pacific Shores lot acquisition mitigation component must be based on the existing wetland habitat value of each acquired lot, but should be no more than 50% (half the mitigation value) for lots of the highest wetland function. Acquired lots consisting of a greater amount of wetland habitat will be awarded a higher amount of mitigation credit than acquired lots with less wetland habitat, since wetlands offer a number of environmental benefits such as biofiltration, flood protection, and groundwater recharge, and wildlife habitat. In this way, the mitigation credit system also incentivizes the acquisition of those available lots with optimal wetland benefit and subsequent transfer of those lots to a responsible public agency for long-term preservation and management. The Commission finds that in this particular case, multiple tiers of mitigation credit ranging between 20% and 50% depending on a site-specific wetland evaluation of each acquired lot (with

a higher amount of credit to apply to lots of the highest wetland value) shall be utilized to allot mitigation credit for the acquisition of property for the 3:1 component of the wetland mitigation.

A significant amount of acreage appears to be available for acquisition for this component of the mitigation plan. To date, the applicant has obtained signed purchase and sale agreements (PSAs) from willing sellers for 121 separate lots within the Pacific Shores Subdivision. There are an additional 52 lots for which PSAs either are pending or are pending completion of Revenue and Taxation Code Division 1, Part 6 (tax sales). In total, the applicant believes it can acquire at least 173 lots in the Pacific Shores Subdivision from willing sellers, for a total of approximately 86 acres for use in this component of the mitigation plan. Lots feasible for acquisition in this manner are scattered throughout the subdivision and are, in many areas, adjacent to lots within the Lake Earl Wildlife Area (Exhibit 13). The applicant believes that with additional outreach efforts to lot owners, additional lots may become available, which could be used for mitigation purposes if needed. Further, the special conditions allow the 3:1 portion of the 4:1 mitigation be satisfied through acquisition or creation within the designated ecoregion.

Wetland reestablishment/creation-component of mitigation. As discussed above, the applicant proposes to provide a minimum of 16.9 acres of wetland reestablishment or creation as a component of the mitigation plan. Although various sites are being investigated as possible mitigation sites, including the removal of certain road segments within the Pacific Shores Subdivision and the establishment of wetlands at other possible mitigation sites outside of Pacific Shores, such as Bay Meadows, at this point only 3.9 acres of land on the airport (adjacent to runway 11/29 in areas that will be graded for the proposed RSA improvements and subsequently restored to wetland function) has been identified for mitigation use. The applicant proposes to identify the location of the remaining 13 acres of wetland reestablishment or creation areas as part of a final mitigation plan to be submitted for review and approval by the Executive Director after project approval.

As the choices of wetland reestablishment and/or creation sites are still under consideration, it is essential that the Commission establish criteria for determining what constitutes acceptable wetland reestablishment or creation that will provide feasible mitigation for the wetland fill impacts of the project prior to commencement of any development. First, the wetland mitigation must not result in the conversion of agricultural lands to nonagricultural uses, because such a conversion would likely be inconsistent with the agricultural land protection policies of the Coastal Act, and alternative sites are available for mitigation uses that would not result in impacts coastal agricultural land. Second, wetland mitigation sites must be located adjacent to, or be capable of being functionally connected to, existing natural wetlands. In addition, the wetland mitigation must not interfere with access to surrounding private properties. Finally, the wetland mitigation site(s) must not result in the conversion of any existing environmentally sensitive habitat area. These criteria will result in the selection of sites that will allow for the creation of a minimum of 16.9 acres of palustrine freshwater wetlands within the Del Norte County coastal zone, which will feasibly mitigate for the filling of 16.9 acres of palustrine freshwater wetlands as part of the project.

The wetland mitigation sites proposed have relative advantages and disadvantages. For example, removal of road segments at Pacific Shores, as proposed, would provide for wetland

reestablishment within the same ecoregion as the impact site in an ecologically important area, and habitat protection in this area would provide extraordinary benefits as discussed above. However, actual wetland mitigation sites in the area (i.e., portions of roads that may be possible to remove without obstructing access to adjoining private properties) may ultimately be relatively small and scattered, and pending litigation raises questions on the timeliness of using road segments as mitigation sites. In comparison, the proposed Bay Meadows mitigation site is also within the same ecoregion as the airport but less similar to the airport impact areas in terms of habitat than Pacific Shores, and the size of the property available for mitigation purposes would offer a relatively large contiguous area for wetland creation, which also could expand on existing wetland habitat on the adjoining property. In addition, Bay Meadows also is located within the same ecoregion as the airport and in a location closer to the airport wetland impact site than other alternatives under consideration. In any case, the criteria discussed above will ensure that the final wetland mitigation plan provides for a minimum of 16.9 acres of palustrine freshwater wetlands to be reestablished and/or created within the Del Norte County coastal zone, which will feasibly mitigate for the filling of 16.9 acres of palustrine freshwater wetlands as part of the project.

It has been determined that there is sufficient area available for mitigation to satisfy the minimum 16.9 acres of wetland reestablishment or creation. The applicant has already determined that at least 3.9 acres of restored palustrine emergent wetlands can be provided on-site as part of the restoration of wetlands along the sides of the main runway following completion of the RSA improvements. In addition, the applicant believes that approximately 6 acres of road segments may be available for removal and mitigation purposes at Pacific Shores. Furthermore, whether or not property at Pacific Shores is acquired as is proposed, the applicant believes it will be possible to create approximately 12-17 acres of new wetlands at Bay Meadows. Moreover, the applicant may be able to acquire additional properties for preservation around Lake Earl, which would increase the likelihood of mitigation success.

Given that the 3:1 portion of the 4:1 mitigation may be in the form of acquisition of lots at Pacific Shores as proposed or wetland creation in the ecoregion, it is essential that the proposed 1:1 wetland reestablishment/creation component of the mitigation be successful to ensure that there is no net loss of wetlands. A rigorous mitigation monitoring program is needed to monitor the success of the mitigation project to assure achievement of the approved mitigation goals and objectives. The mitigation monitoring program must include a remediation component that would require the applicant to prepare a revised or supplemental mitigation plan to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program shall be processed as an amendment to this coastal development permit, at which point the Commission would consider the need for additional mitigation in its review of such an amendment to ensure that the added temporal loss resulting from the lack of success of the initial mitigation effort is fully compensated.

Submittal of revised final plans. To ensure that the project provides feasible mitigation measures to minimize the adverse environmental effects of filling 16.9 acres of coastal wetlands consistent with Section 30233, the Commission attaches Special Conditions 3, 4, 5, and 13. These special conditions specify criteria and performance standards that must be met for mitigation lands but require that the applicant obtain future approvals for specific mitigation

sites. [Special Condition 3](#) requires that prior to the commencement of any development authorized by this CDP, the applicant submit a revised final wetland mitigation plan that includes various provisions for ensuring that sufficient wetland mitigation will be provided. This includes requirements to submit final plans, evidence of sufficient property interest in the mitigation site(s) to be able to perform wetland restoration activities, evidence that easements over the restoration sites will be offered for dedication to protect the habitat and open space values of the mitigation site(s), evidence of other approvals for development of the restoration/mitigation sites, including all necessary coastal development permits from the County or the Commission as applicable to authorize the proposed wetland mitigation work, among other revisions. [Special Condition 4](#) requires in part that wetland mitigation be provided consistent with the mitigation ratios and credit scheme discussed above. [Special Condition 5](#) requires submittal of a final monitoring and reporting program for the wetland mitigation sites. The condition specifies final success criteria that must be achieved at wetland mitigation sites and requires that if the mitigation is unsuccessful, the applicant must submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program must be processed as an amendment to this coastal development permit.

As conditioned in the manner discussed above, the Commission finds that it is feasible for the applicant to provide sufficient mitigation to achieve the required performance standards as conditioned by this CDP. Therefore, the project as conditioned minimizes the adverse environmental effects of 16.9 acres of wetland fill impacts associated with construction of the proposed airport repair and maintenance project.

(b) Impacts to sensitive dune and prairie habitats

As discussed in detail below, the Commission finds that [Special Conditions 6, 7, 8, 9, and 13](#) are needed to ensure that the method of repair and maintenance minimizes significant disruption of 4.5 acres of coastal dune and prairie habitats. As previously described, both habitats are considered ESHA under the Coastal Act. The Commission finds that because the dune and prairie habitats to be impacted are intermingled and interrelated, support many of the same species, and have not been separately quantified in terms of projected impact areas, it is appropriate in this case to consider their impacts and appropriate mitigation together herein.

Proposed ESHA mitigation plans. Included in the two MMPs prepared for the project is proposed mitigation for coastal dune and coastal prairie impacts (in addition to proposed mitigation for wetland impacts, discussed above, and rare plant impacts, discussed below). The applicant proposes to mitigate dune and prairie impacts at a 3:1 ratio using a combination of restoration, enhancement, and land acquisition/preservation mitigation techniques similar to those discussed in subsection (a) above for wetland fill impacts. First, the proposed mitigation “package” includes proposed habitat enhancement across a 14-acre area of County property at Point Saint George immediately west of runway 35 to improve habitat quality for the state and federally endangered western lily population that occurs in the area. Western lily historically occupied coastal prairie and marsh habitats on Point Saint George and still maintains a population on the Point. According to the U.S. Fish and Wildlife Service (FWS),²⁸ Point St.

²⁸ U.S. Fish and Wildlife Service 2009

George was a cattle ranch until the late 1990's, when ownership passed to Del Norte County. When western lily was listed under the federal Endangered Species Act in 1994, the population on the Point was estimated at about 400 reproductive plants. With the change in land ownership and land management regime (e.g., cessation of cattle grazing), woody vegetation began to encroach into former coastal prairie habitat, and with this vegetation change, the western lily population began to decline. Western lily also has been heavily impacted by herbivores (deer and elk) in this area.²⁹ Enhancement activities in this area include in part removal of approximately 5.2 acres of woody vegetation from former coastal prairie habitat, which has overgrown into what's now described (by the applicant's agent) as "mixed tree-shrub thicket" habitat (Exhibit 7). The applicant proposes to construct new airport security/wildlife fencing west of the western lily enhancement area in part to protect the lily population(s) from herbivory impacts (fence construction mitigation measures are discussed in subsection (d) below).

Second, under proposed MMP option 1, the applicant would remove select segments of asphalt road material in the Pacific Shores Subdivision and revegetate areas with regionally appropriate native dune plants. The applicant would conduct enhancement activities, such as invasive species removal and native dune plant reestablishment, on the airport property "if suitable locations are identified away from airport operations areas." Furthermore, if feasible, enhancement activities for the Oregon silverspot butterfly will occur at Pacific Shores, including invasive species removal and planting of butterfly nectar and host plants in certain areas. Finally, if property at Pacific Shores is acquired as proposed by the applicant, the applicant proposes to transfer acquired properties to a responsible public agency for long-term protection. As with the wetland mitigation proposal discussed above, proposed option 2 includes only lot acquisition at Pacific Shores as mitigation, and option 3 doesn't include any proposed mitigation at Pacific Shores. Under the latter two options, invasive species removal and other enhancement activities, such as native plant plantings, would occur on the airport property on sites away from airport operations areas and potentially on other mitigation parcels (such as Bay Meadows).

Given the proximity of the dune and prairie impact areas to other ESHA and park and recreation areas, the ecological significance of the affected habitat for multiple rare plant species (including Del Norte buckwheat, sand dune phacelia, and short-leaved evax), the temporary losses to habitat associated with the lag in implementing the compensatory mitigation, and the uncertainty that valuable habitat conditions being lost can be fully reestablished at the mitigation site(s), the Commission finds that the proposed 3:1 mitigation ratio is reasonable to assure that ESHA impacts are adequately mitigated.

Although some of the ideas and techniques presented in the proposed mitigation plans are sufficient to minimize significant disruption of ESHA, the proposed plans are deficient, as discussed below.

Proposed enhancement activities on Point Saint George. The applicant proposes to undertake activities to enhance habitat for the state and federally endangered western lily on Point Saint George. As previously discussed, the applicant proposes to remove vegetation from 14 acres of prairie and marsh habitats, including 5.2 acres of former coastal prairie habitat referred to as "mixed tree-shrub thicket" habitat, to enhance the habitat for the benefit of western lily. As

²⁹ Ibid

proposed, vegetation removal may occur across a total of 14 acres of intermingled “coastal prairie upland,” “mixed tree-shrub thicket,” and “slough sedge marsh.” However, according to the applicant’s agent, areas of existing coastal prairie (typically small inclusions within or adjacent to dense stands of shrubs and saplings) will not be modified except to remove any isolated individual encroaching woody plants. Although the applicant has proposed to mitigate for the project’s rare plant impacts (i.e., impacts to short-leaved evax, sand dune phacelia, and Del Norte buckwheat) by implementing these proposed western lily enhancement activities, the Commission finds that these proposed activities would more appropriately mitigate, in part, for the project’s coastal prairie impacts (since the proposed enhancement activities will enhance existing coastal prairie habitat by removing encroaching woody vegetation, and since the rare plant species proposed to be enhanced is not the same as any of the rare plant species to be impacted by the project). Rare plant impacts and mitigation are discussed in more detail in subsection (c) below.

For the purpose of determining the size of the coastal prairie enhancement area for mitigation purposes, the Commission finds that only the actual acreage of coastal prairie enhancement activities be counted towards mitigation requirements, which would mean only counting the acreage of vegetation removal in former coastal prairie habitat, referred to as 5.2 acres of “mixed tree-shrub thicket” habitat, towards mitigation requirements. This would exclude awarding mitigation credit for proposed activities conducted in existing “coastal prairie upland” habitat and “slough sedge marsh” habitat, since these habitats will not be modified or enhanced in any way except for removal of isolated woody plants from some areas.

The Commission further finds that because the proposed enhancement activities are only indirectly aimed at coastal prairie enhancement but more specifically designed for western lily habitat enhancement, it only is appropriate to award coastal prairie mitigation credit for the proposed enhancement activities at a less than acre-for-acre value. The Commission therefore applies a mitigation credit of 50% to the proposed enhancement activities (i.e., 5.2 acres of enhancement would receive 2.6 acres of mitigation credit).

The Commission finds that submittal of a revised final plan for the proposed mitigation work on Point Saint George is needed to clarify the mitigation credit scheme, ensure that pre-treatment surveys, monitoring, and reporting results are submitted to the Executive Direct, provide protection measures from vegetation removal impacts for existing western lily plants in the area, and ensure that, as recommended by the U.S Fish and Wildlife Service, revisions are made to the Airport Layout Plan labeling the 14-acre western lily enhancement area as an environmentally sensitive area unavailable for development and restricted from vegetation clearance except as authorized under the approved final plan. [Special Condition 6](#) is so attached requiring these revisions and submittal of the revised plan prior to commencement of development. As conditioned, the Commission finds that the proposed western lily enhancement activities in the degraded coastal prairie habitat adjacent to the airport will partially mitigate for 4.5 acres of coastal dune and prairie impacts that, as proposed, will be mitigated at a ratio of 3:1.

Proposed coastal dune and coastal prairie mitigation at Pacific Shores. As previously discussed, in addition to the Point Saint George western lily habitat enhancement work, the

applicant also proposes to mitigate for coastal dune and prairie impacts using a combination of restoration, enhancement, and lot acquisition and preservation at Pacific Shores.

The mitigation plans submitted for dune and prairie impacts present many of the same problems as for wetland mitigation discussed above. Specifically, they lack key information and detail needed to ensure that sufficient mitigation will be provided to compensate for impacts to 4.5 acres of dune and prairie ESHA, evidence of the applicant's sufficient property interest in the subject mitigation lands to be able to perform the mitigation work, and provisions to ensure that the restored ESHA habitat will be protected. Similarly with the proposed lot acquisition component of the mitigation, there is little information on the lands targeted for acquisition, such as whether or not the lots contain existing ESHA habitat, and assurances that the land will be transferred to a responsible public agency within a reasonable timeframe. In addition, as proposed, the dune and prairie ESHA mitigation plans fail to effectively prioritize mitigation locations to ensure that the most appropriate feasible mitigation is provided to minimize the project's adverse environmental effects. Finally, the plans as proposed fail to ensure that at least 4.5 acres of substantial restoration and/or enhancement of dune and prairie habitats will be provided to minimize significant disruption to 4.5 acres of coastal dune and prairie habitats. As proposed, the lot acquisition component of the mitigation could account for more than two thirds of the target 3:1 mitigation ratio, which would result in a "net loss" of dune and prairie habitats as a result of the project impacts.

The Commission finds that mitigation activities must be concentrated within the ecoregion, as proposed within the Pacific Shores area, for the reasons discussed above. Mitigating for ESHA impacts within the ecoregion provides a mitigation site that is ecologically similar to the impact site and increases the chances that the mitigation will successfully provide the appropriate ESHA habitat and functions with maximal benefit to the affected organisms and resources. In the interest of concentrating mitigation activities within the project ecoregion coupled with the fact that (a) the majority of the lands within the ecoregion already are in public ownership and therefore potentially unavailable for mitigation purposes, and (b) the lands in and surrounding the Pacific Shores area and within the historic footprint of Lake Earl are, in general, of high habitat quality for coastal dune and prairie resources associated, the Commission finds that in this particular case it is appropriate to allow the applicant to count the acquisition of certain lots in the ecoregion as feasible mitigation applied towards the target 3-to-1 mitigation ratio, as proposed. Acquisition from willing sellers and subsequent transfer of acquired lots to a responsible public agency for long-term protection will help reduce the patchy public/private land ownership pattern in the area and facilitate a more cohesive land management strategy to benefit the wildlife and fisheries resources in and around the lagoon ecosystem.

Similar to the above findings for wetland impacts (subsection (a) above), the Commission finds that in this particular case it is appropriate to allow the applicant to count the acquisition of private half-acre lots in the area as feasible mitigation applied towards the target 3-to-1 ESHA mitigation ratio, as proposed. Acquisition from willing sellers of lots and subsequent transfer of acquired lots to an approved accepting entity for long-term protection will help reduce the patchy public/private land ownership pattern in the area and facilitate a more cohesive land management strategy to benefit the sensitive coastal dune and coastal prairie habitats and associated species in and around the Lake Earl ecosystem. The Commission further finds that it only is appropriate to

award mitigation credit for the proposed lot acquisition mitigation at a less than acre-for-acre value, similar to the above discussion of wetland mitigation credit (subsection (a) above). In this regard, it is appropriate to consider active dune or prairie restoration to count as 100% credit, such that every acre of ESHA restored or reestablished, such as the proposed road removal/dune reestablishment at Pacific Shores, or the proposed acquisition of lots and implantation of butterfly habitat enhancement activities on purchased lots, will count in equal value towards required mitigation acreage needed for ESHA impacts. Simply acquiring lots from willing sellers as proposed in part, with no actual mitigation development, is not of equivalent mitigation value as both acquiring lots and actively implementing restoration or enhancement activities on acquired properties. The Commission finds that the amount of mitigation credit that should apply to the mitigation component must be based on the existing habitat value of each acquired lot as it relates to coastal dune and coastal prairie habitat benefits. Acquired lots consisting of greater dune or prairie habitat value, such as those lots with higher coverage of native flowering plants that support sensitive dune mat habitat, sensitive coastal prairie habitat, or plant resources important to the Oregon silverspot butterfly, should be awarded a higher amount of mitigation credit than acquired lots of lower habitat value. The Commission finds that in this case, consistent with the wetland mitigation discussed above, three tiers of mitigation credit ranging between 20% and 50% depending on a site-specific vegetation evaluation of each acquired lot (with a higher amount of credit to apply to lots of the highest native flowering plant cover) is an appropriate mitigation credit scheme for the acquisition of Pacific Shores Subdivision lots for mitigation purposes. Finally, the Commission finds that the final mitigation plan must include provisions for providing at least 4.5 acres of substantial restoration and/or enhancement of coastal dune and/or prairie habitats as part of the mitigation package. The Commission notes that the proposed coastal prairie enhancement activities on Point Saint George would, as discussed above, provide 2.6 acres of mitigation credit. The applicant has identified at least three additional dune enhancement sites on the airport property where additional enhancement activities could occur (figure included in Exhibits 8 and 9).

To ensure that the project provides feasible mitigation measures to minimize the adverse environmental effects to 4.5 acres of coastal dune and coastal prairie habitats consistent with Section 30240, the Commission attaches Special Conditions 7, 8, 9, and 13. [Special Condition 7](#) requires that prior to commencement of the authorized development, the applicant submit a revised final ESHA mitigation plan with final plans, evidence of sufficient property interest in the mitigation site(s) to be able to perform restoration activities, evidence that easements over the restoration sites will be offered for dedication to protect the habitat and open space values of the mitigation site(s), evidence of other approvals for development of the restoration/mitigation sites, among other revisions. [Special Condition 8](#) requires in part that ESHA mitigation be provided consistent with the mitigation ratios and credit scheme discussed above. [Special Condition 9](#) requires submittal of a final monitoring and reporting program for the ESHA mitigation sites. The condition specifies final success criteria that must be achieved at ESHA mitigation sites and requires that if the mitigation is unsuccessful, the applicant must submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved performance standards. The revised mitigation program must be processed as an amendment to this coastal development permit.

As conditioned in the manner discussed above, the Commission finds that the project provides feasible mitigation to minimize the adverse environmental effects of 4.5 acres of coastal dune and coastal prairie impacts associated with construction of the proposed airport repair and maintenance project.

(c) Rare plant impacts

As previously discussed, the RSA improvements will impact, in total, about a third of an acre of three different kinds of rare plants: short-leaved evax, sand dune phacelia, and Del Norte buckwheat. These three plant species occur within the coastal dune and prairie habitats near the end of runway 11. Other rare plants that are located adjacent to areas of potential impact include Alaska violet (near the proposed new security fence alignment) and western lily (in the coastal prairie enhancement mitigation area on Point Saint George discussed above). [Special Condition 6](#), discussed above, will ensure that western lily plants are protected during implementation of the coastal prairie mitigation activities on Point Saint George by requiring that plants be surveyed for and protected from impacts prior to vegetation removal in the area. [Special Condition 11](#), discussed in subsection (d) below, will ensure that impacts significant disruption of Alaska violet plants and other sensitive habitats is minimized or avoided during construction of the new securing fence.

The Final EIR adopted for the project (URS 2009) identified mitigation measures to offset impacts to short-leaved evax, sand dune phacelia, and Del Norte buckwheat. Implementation of Mitigation Measure BIO-3 (URS 2009) would reduce impacts to special-status plant species by “development and implementation of a management plan that would provide for on-site relocation to a suitable area, off-site mitigation, or relocation of special-status plant species to suitable areas in the Crescent City area.” However, in the project description included with the application, the applicant proposes to apply the mitigation activities related to western lily enhancement (discussed above) as mitigation for impacts for short-leaved evax, sand dune phacelia, and Del Norte buckwheat. As discussed above, the Commission finds that the proposed western lily enhancement activities would more appropriately mitigate, in part, for the project’s coastal prairie impacts, since the proposed activities will enhance existing coastal prairie habitat by removing encroaching woody vegetation, and since the rare plant species proposed to be enhanced differs from the rare plant species to be impacted by the project. However, the dune and prairie habitat mitigation plan required by Special Condition 7 does not include provisions to minimize significant disruption of short-leaved evax, sand dune phacelia, or Del Norte buckwheat individuals, and fails to assure that impacts to the three rare species will be offset by that plan.

According to the California Natural Diversity Database (CNDDDB),³⁰ there are only two documented occurrences of Del Norte buckwheat in California, and both are historic occurrences from Del Norte County, meaning these particular occurrences haven’t been seen for many years but only are documented in the database from herbarium information. The CNDDDB is not a catalogue of all actual occurrences of each rare species in the state (there are more actual occurrences of each species than are documented in the database, since not every occurrence of every rare species is reported to the CDFW for inclusion in the database), but it does provide

³⁰ CDFW 2013

some indication of species rarity and geographic distribution based on number of records and locations of documented occurrences. The fact that the database contains no more recent records for Del Norte buckwheat than the last documented occurrence in 1947 perhaps supports the significance of the population of plants on the airport property (as well as the species' rarity designation). There are 15 documented occurrences of sand dune phacelia in the CNDDDB, all of which are documented from sand dune habitats in Del Norte County. Short-leaved evax, as documented, is more common and widespread than the other two species, with 36 occurrences in the database recorded from a wider variety of habitats, including coastal prairie, coastal bluff, coastal bluff scrub, and dune mat. However, only two of those occurrences are from Del Norte County (the rest are from Humboldt County south to San Mateo County).

The proposed project description states that a dune area northeast of runway 29 and east of runway 17 "or other appropriate locations away from the airport operation areas" may be available for enhancement activities, such as invasive species removal and rare plant relocation/reestablishment. One of these sites, where the applicant in earlier stages of the project development considered borrowing fill material for the RSA improvements (i.e., the ~5-acre dune area northeast of runway 29 and east of runway 17), consists of dune mat habitat with an existing population of Del Norte buckwheat. This approximately 5-acre area provides habitat similar to the rare plant impact areas near the end of runway 11, including suitable habitat for relocating and/or reestablishing Del Norte buckwheat and the other two rare plant species in this area. Although the entire 5-acre area is itself ESHA, about 0.4-acre of it is dominated by European beach grass (*Ammophila arenaria*), an aggressive invasive weed that is a documented threat³¹ to the rare plant species that occur at the airport and their associated habitats. Eradication of *Ammophila* from this 0.4-acre area would provide a habitat for native plants in the surrounding ESHA to recolonize as well as opportunities for rare plant mitigation, as proposed.

The Commission finds that the applicant's proposed enhancement activities on the airport property, including *Ammophila* removal across the approximately 0.4-acre area and relocation/reseeding of Del Norte buckwheat, sand dune phacelia, short-leaved evax, and other native dune species to the enhancement area, would provide feasible mitigation for the project's approximately one-third of an acre of impacts to the three rare plant species. As the applicant has provided few details on methods and implementation of these proposed mitigation activities, the Commission requires [Special Condition 10](#). This condition requires submittal of a rare plant mitigation plan that provides for quantitative and qualitative success standards that assure achievement of the approved mitigation goals and objectives of eradicating *Ammophila arenaria* from an approximately 0.4-acre on the airport property immediately north of runway 29 and east of runway 17 and for salvaging, relocating, reestablishing, and planting native dune plants and seeds in the enhancement area, including short-leaved evax, sand dune phacelia, and Del Norte buckwheat. The condition specifies the success standards that must be achieved and requires that if mitigation project is unsuccessful, in part or in whole, based on the identified standards, the applicant shall submit a revised or supplemental mitigation program to compensate for those portions of the original program which did not meet the approved success standards. The revised mitigation program shall be processed as an amendment to this coastal development permit.

³¹ CDFW 2013

As conditioned in the manner discussed above, the Commission finds that the proposed method of repair and maintenance minimizes significant disruption to short-leaved evax, sand dune phacelia, and Del Norte buckwheat habitat consistent with the requirements of Section 30240 of the Coastal Act..

(d) Impacts to sensitive species and habitats resulting from the new security/wildlife exclusion fencing

As proposed, the replacement of the non-compliance airport security/wildlife exclusion fencing on the southwestern side of the airport property will impact about 1.42 acres of ESHA vegetation, primarily coastal prairie (~1.12 ac.) and wetland (~0.3-ac.) vegetation, which will be mowed and disturbed by installation equipment and vehicles. The applicant anticipates that the vegetation will regenerate in time and proposes no mitigation for the proposed major vegetation removal and potential ESHA impacts. As previously discussed, the Commission considers the prairie and wetland habitats that will be impacted throughout the proposed fence corridor to be ESHA, and significant vegetation clearing in these habitats could easily disturb or degrade them by, for example, facilitating the spread of invasive exotic weeds known to occur in the area, such as Spanish heath, pennyroyal, and velvet grass. In addition to the clearing impacts, the proposed fence posts would permanently displace 11 square feet of coastal prairie habitat and 3 square feet of wetland habitat.

The applicant has not proposed mitigation for ESHA vegetation impacts, because it anticipates that the vegetation will regenerate in time to pre-disturbance conditions. The Commission finds that mitigation at the same ratios discussed above for wetland fill impacts (4:1) and dune-prairie impacts (3:1) also are appropriate to sufficiently mitigate for the expected permanent impacts to these environmentally sensitive habitats (i.e., for the permanent displacement of 11 square feet of coastal prairie habitat and 3 square feet of wetland habitat). The Commission further finds that a mitigation ratio of 1:1 is appropriate for coastal prairie and wetland vegetation impacts resulting from installation of airport security fencing (resulting in 1.42 acres of mitigation for 1.42 acres of security fencing vegetation impacts). Vegetation reestablishment along the length of the fenceline following construction may qualify as the required 1:1 mitigation, provided that revegetation is successfully reestablished within one year of impact and is substantially similar to pre-disturbance vegetation in terms of composition and cover. The mitigation conditions discussed above for wetland impacts (**Special Conditions 3-5**) and dune and prairie impacts (**Special Conditions 7-9**) include provisions for ensuring that feasible mitigation is provided for these impacts at appropriate ratios to minimize the project's adverse environmental effects on 1.42 acres of coastal prairie and wetland vegetation resulting from the proposed new security fence. In addition, [Special Condition 11](#) includes certain construction responsibilities that also will minimize the adverse environmental effects of fence installation on sensitive vegetation, such as minimizing vegetation clearing and ground disturbance associated with fence installation and limiting construction to the dry season to protect fragile wetland soils.

As conditioned in the manner discussed above, the Commission finds that the method of repair and maintenance minimizes significant disruption of habitat values consistent with the requirements of Section 30240(a) of the Coastal Act.

(e) Water quality

The project site contains and is adjacent to coastal wetlands and coastal waters, including palustrine and lacustrine wetlands, drainage courses, and the Pacific Ocean. To in part address water quality protection concerns, the applicant prepared a Stormwater Pollution Prevention Plan (SWPPP) for the project in compliance with California's General Permit for stormwater discharges associated with construction and land disturbance activities (State Water Resources Control Board Order No. 2009-0009-DWQ. The provided SWPPP (dated May 2013) is designed to address construction-related sediment sources and control, the control of non-stormwater discharges, and site Best Management Practices (BMPs) to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from construction activities. The applicant also prepared a stormwater facilities plan for the proposed regrading and related work. The plan proposes a design for the airport drainage facilities that would allow for conveyance of a 10-year storm event, consistent with both FAA and Del Norte County standards for the design of storm drainage systems. The applicant also proposes various temporary erosion and sediment control details in the proposed plan sheets developed for the project (Exhibits 5 and 6).

The Commission's water quality staff reviewed the SWPPP, stormwater facilities plan, and erosion control plans and found many of the measures and BMPs proposed to be appropriate. However, there are additional mitigation measures not included in the SWPPP or erosion and sediment control details that could be provided to sustain the biological productivity of coastal waters. These measures include requirements that construction vehicles and equipment be cleaned, fueled, and maintained at least 100 feet from coastal waters, drainage courses, and storm drain inlets, that vehicle and equipment fueling areas be designed to fully contain any spills of fuel, oil, or other contaminants, and that stockpiled materials be stored a minimum of 100 feet from coastal waters, concentrated stormwater flows or drainage courses, and storm drain inlets to further minimize the project's potential water quality impacts.

These additional measures are required by [Special Condition 11](#), which lists various construction responsibilities for the project. The applicant must demonstrate that these additional measures have been included in the final SWPPP and erosion and sediment control plan notes prior to commencement of construction.

As conditioned in the manner discussed above, the Commission finds that the proposed method of repair and maintenance will sustain the biological productivity of coastal waters consistent with Sections 30230, 30231 and 30233 of the Coastal Act.

(f) Impacts that would significantly degrade adjacent ESHA and park and recreation areas

The project area is located immediately adjacent to or in the nearby vicinity of various types of ESHA (including coastal dunes, coastal prairie, herbaceous, lacustrine, and forested wetlands, and rare plant habitats) as well as a public park and recreation area (lands of the Point Saint George Management Area). The proposed method of repair and maintenance could cause adverse environmental effects to adjacent and nearby ESHA, including the sensitive species that

inhabit these areas, incompatible with the continuance of those areas, unless feasible mitigation measures are provided.

First, the adjacent and nearby ESHA and public recreation area could be adversely affected if nonnative, invasive plant species were introduced to the site for revegetation or erosion control purposes. If any of the proposed revegetation/seeding were to include introduced invasive exotic plant species, the weedy plants could colonize (e.g., via wind or wildlife dispersal) nearby ESHAs and the adjacent recreation area over time and displace native vegetation, thereby disrupting the functions and values of the ESHAs. The applicant has proposed to plant mostly native plants as part of the project's revegetation needs, but it is unclear if potentially invasive exotic plants would be used in erosion control and/or hydroseed mixes. Thus, the Commission attaches [Special Condition 11-H](#) to prohibit the use of any plants or seeds other than native and/or non-invasive plant species.

Second, the Commission notes that certain rodenticides, particularly those utilizing blood anticoagulant compounds such as brodifacoum, bromadiolone and diphacinone, have been found to pose significant primary and secondary risks to non-target wildlife present in urban and urban/wildland interface areas. As these target species are preyed upon by raptors or other environmentally sensitive predators and scavengers, the pest control compounds can bio-accumulate in the animals that have consumed the rodents to concentrations toxic to the ingesting non-target species. The applicant has not proposed the use of any rodenticides as part of this project, but such pest control techniques often are employed in conjunction with planting or revegetation activities to limit herbivory impacts. To avoid this potential cumulative impact to environmentally sensitive wildlife species that inhabit the surrounding area, [Special Condition 11-I](#) contains a prohibition on the use of such anticoagulant-based rodenticides.

Third, the project proposes to use a variety of manufactured products as "temporary" erosion and sediment control measures during construction, such as mulch control netting, erosion control blankets, fiber rolls (wattles), and reinforced silt fences. Plastic netting used in these products has been found to entangle wildlife, including reptiles, amphibians, birds, and small mammals. Although erosion and sediment control products classified as temporary are designed to degrade after a period of time, several temporary erosion and sediment control products with netting – such as mulch control netting, erosion control blankets, and fiber rolls – are commonly left in place permanently, particularly when used with seeding. The length of time it takes for netting to begin to degrade depends on the netting composition and the environmental conditions but can remain intact many years after installation. When plastic netting does eventually fall apart, plastic fragments may be blown or washed into waterways and the ocean, creating an entanglement and ingestion hazard for marine life, potentially for many years. Due to its durability, buoyancy, and ability to concentrate toxins present in the ocean, plastic can be very harmful to marine life. The Commission therefore attaches [Special Condition 11-J](#), which prohibits the use of temporary rolled erosion and sediment control products with plastic netting to minimize the potential for wildlife entanglement and plastic debris pollution. The condition also requires that any erosion-control associated netting shall be made of natural fibers and constructed in a loose-weave design to reduce the potential for small animal entrapment and avoid leaving a residue of plastic in the environment upon degradation of the material.

Finally, due to the presence of wetland, dune, forest, prairie, rare plant, and other sensitive habitats on and around the airport property, [Special Condition 11-K](#) explicitly restricts construction activities to only those access, staging, stockpiling, and other work sites identified on the approved plans (Exhibits X and X).

As conditioned in the manner discussed above, the Commission finds that the proposed method of repair and maintenance is designed to prevent impacts that would significantly degrade adjacent ESHA and park and recreation areas, and is compatible with the continuance of those areas, consistent with Section 30240(b) of the Coastal Act.

Conclusion

In conclusion, the Commission finds that the method of proposed repair and maintenance as conditioned herein (1) uses the least environmentally damaging feasible alternative; (2) provides feasible mitigation measures to minimize adverse environmental effects; (3) minimizes disruption of habitat values; (4) protects the biological productivity and the quality of coastal wetlands and waters; and (5) protects adjacent environmentally sensitive habitat areas and park and recreation areas against any significant disruption of habitat values, consistent with Sections 30230, 30231, 30233, and 30240 of the Coastal Act.

H. ARCHAEOLOGICAL RESOURCES

Section 30244 of the Coastal Act states the following:

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

The project area includes lands formerly occupied by the Tolowa. The Tolowa territory included the area from the mouth of the Winchuck River (in southern Oregon) to the mouth of Wilson Creek (approximately 17 miles south of Crescent City).

According to the Environmental Impact Report and Environmental Assessment prepared for the project (February 2011), in August 2009, the applicant's consultant (URS) conducted a cultural resources records search at the North Central Information Center to ascertain whether any previously identified historic or cultural resources had been located within or adjacent to the Airport. The record search indicated that no known recorded cultural resources have been previously identified within the area of potential effects; however, one major prehistoric site was identified in an area adjacent to the airport, and two additional sites were identified in areas within a one-mile radius of the airport.

To further identify cultural resources within the area, a request for further information was submitted to the Native American Heritage Commission, and the FAA entered into government to government consultation with the federally recognized Elk Valley and Smith River Rancherias. A series of meetings were held with the Elk Valley and Smith River Rancherias, including with each group's Tribal Historic Preservation Officer (THPO), and representatives from the BCRAA, FAA, and the applicant's consultant.

No structures of any age occur within the project area. As such, there are no National Register of Historic Places (NRHP) and/or California Register of Historical Resources (CRHR) listed or eligible to be listed historic architectural resources located within the project area.

Following completion of the cultural resources record search, the applicant's consulting archaeologist completed an archaeological pedestrian field survey of the area. Due to the presence of ground covering vegetation, a subsurface survey program was conducted in coordination with the appropriate THPOs for the purpose of determining if buried archaeological resources occur within the project area. Results of the subsurface survey indicate that no NRHP and/or CRHR listed or eligible to be listed archaeological resources are located within the project area.

Although no NRHP and/or CRHR listed or eligible-to-be-listed archaeological resources have been identified within the project area, the archaeological survey discovered a deposit of cultural material that had been used as fill at the time the airport was originally constructed. As this material was transported to its present location, it lacks sufficient integrity to be considered a significant resource (i.e., Historic Property).

As the lead agency for NEPA purposes, the FAA prepared and submitted a Finding of No Effect to Historic Properties to the State Historic Preservation Office (SHPO) for review. The FAA requested and received SHPO concurrence with the Finding of No Effect to Historic Properties on December 10, 2010.

Due to the significant ground disturbance that this project will cause, and to ensure protection of any archaeological resources that may be inadvertently discovered at the site during construction, the Commission attaches [Special Condition 12](#). This condition requires that if an area of archaeological deposits is discovered during the course of the project, all construction must cease, and a qualified cultural resource specialist must analyze the significance of the find. To recommence construction following discovery of cultural deposits, the permittee is required to submit a supplementary archaeological plan for the review and approval of the Executive Director to determine whether the changes are de minimis in nature and scope, or whether an amendment to this permit is required.

Therefore, the Commission finds that the proposed project is consistent with Coastal Act Section 30244, as the proposed project will include reasonable mitigation measures to ensure that there are no significant adverse impacts to archaeological resources.

I. PUBLIC ACCESS

Section 30210 of the Coastal Act requires that maximum public access shall be provided consistent with public safety needs and the need to protect natural resource areas from overuse. Section 30212 of the Coastal Act requires that access from the nearest public roadway to the shoreline be provided in new development projects, except where it is inconsistent with public safety, military security, or protection of fragile coastal resources, or where adequate access exists nearby. Section 30211 of the Coastal Act requires that development not interfere with the public's right to access gained by use or legislative authorization. Section 30214 of the Coastal

Act provides that the public access policies of the Coastal Act shall be implemented in a manner that takes into account the capacity of the site and the fragility of natural resources in the area. In applying Sections 30210, 30211, 30212, and 30214, the Commission is also limited by the need to show that any denial of a permit application based on these sections or any decision to grant a permit subject to special conditions requiring public access is necessary to avoid or offset a project's adverse impact on existing or potential access.

The approximately 340-acre Point St. George headlands adjacent to the airport is owned by the County and is a popular coastal access point in the area for residents, visitors, and organized field trips by educational entities. The proposed project will not adversely affect the availability of this or any other coastal access points in the area. According to the applicant, there are approximately 12,000 deplanements per year at the existing airport, and of the approximately 20,000 tourists per year who visit this portion of the coast (as tallied by the County Visitor's Bureau, the National Park Service, and the Oregon Welcome Center in Brookings), at least some of these visitors access the coast via air travel through the subject airport. As the RSA project is proposed to retain federal certification of airport as a commercial facility, to the extent the airport is used by coastal access users, the project will facilitate continued use of the coast for public access.

Therefore, the Commission finds that the proposed project does not have any significant adverse effect on public access, and that the project as proposed without new public access is consistent with the requirements of Coastal Act Sections 30210, 30211, and 30212.

J. REIMBURSEMENT OF COSTS AND FEES

Coastal Act section 30620(c)(1) authorizes the Commission to require applicants to reimburse the Commission for expenses incurred in processing CDP applications. See also 14 C.C.R. § 13055(e). Thus, the Commission is authorized to require reimbursement for expenses incurred in defending its action on the pending CDP application. Therefore, consistent with Section 30620(c), the Commission imposes [Special Condition 14](#) requiring reimbursement of any costs and attorneys' fees the Commission incurs "in connection with the defense of any action brought by a party other than the Applicant/Permittee challenging the approval or issuance of this permit."

K. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The applicant served as the lead agency for the project for CEQA purposes. The applicant adopted a final Environmental Impact Report for the project on December 1, 2011 (SCH # 2009071019) and is in the process of preparing a supplemental EIR, which must be approved by the applicant's Board and subsequently circulated for public comment that addresses the mitigation sites that will be utilized. In addition to a Supplemental EIR, prior to commencement of any development authorized by this permit, a CDP will be required from the Commission or

the County for the development of the mitigation sites that implement the specific performance criteria set forth in this permit.

As a responsible agency, the Commission conducted its analysis of the potential impacts of the proposed development that the Commission is authorized by the Coastal Act to review. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The staff report discusses the relevant coastal resource issues with the proposal. The Commission has reviewed the relevant coastal resource issues associated with the proposed project and has identified appropriate and necessary conditions to assure protection of coastal resources consistent with the requirements of the Coastal Act. All public comments received to date have been addressed in the staff report, including staff's oral presentation and the findings adopted by the Commission. The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As conditioned, there are no additional feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse environmental effects that approval of the proposed project, as modified, would have on the environment consistent with the Coastal Act and CEQA Section 21080.5(d)(2)(A).

Finally, the development of the mitigation sites that will implement the specific performance criteria set forth in this permit and that will be the subject of a future CDP may qualify for Categorical Exemptions. For example, a Class 13 exemption applies if the mitigation sites are acquired by the Wildlife Conservation Board for fish and wildlife conservation purposes, and a Class 25 exemption applies if the transfer of property is to preserve open space or restore habitat. 13 C.C.R. 15313, 15325. Many properties within Pacific Shores and around Lake Earl are already owned by a mixture of public and private entities. Additionally, a Class 7 exemption applies to actions taken by a regulatory agency to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for the protection of the environment such as wildlife preservation activities of the Department of Fish and Wildlife. 13 C.C.R. 15307.

APPENDIX A SUBSTANTIVE FILE DOCUMENTS

Application File for CDP 1-13-009 (BCRAA)

Adopted (5/12/10) Findings and Application File for Appeal/CDP A-1-DNC-09-048 (BCRAA)

Adopted (11/19/10) Findings and Application File for CDP 1-09-047 (CDFG)

Adopted Findings for CDPs 3-11-020, 1-09-026, A-1-HUM-05-040, A-2-MAR-10-022, A-1-MEN-09-023, 4-06-097, 1-07-013, 3-10-056, E-11-002, E-12-006, A-1-MEN-09-034, 5-10-106 for CC-058-01, and for CD-014-12.

Permit file for Del Norte County CDP #B30766C (Coastal Commission post-certification permit tracking file number 1-DNC-09-103). Permit issued by Del Norte County to the BCRAA for perimeter fencing at Jack McNamara Field (CEC). Approved by the Del Norte County Planning Commission July 1, 2009. Effective date: July 28, 2009.

California Department of Fish and Wildlife, Biogeographic Data Branch. 2013. RareFind 3, (government edition, v3.1.1). CDFW, Sacramento, CA.

California Native Plant Society. 2013. Inventory of Rare, Threatened, and Endangered Plants of California (online edition, v8-02). CNPS, Sacramento, CA.

Tolowa Dunes Stewards. November 2012 Draft. Tolowa Coast Beach Use Study 2009-2011 Results. A project of the Smith River Alliance.

BCRAA and URS. September 2011. Comments and Responses, Environmental Impact Report, Runway Safety Area Improvement Project, Jack McNamara Field (CEC), FAA and County of Del Norte. Prepared for the U.S. Dept. of Transportation, FAA.

BCRAA and URS. February 2011. Draft Environmental Impact Assessment (Draft EA) and Finding of No Significant Impact, Runway Safety Area Improvement Project, Jack McNamara Field (CEC), FAA and County of Del Norte. Volumes I and II. Prepared for the U.S. Dept. of Transportation, FAA.

BCRAA and URS. February 2011. Draft Environmental Impact Report (Draft EIR), Runway Safety Area Improvement Project, Jack McNamara Field (CEC), FAA and County of Del Norte. Volumes I and II. Prepared for the U.S. Dept. of Transportation, FAA.

URS. June 2009. California Coastal Commission Jurisdictional Delineation Runway Safety Area. Prepared for BCRAA. San Francisco, CA.

U.S. Fish and Wildlife Service. January 2009. *Lilium occidentale* (Western lily). 5-Year Review: Summary and Evaluation. FWS, Arcata Field Office, Arcata, CA.

Sawyer, J.O et al. 2008. A manual of California vegetation, second edition. California Native Plant Society, Sacramento, CA. 1300 pp.

Ambrose, R.F. et al. 2007. An evaluation of compensatory mitigation projects permitted under Clean Water Act Section 401 by the California State Water Resources Control Board, 1991-2002. Prepared for the CA SWRCB, University of California, Los Angeles.

Cal-IPC. 2006. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Current inventory database accessed via <http://www.cal-ipc.org/paf/>.

Point Saint George Management Plan Steering Committee et al. Adopted January 27, 2004. "Land Laying Outward Place" Point Saint George Management Plan. Prepared for the County of Del Norte and State Coastal Conservancy

California Department of Fish and Game. July 2004. Lake Earl Wildlife Area Management Plan, Final EIR, responses to comments about DEIR. SCH No. 1989013110. CDFG, Eureka.

California Department of Fish and Game. June 2003. Lake Earl Wildlife Area Management Plan, Draft EIR. SCH No. 1989013110. CDFG, Eureka.

California Department of Fish and Game. January 2003. Lake Earl Wildlife Area, Final Draft Management Plan.

Cowardin et al. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/wetlands/classwet/index.htm> (Version04DEC1998).

Monroe, G.M. et al. March 1975. Natural resources of Lake Earl and the Smith River Delta. State of California, Department of Fish and Game, Coastal Wetland Series #10. 114 pp.+

Bauer, R.D, CDFG and U.S. Bureau of Sport Fisheries and Wildlife. 1974. Acquisition priorities for the coastal wetlands of California: a joint report. University of California. 38 pp.

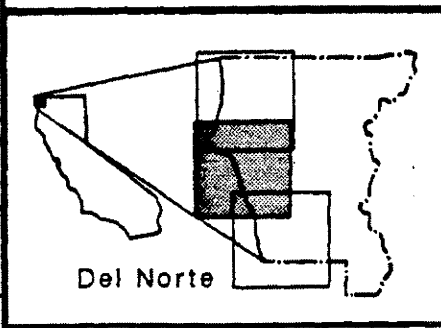
County of Del Norte Local Coastal Program

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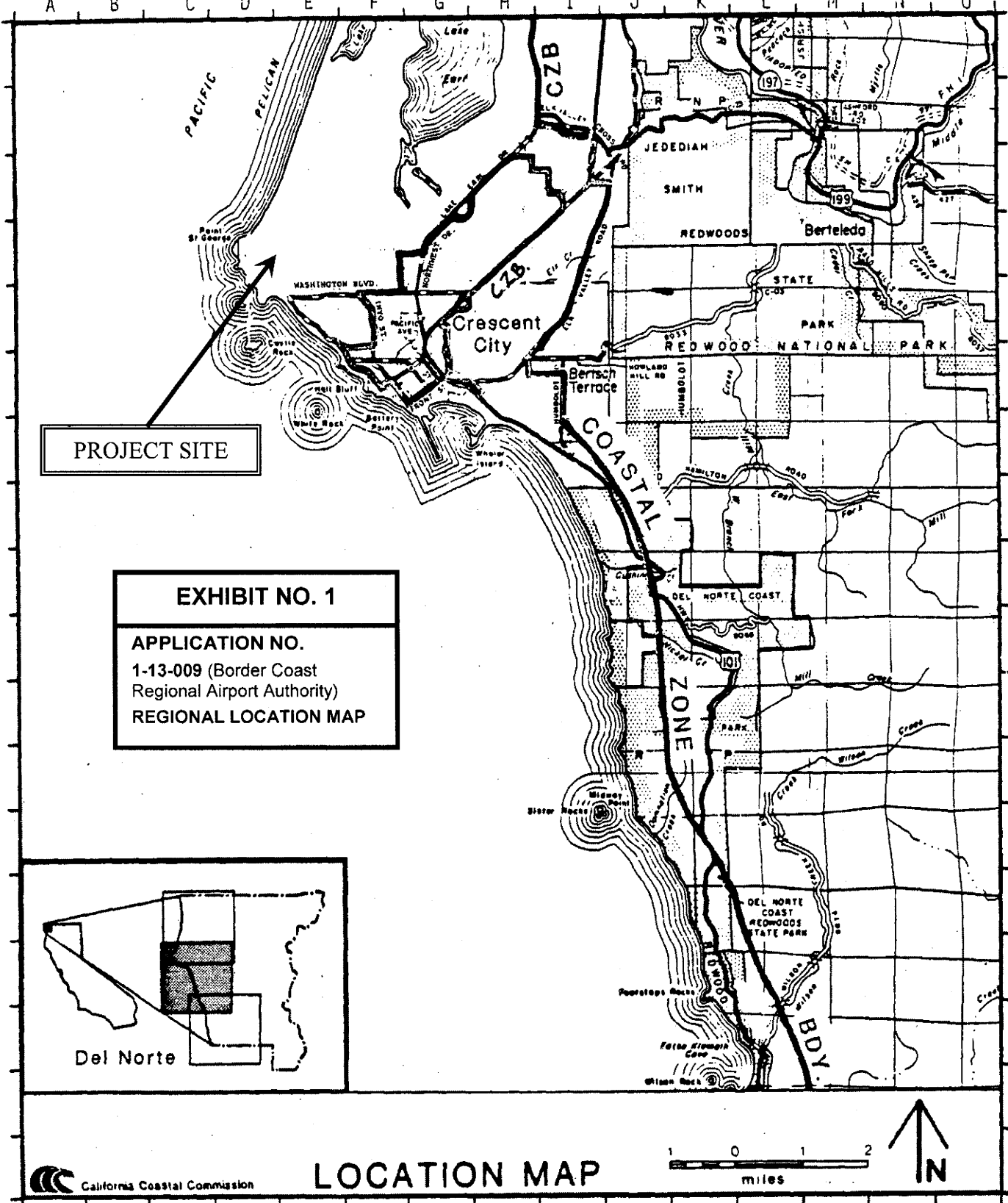
EXHIBIT NO. 1
APPLICATION NO.
1-13-009 (Border Coast
Regional Airport Authority)
REGIONAL LOCATION MAP



LOCATION MAP



County of Del Norte



**Pacific Shores
Subdivision
mitigation site**

EXHIBIT NO. 2

APPLICATION NO.

1-13-009 (Border Coast
Regional Airport Authority)

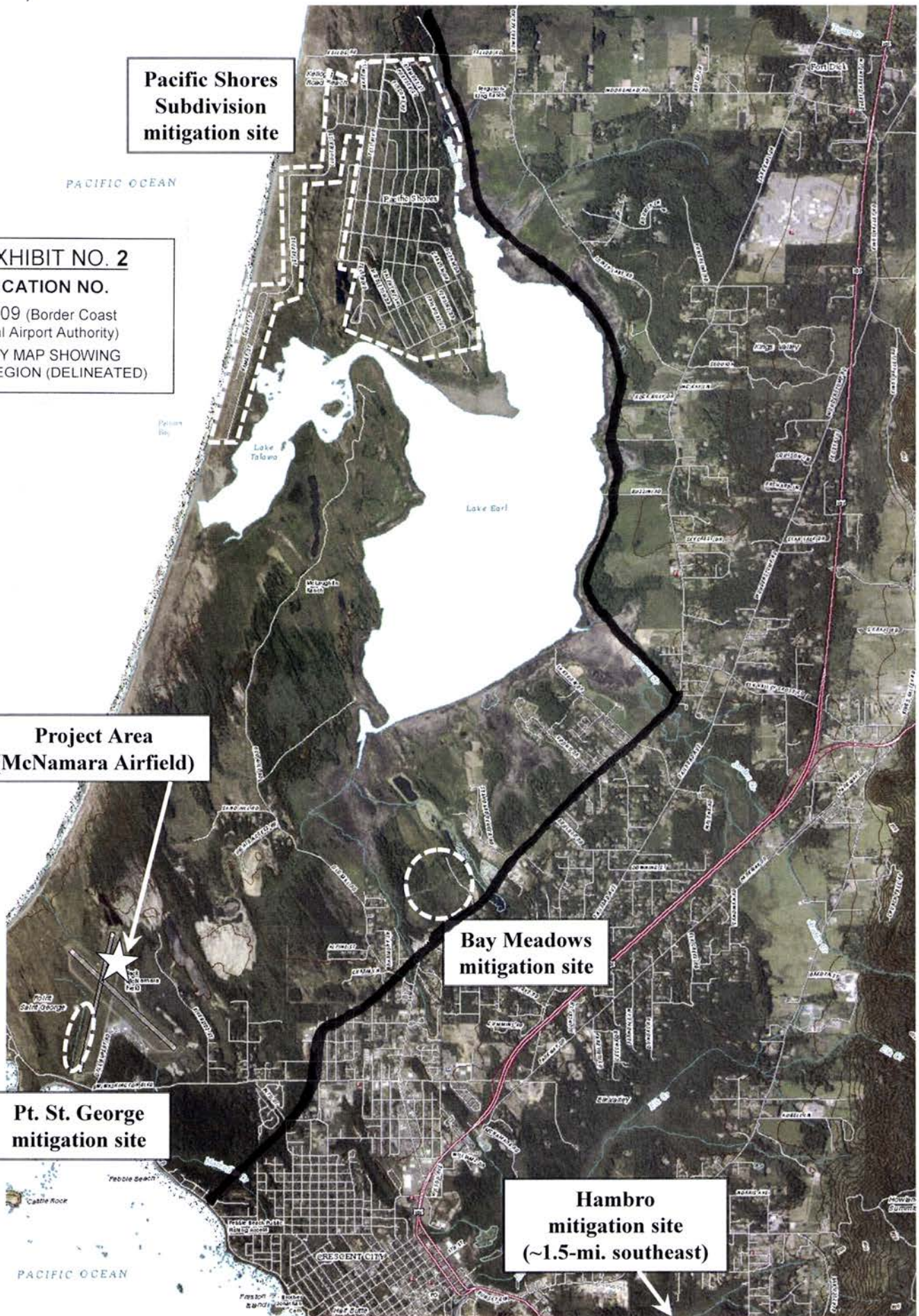
VICINITY MAP SHOWING
ECO-REGION (DELINEATED)

**Project Area
(McNamara Airfield)**

**Bay Meadows
mitigation site**

**Pt. St. George
mitigation site**

**Hambro
mitigation site
(~1.5-mi. southeast)**



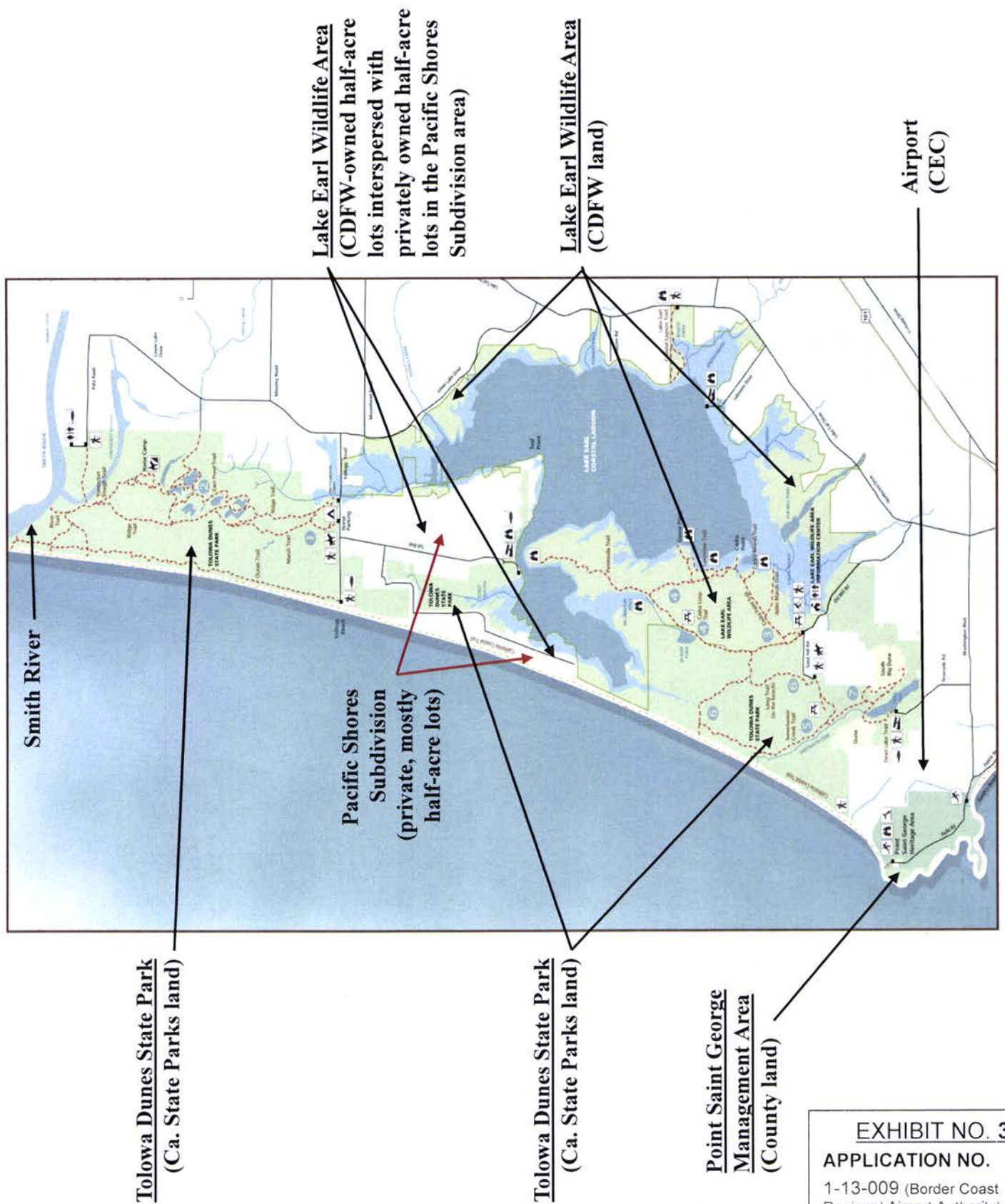
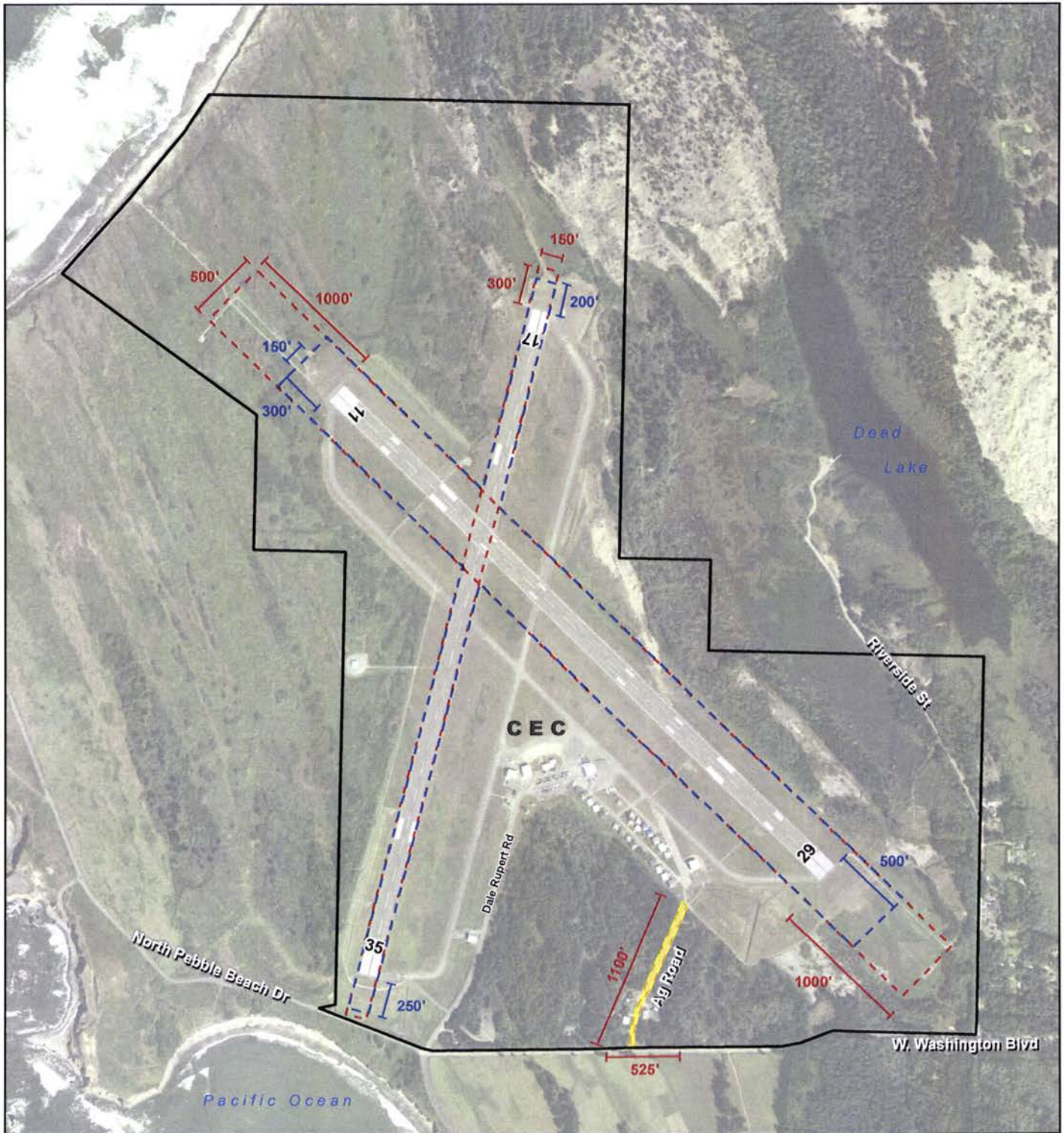


EXHIBIT NO. 3
APPLICATION NO.
 1-13-009 (Border Coast Regional Airport Authority)
VICINITY MAP SHOWING LAND OWNERSHIP



- Airport Boundary
- Existing Runway Safety Area
- Runway Safety Area Standards

RSA Construction Access, Ag Road

Paper Size 8.5" x 11" (ANSI A)
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Border Coast Regional Airport,
 RSA Improvement Project

Existing and Required
 Runway Safety Areas

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 7

EXHIBIT NO. 4

APPLICATION NO.

1-13-009 (Border Coast
 Regional Airport Authority)

SITE PLAN

G:\11984 BorderCoastRegionalAirportAuth\BCRAA_GISMaps\Figures\RSA_CDP\F2_Existing_RSA.mxd

© 2012 While every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: Bing Aerial, 2011, 1 foot resolution; URS GIS RSA layers. Created by: gldavidson

I. APPLICANT INFORMATION

Applicant: Border Coast Regional Airport Authority (BCRAA)
150 Dale Rupert Road
Crescent City, CA 95531
Phone: (707) 464-7288; Fax: (707) 464-1023
Contact: Mr. James Bernard, Airport Director

II. PROPOSED PROJECT

Title: Runway Safety Area (RSA) Improvement Project,
Del Norte County Regional Airport, Jack McNamara Field (CEC)

Zoning (County): PF-C (A)(H) Public Facility (Airport)

Adjacent Zoning (County): AG 20, RCA

General Plan Designation (County): Public Facility (Airport)

Adjacent General Plan Designation (County): Light Industrial, Natural Hazard, and
Agriculture General 20 acres

Location

CEC is located in Del Norte County approximately two miles northwest of Crescent City and approximately 15 miles south of the California and Oregon border (reference Figure 1). The project site is identified as Assessor Parcel Numbers (APNs) 110-010-10, -17, and -21 on the Crescent City 7.5 Minute U.S. Geological Survey (USGS) Quadrangle, Township 16 North, Ranges 1 and 2 West, the NE and SE $\frac{1}{4}$ of Section 13 and SW $\frac{1}{4}$ 18, Humboldt Meridian (H.B.&M.). Directions and access to the site is provided from the City of Crescent City via Highway 101, taking Northcrest Drive north, and then west on Washington Boulevard to the airport entrance (Dale Rupert Road). An alternate coastal access route is via Pebble Beach Drive which heads north from Crescent City towards the airport site.

Environmental Setting

The site is located on a coastal terrace approximately 50 feet above the Pacific Ocean. Average annual rainfall is approximately 65.8 inches. The airport is adjacent to the Pacific Ocean to the northwest and southwest and Point St. George lies immediately to the west. The Point St. George coastal headlands (approximately 339 acres) are owned by the county. This property was previously held in private ownership and used for grazing as part of a ranching operation. Tolowa Dunes State Park is located to the northeast of the site. This adjacent area was also previously used for grazing prior to purchase by the state in 1978. The State Park is approximately 5,000 acres and is an area of modified and unmodified sand dune complexes that includes lakes, ponds, and marshes. Pacific Shores Subdivision (PSS) (undeveloped) on nearby Lake Earl is approximately 5.5 miles north of CEC.

EXHIBIT NO. 5

APPLICATION NO.

1-13-009 (Border Coast
Regional Airport Authority)

PROPOSED PROJECT PLANS
(EXCERPTS) (1 of 58)

The project is within the California Coastal Zone. For the proposed project, since the project site and potential mitigation areas cross jurisdictional and appeal boundaries, the project is being combined under a single Coastal Development Permit (CDP) application to be submitted to the Commission. The County of Del Norte supports a streamlined permit process and has relinquished primary jurisdiction and permit authority for the project to the Commission (see June 2, 2011, letter, previously submitted as Attachment 4).

Background

Site History

The project site was originally developed by the Army during World War II which resulted in the construction of the airport runways and modification of large portions of the site for associated facilities. The CEC was transferred from the United States War Assets Administration to Del Norte County for operation of a public airport under the authority of the Surplus Property Act of 1944. CEC Airport is now a commercial service airport operated and maintained by the BCRAA and owned by the County of Del Norte. The member entities of the BCRAA include Crescent City, California; Del Norte County, California; Elk Valley Rancheria, California; Smith River Rancheria, California; Brookings, Oregon; and Curry County, Oregon. Under the terms of existing Federal Aviation Administration (FAA) grant agreements and the original transfer agreement between the federal government and Del Norte County, the land upon which the Airport is located must be used for airport purposes or ownership will revert to the federal government. The facility is the only commercial airport currently serving Del Norte County, as well as Curry County (Oregon) to the north and serves approximately 30,000 total passengers per year. As an aviation facility, CEC is a critical coastal public transportation facility which provides an important public access link to the remote and rural coastline and parks of northwestern California and southwestern Oregon. CEC participates in the Federal Essential Air Services subsidy program, which supports scheduled commercial airlines service to remote and rural locations such as the Crescent City area. CEC plays a crucial role in providing access for emergency services and a staging area for disaster relief, firefighting operations, and search and rescue activities for the region and the state.

Existing and Adjacent Facilities

Existing landside facilities adjacent to the RSA project site include the airport's terminal building and associated facilities. The terminal building was built in 1950 and is approximately 2,020 square feet. A separate double-wide modular building of approximately 980 square feet is adjacent to the terminal building and accommodates U.S. Department of Homeland Security – Transportation Security Administration (TSA) screening facilities and a small secure passenger hold room. There are also various navigational aids/equipment and security/deer fencing. Emergency response services are on the field and are provided by a volunteer fire department.

Project Background

In 2000, the Federal Aviation Administration (FAA) completed an evaluation of the RSAs at CEC. The evaluation and later inspection determined that the existing RSAs at CEC do not meet current design standards. Required RSA dimensions are based on the Airport Reference Code (ARC) of each of the runways. The ARC is a coding system developed by the FAA to relate airport design criteria to the operational and physical characteristics of the airplane types that will operate at a particular airport. The ARC is part of design standards established in the Advisory Circular (AC) 150/5300-13, Airport Design (FAA June 2008). Following this determination, BCRAA and the county completed an RSA analysis in 2005 to evaluate ways to bring the RSAs into compliance. Public Law 109-115, mandated by Congress, that commercial service airports such as CEC bring their RSAs up to current standards by December 31, 2015. Subsequently, the BCRAA proposes to implement a RSA project at CEC, to meet FAA design standards for both Runway 11/29 and Runway 17/35.

Coastal Access

The adjacent Point St. George coastal headlands (approximately 339 acres) are owned by the county. The headland is a popular coastal access point for area residents, visitors, and organized field trips by educational entities. The existing airport facility is an important coastal access transportation entity and provides essential transportation services to the public. According to recent Visitors Bureau data roughly 20,000 tourists per year visit their facilities. With approximately 12,000 deplanements per year, according to the airlines data, it is safe to assume some percentage of visitors to the North Coast and local Parks travel by commercial airlines. The local state and national Redwood Park log over 400,000 visitors per year. The airport supports coastal dependent uses and coastal nature study/access through enhancing tourist accessibility to Del Norte County, a vital economic sector in this rural coastal county, as verified by Jim Baskin of the Coastal Commission (pers. com., Mr. Jim Bernard, BCRAA).

Environmental Documentation

The BCRAA is the Lead Agency under CEQA and initiated the environmental documentation process by filing a Notice of Preparation (NOP) on July 7, 2009. A Draft EIR (SCH # 2009071019) was subsequently circulated with public comment period opening on February 25, 2011. The public comment period closed after a minimum of 45 days. The Lead Agency prepared response to comments and included these in the Final EIR (BCRAA/URS 2011a). The Lead Agency certified the Final EIR at a board meeting on December 1, 2011, and selected Alternative G as the preferred project because it minimized impacts to wetlands in comparison to the originally proposed project (Alternative A). The Lead Agency approved the project (Alternative G) and on December 7, 2011, a Notice of Determination (NOD) was filed with the State Clearinghouse as well as with the County Clerk for posting.

To date, numerous studies have been conducted for the proposed RSA project. URS conducted a wetland delineation on August 6 and August 10, 2007, to build on a preliminary wetland delineation by Winzler & Kelly from October 2003. Areas potentially subject to United States Army Corp of Engineers (USACE) and the Coastal Commission jurisdiction within the RSA project area were delineated and separate reports were

submitted to agencies for jurisdictional determination (JD) (URS 2009). The USACE provided a JD (File number 2006-301420N) for three parameter wetlands at the project site (USACE 2009) although their review did not include the proposed borrow, stockpile, or laydown areas, and as a result, an updated JD was submitted to the USACE in January, 2013 for the project. On June 23, 2009, the BCRAA submitted the coastal wetland delineation to the Coastal Commission. The Coastal Commission submitted a comment letter (April 2011) on the project DEIR requesting clarification on the wetland mapping at the project site. The Final EIR provided a response to comments, including the Coastal Commission's April 11, 2011 comment letter. The Supplemental Wetlands Evaluation and Existing Habitat Data (URS 2009) report for the RSA project was updated on January 15, 2013. A field visit was conducted on January 23, 2013 with Coastal Commission staff and GHD and subsequent comments were received on January 29, 2013. These comments resulted in an update to the Supplemental Wetlands Evaluation and Existing Habitat Data report.

Purpose/Need & Objectives

The following statement of objectives for the proposed RSA improvement project also includes a description of the underlying purpose for the project. Owners or operators of commercial service airports, such as CEC, have been mandated by Congress (Public Law 109-115) to enhance safety of airport operations by upgrading the RSAs no later than December 31, 2015. Accordingly, the FAA was asked to report the progress to Congress and make available federal funding to support those upgrades.

An RSA is a defined surface surrounding a runway that enhances the safety of and reduces the risk of damage to airplanes in the event of an undershoot (aircraft landing short of the runway), an overshoot (aircraft landing on the runway but not able to stop on the runway), or an excursion from the runway (aircraft moving off the runway to the right or left). RSAs provide accessibility for firefighting and rescue equipment responding to such incidents. The requirement to ensure that all commercial service airports have compliant RSAs was brought about by aircraft accidents that resulted in passenger and crew fatalities or injuries and millions of dollars in property damage. Accordingly, the purpose of the proposed project is to bring the existing RSAs into compliance with current FAA airport design standards. The need for the proposed project is to meet current FAA airport requirements by providing compliant RSAs to enhance the safety of operations at CEC.

The objective of the proposed RSA project is to meet the requirements of Public Law (PL) No. 109-115 by providing and maintaining adequate RSAs in a timely and cost-effective manner. PL 109-115 (Congressional Bill House of Representatives 3058: Transportation, Treasury, Housing and Urban Development, the Judiciary, District Of Columbia, and Independent Agencies Appropriations Act, 2006, PL 109-115, November 30, 2005, 119 Statute 2401) requires that the owner and operator of an airport certificated under 49 United States Code (USC) 44706 shall, no later than December 31, 2015, improve the airport's RSAs to comply with the FAA design standards required by 14 Code of Federal Regulations (CFR) Part 139. The proposed project is necessary to bring RSAs at Del Norte County Regional Airport into compliance with the current

FAA design standards and as required for airport certification under 14 CFR Part 139 per the 2006 Department of Transportation Appropriations Act PL No. 109-115. FAA standards and requirements are contained in FAA Advisory Circular (AC) 150/5300-13, Airport Design. ACs are FAA documents which provide standards and recommendations for use in the design or operation of civil airports. Compliance with the ACs by Airport Sponsors is mandatory for all projects funded with federal grant monies through the Airport Improvement Program or with revenue from the Passenger Facility Charge Program. Paragraph 305(a) of AC 150/5300-13 states that RSAs shall be:

1. Cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;
2. Drained by grading or storm sewers to prevent water accumulation;
3. Capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and
4. Free of objects, except for objects that need to be located in the RSA because of their function. Objects higher than three inches (7.6 centimeters [cm]) above grade should be constructed, to the extent practicable, on low-impact resistant (easily broken) supports (frangible mounted structures) of the lowest practicable height, with the frangible point no higher than three inches (7.6 cm) above grade. In no case should the frangible point height exceed three inches (7.6 cm) above grade.
5. There are also grade requirements for the RSAs located at the ends of the runways that must be met. For example, a zero to three percent grade with downward slope is required for the first 200 feet.

Project Description—Alternative G

The following describes the proposed development in detail, including secondary improvements such as grading, roads, driveways, outbuildings, fences, etc., if any, as requested as part of the CDP application package.

The Del Norte County Regional Airport consists of two intersecting runways, Runway 11/29 and Runway 17/35, with full-length parallel taxiways. The pavement for these runways is designed to accommodate a 43,000-pound, dual-wheel aircraft. Both runways are currently 5,002 feet in length and 150 feet wide. Table 1 presents the general characteristics of the runways at the Airport.

The RSA construction would be accomplished in general by filling and grading the uneven terrain (humps and depressions) that exceed the allowable gradient in RSAs along the length of Runway 11/29 and ends of both runways (11/29 and 17/35). The earthwork at the end of runway 17 would be minimized to avoid filling of lacustrine emergent wetlands. This would be accomplished by evening out areas of uneven terrain and filling or cutting of wetland areas that extend into the RSAs. The proposed RSA will provide a smooth transition with minimal change in elevation and surface variation between the existing paved runway surface to adjacent compacted mowable ground

cover. Additionally, the maximum gradient should not exceed five percent (requires FAA approval for 3-5% grade) and 0-3% is recommended to be compliant with FAA requirements within the RSA. RSA improvements are proposed to maintain the existing paved runway dimensions at CEC.

Table 1: Runway Data for CEC Runway

Designator	Runway			
	11	29	17	35
Length	5,002 feet		5,002 feet	
Width	150 feet		150 feet	
Runway Approach End Elevation (feet above sea level)	56	53	60	50
Surface Material and Condition	Asphalt in good condition		Asphalt in good condition	
Weight Bearing Capacity (in pounds)	Single wheel: 30,000; Double wheel: 43,000		Single wheel: 30,000; Double wheel: 43,000	
Navigation Aids	ILS/VOR/DME E/GPS	—	—	VOR/DME GPS
Visual Aids	MALSR	REIL/VASI	REIL	REIL/VASI
Instrument Approach Procedures	VOR/DME GPS	—	—	—
Traffic Pattern	Left	Left	Left	Left

DME = distance measuring equipment
GPS = Global Positioning System
ILS = Instrument Landing System
MALSR = Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
REIL = runway end identifier lights
VASI = Visual Approach Slope Indicator Lights
VOR = Very High Frequency Omnidirectional Radio Range
Source: AirNav.com, 2010 (<http://www.airnav.com/airport/KCEC>; Del Norte County Airport Layout Plan)

Table 2 summarizes both the existing RSA dimensions at CEC and the required/proposed RSA dimensions specified in AC 150/5300-13. Runway 17/35 is currently an ARC B-II runway. Runway 11/29 is classified as an ARC C-III runway. Both the existing RSAs and the required RSAs are depicted on Figure 2 (previously submitted), and the displaced threshold at Runway 17 is also shown on Figure 2 (previously submitted). Figure 3 (previously submitted) shows the vegetation types, including wetlands, within the RSA. As shown on Figure 4 (previously submitted), wetland areas are located within the existing and proposed RSAs under the Alternative G Proposed Project for Runway 11/29 and Runway 17. Impacts to these mapped wetlands with implementation of Alternative G are shown in Figure 5 (previously submitted). Also shown are the staging areas that would be used for project construction.

Table 2: CEC Existing Versus Required RSA Dimensions

Runway	ARC	Runway Length	Existing RSA (feet)		Required RSA (feet)	
			Width (Runway End and Lateral RSA)	Length (Beyond Runway End)	Width (Runway End and Lateral RSA)*	Length (Beyond Runway End)
11/29	C-III	5,002	500	300/500	500	1,000
17/35	B-II	5,002	150	200/250	150	300

Source: FAA AC 150/5300-13, 2006; URS, 2010.

* = on center line measurement

Notes:

ARC = Airport Reference Code

RSA = Runway Safety Area

Runway 11/29

Runway 11/29 is considered the primary runway, with precision instrument approach capability (Instrument Landing System/Distance Measuring Equipment) and three non-precision instrument approach procedures. Runway 11/29 is classified as an ARC C-III runway and does not meet FAA RSA design standards for ARC C-III aircraft classification. The existing length of the runway will be maintained at 5,002 feet.

Currently, the departure end of Runway 11, RSA, extends 300 feet beyond the end of the paved portion of the runway and is proposed to extend an additional 700 feet, for a total of 1,000 feet of length beyond the runway to comply with FAA RSA design standards. The width of the RSA will be maintained at 500 feet to comply with FAA RSA design standards.

The RSA for Runway 29 currently extends 500 feet beyond the end of the paved portion of the runway. In order to comply with FAA design standards, the project proposes to extend the RSA an additional 500 feet, providing a total of 1,000 feet.

The proposed Runway 11/29 improvements include the following components to comply with FAA requirements stated above:

1. Nonstandard objects or conditions would be relocated, removed, or otherwise addressed accordingly. Nonstandard objects or conditions include variations in terrain within the RSAs that would be filled and graded. Adjustments would be made to the existing Runway End Identifier Lights (REILs) and Medium Intensity Approach Lights (MALSRs)
2. MALSRs to account for changes in grade.

Runway 17/35

Runway 17/35 is designated as the crosswind runway, with two non-precision instrument approach procedures. Runway 17/35 is currently an ARC B-II runway. In order to comply with FAA ARC B-II runway standards, the existing length of the runway will be maintained at 5,002 feet and 150 foot width. However, the Runway 17 threshold would be displaced 150 feet south and declared distances would be implemented, allowing for development of a fully compliant RSA that minimizes impacts to wetlands

beyond the Runway 17 end. This would result in a reduction of available runway length. Runway length available for Runway 17/35 would be 4,852 feet. The end of Runway 35 would extend the RSA by 50 feet providing a total of 300 feet in order to comply with FAA standards. The terrain within the existing Runway 17/35 RSAs includes unacceptable grade and depressions. Alternatives identified by FAA (FAA Order 5200.8) and Caltrans Division of Aeronautics to bring Runway 17/35 RSA into compliance with FAA standards include soil stabilization, grading, filling, drainage improvements, relocating items not fixed-by-function, and replacing items that do not have frangible mountings.

The proposed Runway 17/35 improvements include the following components to comply with FAA requirements stated above:

1. Nonstandard objects or conditions would be relocated, removed, or otherwise addressed accordingly. Nonstandard objects or conditions include variations in terrain within the RSAs that would be filled and graded.
2. Adjustments would be made to the existing REILs for Runway 17/35.
3. A section of service road passing through the Runway 35 RSA would be removed.

Ag Road

The agricultural road, known as the Ag Road, is located southwest of the existing aircraft hangars, connecting to Hanger Road, and north of the drainage ditch that demarcates the east and west boundary of the triangle area located between Washington Boulevard and Dale Rupert Road. Ag Road is currently an unfinished dirt road. For the RSA improvement project, the Ag Road will receive top dressing only, with a four to six inch base and be approximately 25 feet wide. Ag Road is part of the proposed RSA Improvement project (design and construction); while the paving of the road to Washington Boulevard is included with the proposed Terminal Replacement Project.

Construction Activity

The proposed RSA project is expected to cost approximately \$3.5 million dollars. The construction activities associated with the project consist of activities such as removing obstructions, filling uneven surfaces using borrow material from offsite, and grading. No impacts to level of service (LOS) at the airport are anticipated during project implementation. An estimate of the cut and fill calculations for the project area is shown in Table 3. This data is based on URS Alternative G design calculations (URS 2013).

Table 3 also presents the minimum and maximum elevations of cut and fill for the RSAs beyond each runway end. The values shown represent the maximum anticipated depth of cut and fill; however, the actual depths of cut and fill will vary throughout the RSAs, based on variances in the existing topography and the final design currently underway.

Table 3: Alternative G – CEC RSA Cut and Fill Estimates

Estimates Location	Cut (cubic yard)	Fill** (cubic yard)	Maximum Depth of Cut (Feet)	Maximum Depth of Fill (Feet)
Runway 11 end*	17,300	12,231*	11.1	4.6
Runway 29 end*	4,800	31,065*	3.2	3.9
Runway 17 end	2	0	1.2	8.9
Runway 35 end	100	1,710	1.0	5.5
Runway 11/29 Lateral (sides)*	9,010	3,514*		
Subtotal	31,310	48,520		
Runway 11/29 borrow site	16,025	3,982		
Ag Road		13		
Total	47,237	52,515**		

*These portions of project includes wetland fill, Estimated Total = 46,810 cy

**These estimates have been updated since the EIR and are assumed to include both upland and wetland areas that require fill in order to achieve adequate slopes within both the existing and proposed extension to RSAs. Estimates differ slightly from what was reported in Table 4-3 in the EIR for Alternative G, because "Runway 11/29 Borrow Site" has been modified to avoid impacts to wetlands and thus eliminates the Fill from this component. Cut and fill estimates are not based on final design, thus calculations may vary from this point as project moves forward with design.

Source: URS 2010, 2013

Potential Environmental Impacts

Wetlands Impacts

Construction of the RSA's will result in unavoidable direct and temporary impacts to wetlands. While these impacts have been minimized through the design process of the project, there remain unavoidable wetland impacts. The mitigation plan will be implemented to maintain no net loss of wetlands habitat. The initial wetland delineations for the project site mapped approximately 17 acres of wetlands within the jurisdiction of both the USACE and Coastal Commission as well as 0.016 acres of other waters (drainage ditches) possibly under the jurisdiction of the Coastal Commission (by URS). The supplemental delineation identified 16.77 acres of wetlands under both jurisdictions and 0.016 acres of other waters (drainage ditches) under the jurisdiction of the Coastal Commission (Table 4) that could be impacted as a result of the Proposed Project – Alternative G (GHD 2012); however, only 12.97 acres are permanent fill (2.97 acres temporary fill). Impacts to jurisdictional (3-parameter wetlands) and Coastal Commission (1-parameter wetlands) features have been conservatively estimated to include the entire extent of a wetland/water within the likely construction zone. The reason for the adjustment in actual wetland acreage estimated to be impacted is the determination of one area that is likely not jurisdictional by either agencies on the east side of Runway 17, as well as avoidance of some wetland impacts through displaced threshold of Alternative G and adjustment of borrow area footprint to avoid impacts to wetlands. Approximate cubic yards of dredge or fill is presented in Table 3 as requested by the CDP Application, and total fill within wetland areas is estimated to be approximately 52,515 cubic yards. Dredging within wetland is not proposed, and in fact avoidance of cut in wetland areas within the "Borrow Area" has been achieved by avoiding borrow areas mapped as wetlands.

Table 4: Wetlands & Waters within the Project Footprint

Wetland Habitat	USACE (Acres)	CCC (Acres)
Palustrine Emergent Freshwater	16.72	16.72
Ag Road (Riverine Unconsolidated Bottom & Palustrine Forested Wetland)	0.03	0.03
Drainage Channels	0.02	0.02
Total	16.77¹	16.77¹

¹Only 12.97 acres are permanent fill.

Vegetation Impacts

Beyond impacts to wetlands disclosed above, temporary construction impacts from clearing and grubbing are anticipated to be mostly ruderal upland vegetation within the existing and proposed RSA as shown on site plans and designated as fill areas. The ends of runway 35 and 11 contain Environmentally Sensitive Habitat Areas (ESHA's) as defined by the Coastal Act. Wetland areas to receive additional fill material to achieve appropriate slopes along the runway are estimated at approximately 12.97 acres, with an additional 3.80 acres of temporary impacts which would be graded to lower elevations than at present and then re-vegetated with native species. For the most part, equipment staging and access will be contained within existing roads, gravel areas, and road margin which are already disturbed, although some areas planned for use that were historically disturbed have since become re-vegetated with a mix of native and non-native upland species. Staging areas that are already disturbed from historic site use and are planned for use as part of this project, are estimated at approximately 0.05 acres, and are contained within upland areas. The upland borrow area is estimated at 5.2 acres with no wetlands, but contains upland ESHAs.

Project activities, including cutting, filling, and grading, would remove a total of 0.33 acres that is habitat for three plant species, two CNPS List 1B species short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*) and sand dune phacelia (*Phacelia argentea*), and one CNPS List 2 species, Del Norte buckwheat (*Eriogonum nudum* var. *paralinum*). These are being mitigated for at Point St. George. Additionally, the Final EIR identified mitigation measures to offset impacts to special-status species. Implementation of Mitigation Measure BIO-3 would reduce impacts to special-status plant species under Alternative G to a less-than-significant level.

There are no Ag Road impacts to an ESHA. Pine trees and shrubs are not planned for removal within the RSA proposed project footprint. The wetlands enhancement mitigation component to provide increased wetland value for western lily at Point St. George will require tree and/or shrub removal in areas where these plants are encroaching on lily habitat. Approximately 8.6 acres (5.2 acres of mixed tree-shrub thicket and 3.4 acres of coastal prairie upland) are proposed for clearing at Point St. George for the western lily. Vegetation within the proposed airport footprint to replace disturbed vegetation is described below in revegetation and erosion control information.

The Conservation Measures of the Biological Opinion apply. Additionally, the *Draft Mitigation and Monitoring Plan* will guide the revegetation components of mitigative elements associated with the proposed project.

Revegetation Plan

Upon completion of the proposed project, areas within the RSAs will be revegetated consistent with what currently exists within the RSAs and or with a grass/forb seed mix as further described below. Native grass/forb seed mix will be used for erosion control purposes on disturbed areas that are not otherwise revegetated with other native plantings or natural recruitment. Native grass/forb seed should consist of some or all of the species presented in Table 5, depending on what is available, and similar species may be supplemented if deemed necessary prior to implementation. For highly impacted/compacted areas within the construction zone, and areas difficult to revegetate such as slopes and staging area, an additional clover species is recommended to assist in establishment. A perennial flower seed mix has also been provided that includes coastal prairie species that would be appropriate for replanting in sandy substrate areas.

The seed mix selected will consist of native plants that are local to the region. Seed shall be delivered to the site tagged and labeled in accordance with the California Agricultural Code and shall be acceptable to the County Agricultural Commissioner. Bag tag figures shall be evidence of purity and germination. Time since date of seed test shall not exceed nine months, unless approved by permitting agencies. An agreement with a native plant nursery should be made well in advance of planting to collect seed and/or source seed appropriately if necessary. In addition, consideration should include supplemental and/or incidental planting in anticipation of long-term maintenance efforts for the following year.

Fertilizers will not be broadly applied to minimize the risk of invasive weeds. If an area is to have additional site activities after seed application has occurred, planting activities will be performed carefully so as to minimize physical damage to seeded areas. Restrictions such as use of narrow foot trails to transport hand equipment and plant materials to each planting location and prohibition of motorized equipment will be employed until seed mix becomes established.

Table 5: Possible Species for Revegetation

Scientific Name	Common Name	Status
Revegetation Grass seed mix, sandy substrate and dune areas		
<i>Bromus carinatus</i>	California brome	NL
<i>Calamagrostis foliosa</i>	leafy reedgrass	NL
<i>Festuca californica</i>	California fescue	FACU
<i>Festuca pratensis</i>	meadow fescue	FACU
<i>Festuca rubra</i>	red fescue	FAC
<i>Hordeum californicum</i>	California barley	FACU
<i>Vicia cracca</i> (or similar)	blue vetch	NL
<i>Vulpia microstachys</i>	small fescue	NL
Revegetation Grass seed mix, wetland areas		
<i>Agrostis stolonifera</i>	creeping bentgrass	FACW
<i>Danthonia californica</i>	California oatgrass	FACW
<i>Deschampsia cespitosa</i>	tufted hairgrass	FACW
<i>Panicum occidentale</i>	western panicum	FACW
Construction Impact Areas and Slopes/Sideslope		
<i>Trifolium tridentatum</i> (willdenovii)**	tomcat clover	NL
Perennial Flower Mix		
<i>Achillea millefolium</i>	common yarrow	FACU
<i>Anaphalis margaritacea</i>	pearly everlasting	NL
<i>Armeria maritima</i> spp. <i>californica</i>	sea pink	FACU
<i>Erigeron glaucus</i>	seaside daisy	FACU
<i>Erigonum fasciculatum</i>	California buckwheat	NL
<i>Gnaphalium purpureum</i>	purple cudweed	NL
<i>Grindelia stricta</i>	gum plant	NL
<i>Linum bienne</i>	Western blue flax	NL
<i>Lupinus littoralis</i>	seashore lupine	NL
<i>Sisyrinchium bellum</i>	blue-eyed grass	FAC
<i>Solidago spathulata</i>	coast goldenrod	FACU
<i>Vulpia microstachys</i>	small fescue	NL

*Recommended lbs/acre is approximate, application rate based on weight of seed and typical ratio within seed mixes, but actual quantities will depend on number of species selected for the mix. Application rate for the mix is recommended for initial establishment at 60lbs/ac.

**Construction Impact Area (non dune area) the grass seed mix is recommended with the addition of tomcat clover

Broadcast Seeding: This method can be used throughout the project site, but is intended to cover bare soil areas prone to erosion, such as or where the Contractor

could generate temporary roads to access portions of the site, staging areas if vegetated, etc. It is recommended that the broadcast seeding mixture include 60 pounds per acre of grass seed plus mulch at a rate of 500 pounds per acre. A tackifier is not required, but may be used if desired. The mulch will consist of natural fiber (virgin wood fiber is preferred), be free of synthetic materials (e.g., plastic), and contain no more than seven percent ash or 250 parts per million of boron. The seed and mulch can be applied separately, or mixed dry then spread evenly onsite. After application, the seed/mulch mixture should be lightly compacted into the soil surface to help ensure good soil/seed contact. Application will not occur when heavy rainfall is anticipated within 24 hours.

Hydroseeding: In some cases, such as on steep slopes or remote locations, use of hydroseeding application method may be preferred instead of broadcast seeding. Hydroseeding will be applied as directed in the specifications. The soil should be moistened immediately prior to hydroseeding. Fiber mulch at 2,000 pounds per acre and 150 pounds per acre of Ecology Control M-Binder (or similar brand) shall be applied during the hydroseeding process. The site will either be hydroseeded during the rainy season (fall or winter) or the hydroseeded area will be sufficiently irrigated to maintain a constant moist soil during the first six weeks after seeding. Broadcast seeding and hydroseeding will be further discussed in the Mitigation Monitoring Plan.

The EIR identified mitigation measures to offset impacts to special-status species. Implementation of Mitigation Measure BIO-3 would reduce impacts to special-status plant species under Alternative G to a less-than-significant level. Mitigation Measure BIO-3 requires potential impacts to special-status plants be mitigated by development and implementation of a management plan in coordination with California Department of Fish and Wildlife (CDFW) that would provide for offsite and/or onsite relocation (not near runways or RSAs) to a suitable area, if possible, or offsite mitigation or relocation of special-status plant species. The mitigation location and management plan would be developed in coordination with resource agencies and BCRAA (BCRAA/URS 2011). A Mitigation Monitoring Plan by the BCRAA describes the approach/strategy for replacement of impacted CNPS-listed plant species within the project area.

Erosion Control Measures

Temporary erosion control measures shall be followed during construction to avoid adverse impacts to coastal resources, adjacent property, or to sensitive habitat in the project vicinity. Erosion control measures proposed for implementation prior to and concurrent with construction activities include straw wattles, silt fence, plastic stormwater berms and straw bale barriers. At a minimum, barriers will be placed between planned project footprint and adjacent wetland areas. Biodegradable straw matting or equal will be applied on slopes that exceed 3:1. Straw wattles may also be used to function as runoff diversions. These project details are shown in the Stormwater Pollution Prevention Plan (SWPPP) prepared for the proposed project and submitted to the Coastal Commission in June, 2013. Project construction activities involving the disturbance of one or more acres are required to apply for coverage under the State Water Resources Control Board's (SWRCB) National Pollutant Discharge Elimination

System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activities. BCRAA or the RSA contractor will submit a NOI with required fees and prepare a project-specific SWPPP for preventing impacts to water quality through the use of structural and/or operational best management practices (BMPs) during construction. The SWPPP will include details and specifications and measures to be implemented after construction is completed including revegetation.

The following BMPs are recommended to be implemented during the construction:

- Prior to the commencement of construction activities, the contractor would develop and implement a SWPPP. The Project would comply with water quality standards established in the North Coast Regional Water Quality Control Board's Basin Plan (NCRWQCB 2007) and guidelines set forth in the project-specific SWPPP.
- Earthwork, mulching, and drainage standards would be in accordance with the FAA Aviation Circular 150/5370.10D, Standards for Specifying the Construction of Airports (FAA 2008) to minimize erosion and sedimentation.
- Erosion control measures such as, but not limited to, silt fences, wattles, and sand bags, would aid in minimizing the effects of erosion, sedimentation, and leakage of vehicle and equipment fluids on surface water quality. This effort would reduce runoff velocities and help to protect nearby water bodies and the coast of the Pacific Ocean from sediment and construction-related pollutants.
- Designated vehicle maintenance and washing areas and proper storage of equipment and vehicle fluids would reduce impacts from leakage of vehicle and equipment fluids on groundwater quality.
- If groundwater is encountered and dewatering is required, water would be disposed of in accordance with NPDES and SWRCB requirements and other federal, state, and local regulations.

Borrow Area versus Import

The Final Environmental Assessment (Final EA) and Final EIR stated that all fill material necessary for construction would be obtained from the borrow area located adjacent and to the north of Runway 11/29 east of Runway 17/35. Project refinements now call for fill material to be imported from off-site. The amount of fill material needed from offsite is approximately 26,000 cubic yards. Potential sources are currently under investigation.

Upland Environmentally Sensitive Habitat Areas

One of the primary objectives of the California Coastal Act is to preserve and protect ESHA. Section 30107.5 of the Coastal Act defines an "Environmentally sensitive habitat area" as: any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments. The Final EIR for the proposed project identified areas at the end of Runways 17 and 11 as introduced Perennial Grassland Series/Ruderal; however, further analysis now

classifies 2.77 acres of disturbed Beach Bursage-Beach Knotweek/Dune Mat at the end of Runways 17 and 11. The 1.62 acres of Beach Bursage-Beach Knotweek/Dune Mat at the borrow area is no longer part of the proposed project and project refinements.

Perimeter Fence Replacement

The BCRAA is required by Federal Aviation Regulations (FARs) to replace its remaining temporary and non-compliant perimeter security-deer fencing at the airport. The last section of temporary and non-compliant airport perimeter fencing exists on the border between Point St. George and the airports western property boundary. The existing, temporary and non-compliant, perimeter fencing has been in place since approximately 1972 with temporary fencing installed in 2009 to restrict elk access to the field. The existing non-compliant fencing consists of four-strand barb wire cattle fencing, on the airport boundary, which is down in places. The temporary fencing is a combination of eight foot plastic and wire fencing installed in 2009, inside the airport boundary, as an emergency measure to stop elk incursions into the field. This temporary security fencing is not currently in compliance with FAA and TSA regulations. The fence is intended to provide adequate airport perimeter security and to keep animals clear of the airport operations area to maintain aviation safety. The FAA requires the following:

- 10-12 foot chain link fence with three strand barbed wire outriggers to keep deer/elk off of aircraft movement areas.
- Obstruction clear zone setback to satisfy FAR Part 77 airspace protection regulations, which requires all permanent non-frangible structures to be setback at a defined distance from runways and taxiways.
- Setback for metal objects of 550 feet from the Navigational Aid (VORTAC) to avoid any signal interferences.

The security fencing proposed for the west side of the airport would be similar to that installed in 2006 and 2009 elsewhere on the airport and would complete fencing of the perimeter of the airport operations area. Figure 2 shows the location of the proposed fencing and the other project refinements since the CDP was originally submitted. Construction techniques and project conditions are anticipated to be similar to the 2006 and 2009 fencing project and would include:

1. The project shall be developed in accord with the submitted plot plan in compliance with the preferred alignment;
2. Fence construction within the wetland areas shall be limited to the summer/fall months when these areas are devoid of standing water;
3. Fence construction within wetland areas shall be limited to be non-mechanical other than the hand tools and the power tools necessary to place the fence poles and construct the fence and to an all-terrain vehicle (ATV) equivalent with rubber tires;
4. The fence poles to be placed in wetland areas and dune areas shall be installed by driving (five feet into the ground) instead of excavation of a hole and

backfilling with concrete. The ram to drive the poles will either be hand held or can be mounted on an ATV equivalent with rubber tires;

5. The temporary impact from fence construction is approximately 16 feet in width along the fence centerline (eight feet on both sides) to allow for the movement of fence installation equipment along the fence line, and all vegetation would be cut approximately six inches from the ground;

6. The project should not generate any offsite impacts either in the upland or the wet sand areas; however, the County Engineer may impose sediment controls if deemed necessary. If erosion controls are implemented, the following shall apply:

- (a) During construction, erosion (if any) shall be controlled to avoid adverse impacts to any wetland area;
- (b) Temporary erosion and sedimentation control measures or the appropriate equivalent shall include straw bale barriers, silt fencing, and mulching;
- (c) A site plan shall be prepared showing the location of any temporary erosion control;
- (d) A schedule shall be prepared by the County Engineer for removal of any temporary erosion control measures; and
- (e) If any permanent erosion control measures are installed, a site plan shall be prepared for them and a schedule of maintenance and inspection shall also be prepared and provided to the Airport Maintenance person.
- (f) The remaining sections of old fencing shall be removed.

7. If any archaeological resources are found during construction activities, construction activities shall be halted at the site until an evaluation of the find is made either by a qualified archaeologist or a representative of a local Rancheria or Rancherias.

The fence line route has been chosen because this route would avoid the meadow drainage at the junction with the existing fence; utilize intervening ridge lines to eliminate or lessen visibility of the new fence; utilize existing animal trails which tend to avoid wet areas, woody vegetation, and follows paths through the sedge grasses; and avoid and enclose areas of known sensitive plants. Phase 1 of the western perimeter security fencing project, is a section on the airport boundary with Point St. George, which has already been permitted and built. An airport controlled gate will be placed on the southwest end of this fence section to allow for Point St. George and search and rescue access.

Phase 2 perimeter fencing will be installed incorporating the same construction conditions and type of fencing as in Phase 1. Additional environmental conditions along this section of fencing would include wetlands, potential sensitive archaeological sites and known endangered species sub-populations (western lily) on the southwest end of this fence line. Some clearing of encroaching scrub/shrub along the west side will be required to clear obstructions in protected airspace and to enhance survivability of remaining western lily populations. The extent and manner of this clearing will be

coordinated with USFWS and CDFW personnel in the field and is detailed in the Conservation Measures of the Biological Opinion.

Approximately 3,874 linear feet of 10 foot high chain link fencing will be placed across Point St. George property to Pebble Beach Drive and then southeast to connect with existing airport fencing. Two airport controlled gates will be installed, one along Pebble Beach Drive to allow for responsible party access and a second one near the VORTAC to allow for search and rescue access onto Point St. George.

Wetland and Habitat Mitigation

Proposed wetland and habitat mitigation and restoration activities are an integral component of the proposed project. Several sites are currently under consideration for an array of restoration and mitigation activities, which have been further detailed in two *Mitigation & Monitoring Plans*. Various mitigative components and potential sites are under consideration as summarized below. Mitigation components could vary from passive to active restoration such as wetlands establishment/creation (i.e., road removal), dune restoration, special-status species habitat enhancement, Oregon silverspot butterfly nectar and larval plant revegetation, and/or land acquisition with secured easements or agreements.

Reports/studies prepared for the potential mitigation sites include two Mitigation and Monitoring Plans, one for Option 1 (Pacific Shores lot purchase and road removal and Bay Meadows if needed) and one for Options 2 and 3 (additional mitigation options to be utilized in the event that litigation precludes road removal); a Preliminary Biological Report; a Preliminary Wetland Verification; a Habitat Map; a 30% design plan set (for Pacific Shores and Point St. George only); and a Preliminary Feasibility Report for three additional sites.

Pacific Shores Subdivision

Pacific Shores Subdivision is located west of Lake Earl (Figure 3) and includes sand dunes, wetlands, and a variety of other sensitive habitat types. The site supports a number of endangered, threatened and rare species including the Oregon silverspot butterfly. The site was subdivided and 27 miles of roads constructed, but was never completed. About half of the over 1,500 lots are in CDFW ownership and the rest remain in private ownership.

A Mitigation and Monitoring Plan originally published in May 2013 and updated in July 2013 describes what is now referred to as Option 1. This option, developed to the 50% design stage, would remove roads at Pacific Shores Subdivision as described below. Subsequent litigation forced development of additional mitigation strategies, both included in a later (July 2013) MMP. Option 2 would limit activities at Pacific Shores to acquisition of parcels from willing sellers. Option 3 would completely eliminate any proposed activity at Pacific Shores and utilize other additional sites.

Option 1 is described below:

Mitigation would involve the following activities at Pacific Shores Subdivision:

- Seed collection
- Mobilization
- Implementation of traffic control devices
- Installation of BMPs to protect drainages and coastal waters.
- Garbage removal. This would include removing and disposing of garbage materials from designated areas. It may include general garbage, hazardous materials, and structures. Areas to be removed would be flagged in advance.
- Salvaging of rare plants. This would include salvaging plant materials (primarily gumplant, *Grindelia stricta*) from within the 24-foot wide pavement width. Plants would be removed manually with a sharp spade or soil knife and stockpiled for a short time before being replanted in adjacent right-of-way or in an area of removed road. Known areas of nectar plants on roads or in adjacent right-of-way are shown in Figure 4. OSB host plants are off of pavement and would be protected and avoided.
- Removal of invasive species. Selected areas of European beachgrass, Scotch broom, and other invasive species would be removed from adjacent right-of-way, from parcels acquired as part of the project, and possibly in limited cases from adjacent state owned parcels. Removal would be manually done unless specified otherwise elsewhere in this document or in project specifications. Materials would be bagged and removed to an appropriate off-site green waste disposal facility.
- Clearing and Grubbing. This would include clearing of trees, shrubs, and herbaceous vegetation and debris from the existing 24-foot wide road surface where roads are to be removed. Some pine and willow would be stockpiled for later re-use as barriers, with all other material to be disposed of off-site.
- Asphalt removal. This would include cold plane removal of asphalt and concrete road surface and base. The planing machine shall be one that is specifically designed and built for the planing of bituminous pavements without the addition of heat. Cold planing machines shall be equipped with a cutter head not less than 30-inches in width and shall be operated so that no smoke or fumes will be produced. Material would be removed from the site as quickly as practical, and disposed of at an approved off-site location.
- Excavation. This includes all earthwork activities related to excavation of roadbed rock, excavation of frog ponds, dune re-connections, topographic variation in road removal areas, and road entry barriers. Excavation work would occur during dry weather. Potential dune and frog pond work would occur only where parcel availability allows road removal.

- Ripping. This would include scarifying soils beneath removed roads to a depth of at least 10 inches to loosen compacted material. Work would occur during dry weather.
- Grading. After completion of the above tasks, final grading of frog ponds, dune reconnections, topographic variation in road removal areas, and road entry barriers would occur. Frog pond locations are, when possible, clustered in groupings adjacent to existing wetlands and are typically in proximity to dune reconnections to provide a sand source. Dune re-connection locations are adjacent to existing dunes which were bisected during original subdivision layout. Topographic variation would occur throughout road removal areas to encourage habitat heterogeneity.
- Road barriers. Pine saplings and willow branches stockpiled during clearing and grubbing would be used to create barriers at removed roadway entries to discourage ATV access. Pines would be stacked, and willow stakes planted among them to create a physical and visual barrier.
- Revegetation. Areas of removed roadway and adjacent invasives management areas would be planted with the appropriate planting mix. Dune mat, coastal terrace prairie, and transitional wetland areas would be planted using broadcast seeding or hydroseeding. Wetland areas would be planted with plugs. Deeper centers of frog ponds (greater than 18-inches below grade) would not be planted to encourage formation of an open water center. Details of seed mixes and quantities are provided below in the planting plan section of this document. The planting mix would include OSB nectar species within the appropriate habitat types (generally dune mat and coastal terrace prairie).
- Ongoing management of invasive species during the five year monitoring period.

A GIS-based optimization report (GHD Inc. 2013a) identified potential road segments to be removed, pending agreements to acquire adjacent parcels from willing sellers. Where adjacent lots cannot be acquired those specific road segments would not be removed to retain access. Technical or practical considerations may also restrict opportunities along some road segments. Approximately 172 lots are believed to be available from various sources including those with purchase agreements signed as of July 2013 and lots already or potentially in County ownership.

It is anticipated that equipment would include bulldozers, front end loaders, dump trucks, graders, asphalt planers or grinders, chainsaws, chippers, and other standard construction equipment. Only hand tools would normally be utilized beyond the limits of pavement.

Additional detail on construction methods is available in the Basis of Design Report (GHD Inc. 2013).

Option 2, as stated above, would include parcel acquisition from willing sellers only and no establishment or enhancement at Pacific Shores, wetland creation at other additional sites. Option 3 would avoid the site entirely utilizing other additional sites.

Point St. George

Point St. George County Park is located immediately west of CEC (Figure 1). Mitigation would involve the following activities at Point Saint George:

- Management of areas immediately adjacent to the airport, initially through removal or thinning of woody vegetation and later through vegetation management as specified in Biological Opinion conservation measures, to maintain or re-establish potentially suitable conditions for the western lily and other rare or sensitive plants;
- Relocation of the airport fence to protect the management area.

Clearing of woody debris would be done by hand (chainsaw) and removed from the site by hand or with light mechanized ATV equivalent depending on location, access, and sensitivity. Material may be removed whole, chipped adjacent to the site, or burned adjacent to the site depending on end use and resource agency approval.

Moving the airport fence into Point St. George is proposed as part of the mitigation package for the RSA project, to provide perimeter security and to enclose this area and reduce deer predation on emergent wetland vegetation species, such as western lily and to protect cultural resources. A conservation easement or equal agreement is proposed by the Applicant to allow for the long-term vegetation management of this area as requested by USFWS. This component of the mitigation strategy is not for replacement of individual plants, and is instead proposed to take advantage of an immediate opportunity for improvements to wetlands adjacent to the project site. The intent is to fence and protect approximately 33 acres and enhance approximately 8.6 acres of uplands and approximately 5.4 acres of wetlands. CNPS sensitive plants will be mitigated here.

CEC On-airport ESHA Mitigation Areas

Some areas to be impacted by RSA improvements currently support sensitive plants or ESHA. Upon completion of grading, RSA runway ends would be replanted with a native seed mix. In addition part of the "borrow area" or other appropriate locations away from airport operation areas may be used for dune mat replacement or enhancement.

Bay Meadows Potential Mitigation Site

The Bay Meadows site is located on the northwest side of Northcrest Drive, north of Blackwell Lane and south of Bay Meadows Drive, approximately 2.5 miles northeast of Crescent City and approximately 14 miles south of the California/Oregon border. The site is accessed off of Bay Meadows Drive. The Pacific Ocean is located approximately 2.5 miles west of the site, Lake Earl is located one mile north of the site, and Highway

101 is located one mile to the southeast (Figure 5). The site has been the subject of previous investigations for potential development. The site incorporates approximately 136 acres of total area. A preliminary boundary adjustment map was developed which separated the property into four proposed parcels of approximately 75.3 acres (Parcel 1), 3.0 acres (Parcel 2), 11.9 acres (Parcel 3) and 45.6 acres (designated for future development as the Harbor Center Tract). Small additional areas of residential development have been proposed. Approximately 70 to 80 acres of the site may be available for mitigation purposes.

The site consists of level to undulating and gently sloping areas within a marine terrace landscape setting. There are two south-to-north trending drainage ways separated by a low ridge. Both drainage ways have altered hydrology as a result of shallow ditching. Elevations on site range from 44 feet along the small ridge on the east side of the site to 20 feet near the northwest corner of the site. Previous land uses for the site include timber harvesting and cattle grazing. Brush and slash removal efforts and mowing on much of the site have left large areas of low brush vegetation, some open patches of grassland and one significant larger open sloped pasture area in the north central portion of the parcel. The site is a complex patchwork of annual grasslands, shrubs, remnant wetlands, swales, and woodlands. On some areas of the site (particularly in the northwest corner and along the western property line) vegetation forms impenetrable thickets. Several gravel roads with culverts in places wind through the site. Surrounding the site are residences to the south, large open drainages and wetlands to the east and west, and the CDFW's Lake Earl Wildlife Refuge to the north.

The western half of Bay Meadows contains approximately 7.1 acres of existing wetlands. One conceptual mitigation approach to this site would consist of raising culverts and re-grading or use of low berms to restore water levels in channelized drainages, thus elevating ground water levels slightly in adjacent areas. Additional wetlands would be established on this property by re-grading and planting native wetland species to mimic and expand the existing wetlands. If properly executed, the expansion would connect existing wetlands and habitat areas. This approach would require considerable excavation and the construction of relatively shallow berms (two to four feet), and excavation between the berms to a depth of approximately three feet. The focus would be to limit the excavation depth as much as possible to the upper soil region. To the extent practical grading would avoid existing mature trees. It is anticipated that a minimum of 12-17 acres of new wetlands could be established using this approach, with enhancement of additional areas of existing habitat.

Under the Option 1 MMP the Bay Meadows site would serve as an additional location to make up any shortfall in wetland mitigation (road removal) acreage at Pacific Shores. Under the Options 2 and 3 MMP Bay Meadows would become a primary location for wetland establishment (creation) and enhancement.

Moore Tract Potential Mitigation Site

The site is bordered by Highway 101 to the west, Kings Valley Road along the east, and

Kings Valley Golf Course along the south boundary. The site is approximately 4.5 miles northeast of Crescent City and 13 miles south of the California/Oregon border (Figure 6). The site is accessed off of Kings Valley Road. The Pacific Ocean is located approximately 4.5 miles west of the site, Lake Earl is approximately 2 miles west of the site, and Highway 199 is located 1/2 mile south of the site.

The Moore Tract is located east of Lake Earl and occupies a transition from alluvial deposits at the western margin of the Siskiyou Mountains onto unconsolidated marine terrace deposits. There are buildings located at the southeast and northeast corners of the site. Scattered Douglas fir and some redwoods are present on the western half of the site, although most of the site is open and consists of disturbed annual grassland with small emergent wetland areas.

Mitigation Option 3 would involve the following activities at the Moore Tract: re-establish, rehabilitate, establish or enhance palustrine emergent wetlands at the Moore Tract, water issuing from the base of alluvial deposits on the upper half of the site has been directed through three small ditches to drain the site. Despite this maintained drainage, some wetlands persist on the site. Re-establishment of additional wetlands would be relatively simple by grading these ditches into shallow swales to slow the movement of water through the site. Additional wetlands could be established (created) by minimal excavation of adjacent areas and/or by constructing low berms to encourage local ponding of water.

Although the Moore Tract is outside of the coastal zone, it is in proximity to extensive public lands on uplands to the east, and thus is attractive to some agencies as a corridor contributing to connectivity between mountain and coastal habitats.

Other Sites

Point St. George, Bay Meadows and/or the Moore Tract may not offer enough opportunities to meet the necessary mitigation ratios if litigation precludes activities at Pacific Shores; therefore, other parcels are currently under consideration for the purposes of wetland mitigation package. These include the McNamara Ranch, several parcels adjacent to Crescent City Marsh, and various properties identified on a map provided by the Coastal Commission. Some of these locations are not feasible because they are currently in agricultural use, because they are already mostly wetland, or for technical reasons. Other locations would require additional investigation to determine feasibility.

Timeframe and Schedule

The NEPA review process is complete, and for CEQA, a Supplemental EIR is in preparation to address project refinements since the 2011 Final EIR was certified. When completed the RSA construction and Ag Road are planned to commence in 2014 once the required permits are obtained. The project construction is planned to be completed by November 2015. The existing airport facility will remain operational during construction. Construction is planned to be year-round as necessary. It is anticipated that construction of the proposed project would be undertaken in phases for each

runway end. The mitigation construction for the RSA project is planned to commence in 2015 with the purchase/permission of required properties and/or potential mitigation sites.

Permits and Approvals

As requested as part of the CDP application with the Commission and designated format and attachments [Item 10], the permits and approvals for the Proposed Project are provided in Section IV below (Item 10).

Federal Actions:

Federal actions include the following:

- **National Environmental Policy Act (NEPA).** FAA as the Lead Federal agency, a Draft EA was prepared concurrently with the EIR. A Final EA and FONSI were completed in 2011.
- **FAA Approval -**
 - Conditional approval of the updated Airport Layout Plan that depicts RSAs as planned for under Alternative G.
- **U.S. Army Corps of Engineers (USACE) - Section 404 permit.** The project will require approval for fill disturbance within jurisdictional wetlands and/or Waters of the U.S. Submitted in February, 2013.
- **US. Fish and Wildlife Service – Endangered Species Act Section 7 Consultation.** Section 7 Consultation for the proposed project was completed on September 2, 2010. Additional consultation/concurrence was initiated in November 2012 for mitigation implementation at Point St. George. Biological Opinion obtained. A Biological Opinion for proposed mitigation activities was issued by USFWS in June 2013.

State and Regional Actions:

State and regional actions include the following:

- **California Department of Fish and Wildlife (CDFW) Land and Streambed Alteration Agreement.** Consultation regarding impacts to habitats and/or endangered and threatened species under their jurisdiction as well as issuance of a 1600 permit. Submitted in February, 2013. Obtained draft notification was issued in June 2013.
- **North Coast Regional Water Quality Control Board (NCRWQCB)**
- **Water Quality Certification (Section 401).** The proposed project includes fill disturbance within wetlands or waters of the United States/State. Concurrence will be requested for State Water Resources Control Board approval of any Section 401 certification granted by the NCRWQCB and analysis of potential project impacts to water quality. Submitted in February, 2013.
- **National Pollutant Discharge Elimination System (NPDES) and Storm Water Pollution Prevention Plan (SWPPP)** NCRWQCB review and input to proposed changes will be necessary if the project includes grading over an acre of land.

- **California Coastal Commission – Coastal Development Permit (CDP).** The proposed project would typically require CDP approval from both the County (for landward portion of project) and from the Commission (for seaward portion of project). For the proposed project, since the identified wetland mitigation site (Point St. George) is an “area of deferred certification” the project is being combined under a single CDP application with the Coastal Commission. The County of Del Norte has assigned its jurisdiction for primary permit authority to the Commission as provided in June 1, 2011, letter (Del Norte, County of, 2011).
- **California Environmental Quality Act (CEQA).** Certification of the RSA Improvement Project EIR was provided by the Lead Agency (BCRAA) in December 2011. A supplemental CEQA compliance document for the RSA project is forthcoming.
- **State Historic Preservation Officer (SHPO).** Concurrence regarding potential project impacts to any cultural resources was received on December 10, 2010.

III. REFERENCES

- Anderson J., 2001. *Direct Seeding of California Native Grasses In the Sacramento Valley and Foothills*. Woodland, CA: Yolo County Resource Conservation District. 101p.
- BCRAA/URS, 2011a. *Comments and Responses, Final Environmental Impact Report, Runway Safety Area Improvement Project*. Border Coast Regional Airport Authority (BCRAA) and URS Corporation (URS). September.
- BCRAA/URS, 2011b. *Draft Environmental Impact Report Runway Safety Area Improvement Project, Jack McNamara Field (CEC)*. Volume I. SCH# 2009071019. Border Coast Regional Airport Authority (BCRAA) and URS Corporation (URS). February.
- BCRAA/URS, 2011c. *Draft Environmental Impact Report Runway Safety Area Improvement Project, Jack McNamara Field (CEC)*. Volume II. SCH# 2009071019. Border Coast Regional Airport Authority (BCRAA) and URS Corporation (URS). February.
- California Coastal Commission, 2011. *Comments on Draft Environmental Impact Report for RSA Improvement Project*. April 11.
- California Coastal Commission, 1986. *Post LCP Certification Permit and Appeal Jurisdiction*. Crescent City Quad, Coastal Zone Map 2. Revision: November 12.
- California Coastal Commission, 1981. *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone*. California Coastal Commission.
- California Coastal Act, 1976. <http://www.coastal.ca.gov/coastact.pdf>.
- CalFlora, 2011. *The Calflora Database: Information on California plants for education, research and conservation*. Berkeley, California. Available: <http://www.calflora.org/>. Accessed: December.

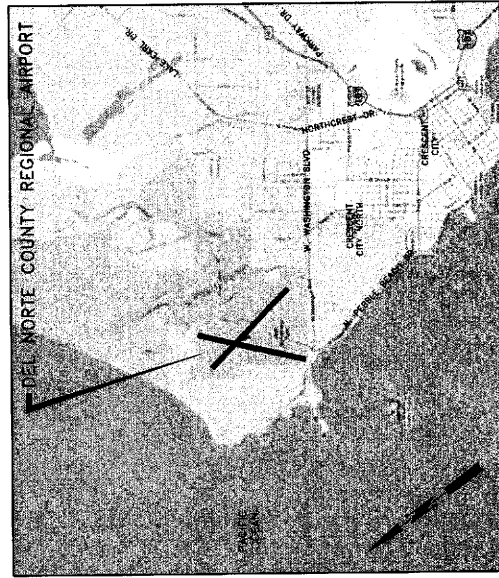
- Cowardin, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*, Publication No. FWS/OBS-79/31. Office of Biological Services, United States Fish and Wildlife Service (FWS).
- Del Norte, County of, 2011. *CDP Permit Consolidation Approval Letter*. Kevin Hamblin, Director, Community Development Department. June 1.
- DFG, 2000. *Guidelines for Assessing the Effects of Proposed Development on Rare, Threatened, and Endangered Plants and Plant Communities*. DFG.
- DFG, 1994. *Riparian Habitat Recommendations*. California Department of Fish & Game.
- FWS, 1988. *National List of Plant Species that Occur in Wetlands, California (Region O Indicator Status, [ROIND])*, Bio. Rep. 88 (26.20). U.S. Department of the Interior.
- GHD, 2012a. *Supplemental Wetlands Evaluation in Response to Coastal Commission Comments for Runway Safety Area Improvement Project*. February.
- GHD, 2012b. *Draft, Mitigation and Monitoring Plan*. February.
- Harris, S.W, 1998. *Birds of Northwestern California*. Third edition. Humboldt State University Press, Arcata, CA.
- Hickman, J.C. (ed), 1993. *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, CA.
- NatureServe, 2009. *NatureServe Explorer: An online encyclopedia of life* [web application]. Version 7.1. NatureServe, Arlington, Virginia. Accessed: <http://www.natureserve.org/explorer>.
- NOAA, 2011. *Climate Data*. NOAA National Weather Service Office, Eureka. <http://www.weather.gov/climate/index.php?wfo>
- Sawyer, J.O., and T. Keeler-Wolf, 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento, CA.
- Tibor, D.P., editor., 2001. *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California*.
- URS, 2010. *Biological Assessment Runway Safety Area Improvement Project*. August.
- URS, 2009. *California Coastal Commission Jurisdictional Delineation, Runway Safety Area*. June.

DEL NORTE COUNTY REGIONAL AIRPORT JACK McNAMARA FIELD CRESCENT CITY, CALIFORNIA RUNWAY SAFETY AREA REGRADING AND RELATED WORK



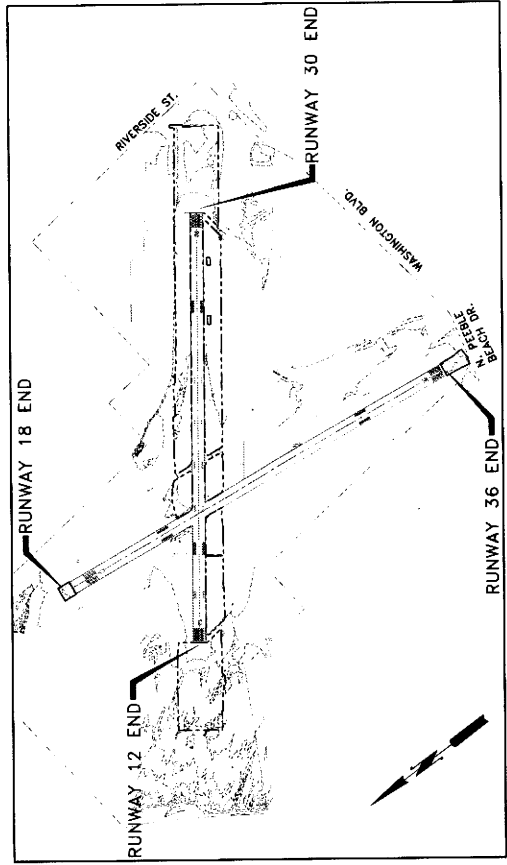
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PROJECT LOCATION MAP

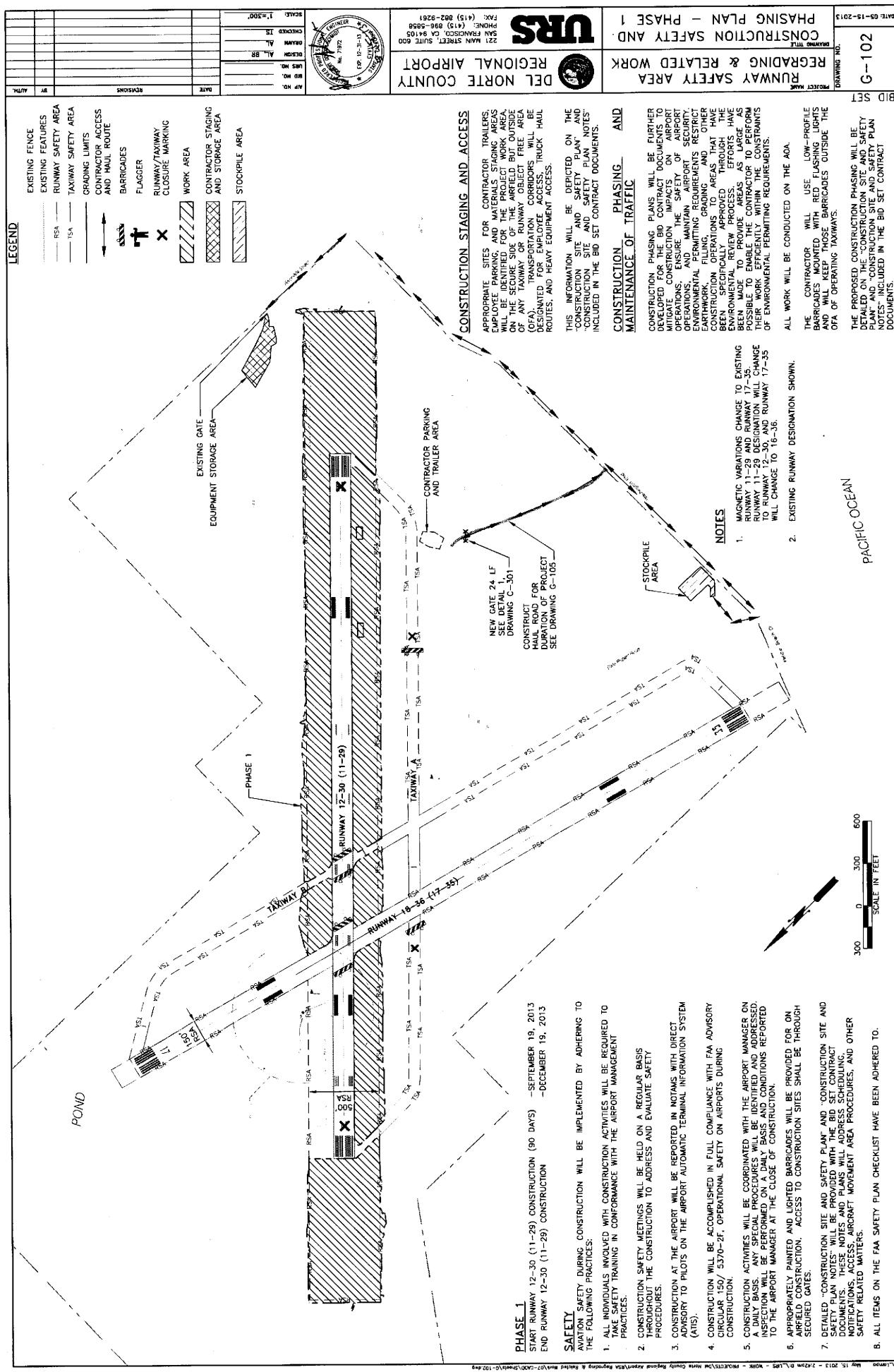


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SUMMARY OF QUANTITIES:
AIRFIELD CIVIL AND ELECTRICAL

DRAWING NO.	DRAWING TITLE	UNIT	QUANTITY
G-140-2.1	MOBILIZATION	LS	1
G-140-2.2	Construction Staking	LS	1
G-142-10.1	Safety and Security	LS	1
G-145-5.1	Temporary Fencing, Barricades and Facilities	LS	1
P-101-5.1	Pave Removal	SF	130,000
P-130-4.1	Chain Link Fence Removal	LF	765
P-151-4.1	Clearing and Grubbing @ 2 inch average depth	AC	71
P-162-4.1	Unclassified Excavation	CY	95,000
P-162-4.2	Unclassified Excavation	CY	10,000
P-162-4.3	Borrow Import	CY	26,000
P-165-6.1	Temporary Erosion Control, Silt Fence	LF	16,500
P-165-6.2	Temporary Erosion Control, Straw Wall	LF	2,000
P-165-5.3	Temporary Erosion Control, Storm Drain Inlet Protection	EA	13
P-165-5.4	Temporary Erosion Control, Stabilized Construction Entrance	LF	200
P-165-5.6	Temporary Erosion Control, Allowance for Beta Erosion Control	AL	1
P-200-5.1	Runway and Taxiway Hauling	SF	130,000
D-701-5.1	15" Reinforced Concrete Pipe, Class II	LF	50
D-701-5.2	15" Reinforced Concrete Pipe, Class II	LF	150
D-751-5.1	Catch Basin, 48 inch diameter, 120 Loading	EA	3
F-162-5.1	Chain Link Fence	LF	761
F-162-5.2	24 Foot Manual Saw Right Gates	EA	1
T-401-5.1	Remnant Seeding	AC	71
CT-005	Aggregate Base Course	CY	1,900
CT-009	Hot Mix Asphalt	TON	310
CT-009-1	Geotextile	SY	4,700
CT-009-2	Geogrid	SY	3,600
L-107-1	Dedicate Existing Wood one to new foundation	LS	1
L-108-1	New 1-1/2" x 4" x 8' APL Cable	LF	26,730
L-108-2	New 1-1/2" x 4" x 8' APL Cable	LF	4,626
L-108-3	New 1-1/2" x 4" x 8' APL Cable	LF	6,002
L-108-4	New 1-1/2" x 4" x 8' APL Cable	LF	1,215
L-108-5	New 1-1/2" x 4" x 8' APL Cable	LF	2,142
L-108-6	New 1-1/2" x 4" x 8' APL Cable	LF	1,612
L-108-7	New 1-1/2" x 4" x 8' APL Cable	EA	126
L-110-1	New 1-1/2" x 4" x 8' APL Cable	LF	11,949
L-110-2	New 1-1/2" x 4" x 8' APL Cable	LF	666
L-110-3	New 1-1/2" x 4" x 8' APL Cable	EA	610
L-110-4	New 1-1/2" x 4" x 8' APL Cable	EA	405
L-110-5	New 1-1/2" x 4" x 8' APL Cable	EA	1,160
L-110-6	New 1-1/2" x 4" x 8' APL Cable	EA	200
L-110-7	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-8	New 1-1/2" x 4" x 8' APL Cable	EA	8
L-110-9	New 1-1/2" x 4" x 8' APL Cable	EA	74
L-110-10	New 1-1/2" x 4" x 8' APL Cable	EA	15
L-110-11	New 1-1/2" x 4" x 8' APL Cable	EA	10,362
L-110-12	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-13	New 1-1/2" x 4" x 8' APL Cable	EA	15
L-110-14	New 1-1/2" x 4" x 8' APL Cable	EA	2
L-110-15	New 1-1/2" x 4" x 8' APL Cable	EA	4
L-110-16	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-18	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-20	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-21	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-22	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-23	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-24	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-25	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-26	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-27	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-28	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-29	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-30	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-31	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-36	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-40	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-44	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-45	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-46	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-47	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-48	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-49	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-50	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-51	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-52	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-53	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-54	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-55	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-56	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-58	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-59	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-60	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-61	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-62	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-63	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-64	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-65	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-66	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-67	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-68	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-70	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-71	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-109	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-151	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-169	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-170	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-171	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-175	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-178	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-179	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-181	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-189	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-190	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-191	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-192	New 1-1/2" x 4" x 8' APL Cable	EA	1
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L-110-198	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-199	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-200	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-201	New 1-1/2" x 4" x 8' APL Cable	EA	1
L-110-202	New 1-1/2" x 4" x 8' APL Cable	EA	1



LEGEND

- EXISTING FENCE
- EXISTING FEATURES
- RUNWAY SAFETY AREA
- TAXIWAY SAFETY AREA
- GRADING LIMITS
- CONTRACTOR ACCESS AND HAUL ROUTE
- BARRICADES
- FLAGGER
- RUNWAY/TAXIWAY CLOSURE MARKING
- WORK AREA
- CONTRACTOR STAGING AND STORAGE AREA
- STOCKPILE AREA

PHASE 1

START RUNWAY 12-30 (11-29) CONSTRUCTION (90 DAYS) - SEPTEMBER 19, 2013

END RUNWAY 12-30 (11-29) CONSTRUCTION - DECEMBER 19, 2013

PHASE 2

START RUNWAY 18-36 (17-35) CONSTRUCTION (90 DAYS) - SEPTEMBER 19, 2013

END RUNWAY 18-36 (17-35) CONSTRUCTION - DECEMBER 19, 2013

SAFETY

AVIATION SAFETY DURING CONSTRUCTION WILL BE IMPLEMENTED BY ADHERING TO THE FOLLOWING PRACTICES:

1. ALL INDIVIDUALS INVOLVED WITH CONSTRUCTION ACTIVITIES WILL BE REQUIRED TO TAKE SAFETY TRAINING IN CONFORMANCE WITH THE AIRPORT MANAGEMENT PRACTICES.
2. CONSTRUCTION SAFETY MEETINGS WILL BE HELD ON A REGULAR BASIS THROUGHOUT THE CONSTRUCTION TO ADDRESS AND EVALUATE SAFETY PROCEDURES.
3. CONSTRUCTION AT THE AIRPORT WILL BE REPORTED IN NOTAMS WITH DIRECT ADVISORY TO PILOTS ON THE AIRPORT AUTOMATIC TERMINAL INFORMATION SYSTEM (ATIS).
4. CONSTRUCTION WILL BE ACCOMPLISHED IN FULL COMPLIANCE WITH FAA ADVISORY CIRCULAR 150/5370-21, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.
5. CONSTRUCTION ACTIVITIES WILL BE COORDINATED WITH THE AIRPORT MANAGER ON SCHEDULING. THESE ACTIVITIES WILL BE IDENTIFIED AND ADDRESSED TO THE AIRPORT MANAGER AT THE CLOSE OF CONSTRUCTION.
6. APPROPRIATELY PAINTED AND LIGHTED BARRICADES WILL BE PROVIDED FOR ON AIRFIELD CONSTRUCTION. ACCESS TO CONSTRUCTION SITES SHALL BE THROUGH SECURED GATES.
7. DETAILED "CONSTRUCTION SITE AND SAFETY PLAN" AND "CONSTRUCTION SITE AND SAFETY PLAN NOTES" WILL BE PROVIDED WITH THE BID SET CONTRACT DOCUMENTS. THESE NOTES AND PLANS WILL ADDRESS SCHEDULING, NOTIFICATIONS, ACCESS, AIRCRAFT MOVEMENT AREA PROCEDURES, AND OTHER SAFETY RELATED MATTERS.
8. ALL ITEMS ON THE FAA SAFETY PLAN CHECKLIST HAVE BEEN ADHERED TO.

NOTES

1. MAGNETIC VARIATIONS CHANGE TO EXISTING RUNWAY 11-29 AND RUNWAY 17-35. RUNWAY 12-30 DESIGNATION WILL CHANGE TO RUNWAY 12-30 AND RUNWAY 17-35 WILL CHANGE TO 16-36.
2. EXISTING RUNWAY DESIGNATION SHOWN.

CONSTRUCTION STAGING AND ACCESS

APPROPRIATE SITES FOR CONTRACTOR TRAILERS, EQUIPMENT, AND MATERIALS STAGING AREAS WILL BE IDENTIFIED FOR THE PROJECT WORK AREA. ON THE SECURE SIDE OF THE AIRFIELD BUT OUTSIDE OF ANY TAXIWAY OR RUNWAY OBJECT FREE AREA (OFA), TRAILER STAGING AREAS WILL BE IDENTIFIED. THESE AREAS WILL BE ACCESSIBLE TO CONTRACTOR TRUCKS, HAUL ROUTES, AND HEAVY EQUIPMENT ACCESS.

THIS INFORMATION WILL BE DEPICTED ON THE "CONSTRUCTION SITE AND SAFETY PLAN" AND "CONSTRUCTION SITE AND SAFETY PLAN NOTES" INCLUDED IN THE BID SET CONTRACT DOCUMENTS.

CONSTRUCTION PHASING AND MAINTENANCE OF TRAFFIC

CONSTRUCTION PHASING PLANS WILL BE FURTHER DEVELOPED FOR THE BID CONTRACT DOCUMENTS TO MITIGATE CONSTRUCTION IMPACTS ON AIRPORT OPERATIONS. ENSURE MAINTAIN AIRPORT SECURITY. ENVIRONMENTAL PERMITTING REQUIREMENTS RESTRICT EARTHWORK, FILLING, GRADING, AND OTHER CONSTRUCTION OPERATIONS TO AREAS THAT HAVE BEEN IDENTIFIED AND REVIEWED. THESE AREAS HAVE BEEN MADE TO PROVIDE ACCESS AS LARGE AS POSSIBLE TO ENABLE THE CONTRACTOR TO PERFORM THEIR WORK EFFICIENTLY WITHIN THE CONSTRAINTS OF ENVIRONMENTAL PERMITTING REQUIREMENTS.

ALL WORK WILL BE CONDUCTED ON THE ADA.

THE CONTRACTOR WILL USE LOW-PROFILE BARRICADES MOUNTED WITH RED FLASHING LIGHTS AND WILL KEEP THOSE BARRICADES OUTSIDE THE OFA OF OPERATING TAXIWAYS.

THE PROPOSED CONSTRUCTION PHASING WILL BE DETAILED ON THE "CONSTRUCTION SITE AND SAFETY PLAN" AND "CONSTRUCTION SITE AND SAFETY PLAN NOTES" INCLUDED IN THE BID SET CONTRACT DOCUMENTS.

1. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PREVENTING DAMAGE TO ALL EXISTING UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CALL 811 (USA NORTH), 48 HOURS (2 WORKING DAYS) PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL DETERMINE WHETHER SHOWN OR NOT, SHALL BE LOCATED PRIOR TO CONSTRUCTION, SO AS TO AVOID DAMAGE OR DISTURBANCE, AND THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY AND COSTS CONNECTED THEREWITH TO PROTECT, MAINTAIN, AND REPAIR, WHERE NECESSARY.
2. ALL UNSUITABLE MATERIAL SHALL BE DISPOSED OF AT STOCKPILES ON AIRPORT PROPERTY AS DIRECTED BY THE ENGINEER. MATERIAL EXCEEDING THE ALLOWED LIMITATION EXCEEDED THAT REQUIRED TO CONSTRUCT THE EMBANKMENTS TO THE GRADES INDICATED, EXCESS MATERIAL SHALL BE DISPOSED OF AT STOCKPILES ON AIRPORT PROPERTY AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATERIALS SHOWN INCIDENTAL TO OTHER BID ITEMS.

4. CONTRACTOR SHALL HAVE A QUALIFIED ELECTRICIAN, PER FAA REQUIREMENTS, ON-CALL FOR THE DURATION OF THE CONSTRUCTION PROJECT'S EXCAVATION PHASE FOR THE PURPOSE OF ACCIDENTAL DISRUPTION OF AIRPORT LIGHTING SYSTEM INCLUDING POWER AND CONTROL. THE ELECTRICIAN SHALL BE PREPARED TO MAKE TEMPORARY SPLICES TO SEVERED CABLES AS A REQUIREMENT FOR MAINTAINING OPERATION OF THE LIGHTING SYSTEM. THE ELECTRICIAN SHALL BE AVAILABLE TO MAKE REPAIRS TO THE LIGHTING POWER/CONTROLS WITHIN 30 MINUTES OF RECEIVING A CALL.

6. CONTRACTOR SHALL NOTIFY AIRPORT PERSONNEL IMMEDIATELY IF THEY DEACTIVATE WATER LINES OR FIRE HYDRANTS OR HAVE TO BLOCK/RE-ROUTE EMERGENCY ACCESS ROADS.

PHASING NOTES

1. THE CONTRACT TIME FOR COMPLETION OF ALL WORK UNDER THE TERMS OF THE CONTRACT SHALL BE XX CALENDAR DAYS.

1. THE CONTRACTOR IS REQUIRED TO COMPLY WITH ALL AIRPORT SAFETY AND SECURITY MEASURES.

3. THE CONTRACTOR SHALL USE DESIGNATED ACCESS ROUTES ONLY. CONTRACTOR SHALL MAINTAIN AND PROTECT PAVEMENT IN AREAS USED AS ACCESS ROUTES. STORAGE OF EQUIPMENT AND/OR SUPPLIES SHALL BE IN THE DESIGNATED AREA. CONTRACTOR SHALL, AT THE END OF EACH WORK DAY, RETURN ALL EQUIPMENT TO DESIGNATED STAGING AREAS. AREA SHALL BE RESTORED UPON COMPLETION OF PROJECT AT NO ADDITIONAL COST TO THE OWNER.

5. OWNER SHALL BE RESPONSIBLE FOR ISSUING, MAINTAINING, UPDATING, AND CANCELING NOTICES TO AIRMEN (NOTAMS). NO WORK WILL BEGIN WITHOUT PROPER ISSUANCE OF NOTAMS.
6. THE CONTRACTOR SHALL INSTALL AND MAINTAIN LOW-PROFILE BARRICADES WITH FLASHING RED LIGHTS TO CLOSE OFF TAXWAYS AS SHOWN. BARRICADES SHALL BE LOCATED SO AS NOT TO IMPEDE AIR OPERATIONS IN ADJACENT AREAS.

7. CONSTRUCTION PERSONNEL, VEHICLES, AND EQUIPMENT SHALL NOT BE ALLOWED TO PASS IN FRONT OF A TAXIING AIRCRAFT. AIRCRAFT HAVE THE RIGHT-OF-WAY AT ALL TIMES. RESCUE AND FIRE FIGHTING VEHICLES ALSO HAVE THE RIGHT-OF-WAY AT ALL TIMES.

9. CONTRACTOR SHALL CLEARLY MARK AND LIGHT ANY OBSTRUCTION, EQUIPMENT, EXCAVATIONS, OR OTHER SAFETY HAZARD TO THE SATISFACTION OF THE ENGINEER.

1. GROUND VEHICLE TRAINING WILL BE REQUIRED FOR ANY PERSONNEL OPERATING A VEHICLE ON THE AIRFIELD. THIS COST IS INCIDENTAL TO THE BID.

3. THE OWNER RESERVES THE RIGHT TO ORDER THE CONTRACTOR AT ANY TIME TO VACATE ANY AREA NECESSARY TO MAINTAIN SAFE AIRCRAFT OPERATIONS.

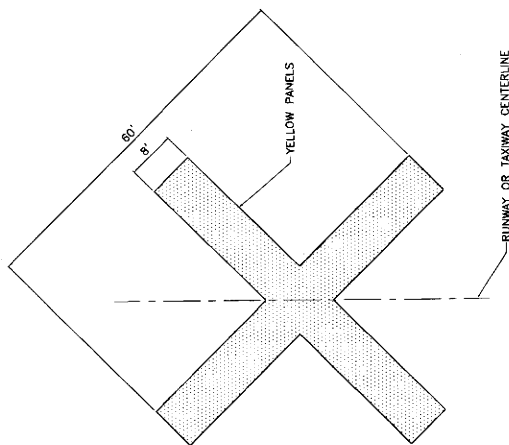
5. CONTRACTOR EQUIPMENT AND MATERIALS ARE LIMITED TO A MAXIMUM HEIGHT OF 25 FEET ABOVE THE GROUND INSIDE THE AIRPORT OPERATIONAL AREAS.

7. OPEN FLAME, WELDING, OR TORCH CUTTING OPERATIONS ARE PROHIBITED UNLESS ADEQUATE FIRE AND SAFETY PRECAUTIONS HAVE BEEN TAKEN AND THE PROCEDURE APPROVED BY THE ENGINEER. IF APPROVED, A FIRE WATCH IS REQUIRED.

9. THE CONTRACTOR SHALL PROVIDE ADEQUATE WATER TRUCKS TO CONTROL DUST IN THE PROJECT WORK AREA, STAGING AND STORAGE AREA, HAUL ROUTES, BORROW SITES, WASTE SITE, AT ALL TIMES DURING THE PROJECT DURATION. PROVISIONS SHALL BE MADE TO CONTROL DUST DURING NON-WORK PERIODS.

20. NO LIP EXCEEDING 3 INCHES MAY BE LEFT AT PAVEMENT EDGE WITHIN SAFETY AREAS.

1. NO STORAGE OF EQUIPMENT OR STOCKPILING OF MATERIALS IN OFA IS ALLOWED DURING THIS PROJECT.
2. AT THE END OF THE WORK DAY, CLOSE AND COMPACT ANY OPEN TRENCHES.
3. THE AIRPORT NAVIGATIONAL AIDS (NAVAIDS), WILL REMAIN OPERATIONAL EXCEPT FOR RUNWAY CLOSURE TIMES.

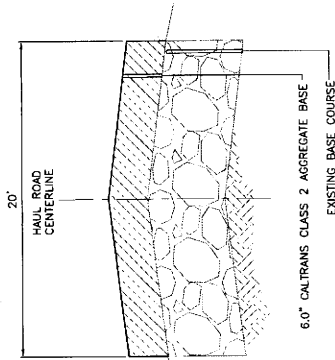


TEMPORARY RUNWAY AND TAXIWAY CLOSURE MARKINGS

SCALE: NOT TO SCALE

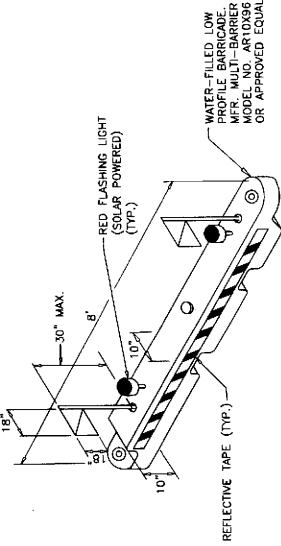
**TEMPORARY RUNWAY AND TAXIWAY
CLOSURE MARKING NOTES:**

1. TEMPORARY RUNWAY AND TAXIWAY CLOSURE MARKINGS MAY BE CONSTRUCTED OF COLORED LAYERED PAINTED SNOW FENCE, COLORED PLASTIC OR OTHER MATERIALS APPROVED BY THE ENGINEER.
2. TEMPORARY RUNWAY AND TAXIWAY CLOSURE MARKINGS MUST BE PROPERLY CONFIGURED AND SECURED TO PREVENT MOVEMENT BY PROP WASH, JET BLAST, OR OTHER WIND CURRENTS UP TO 110 MPH.
3. CONTRACTOR MAY ALSO USE PREFABRICATED CLOSURE MARKINGS SUCH AS NEUBERT MARKINGS OR APPROVED EQUIVALENT.



HAUL ROUTE ROAD

SCALE: NOT TO SCALE

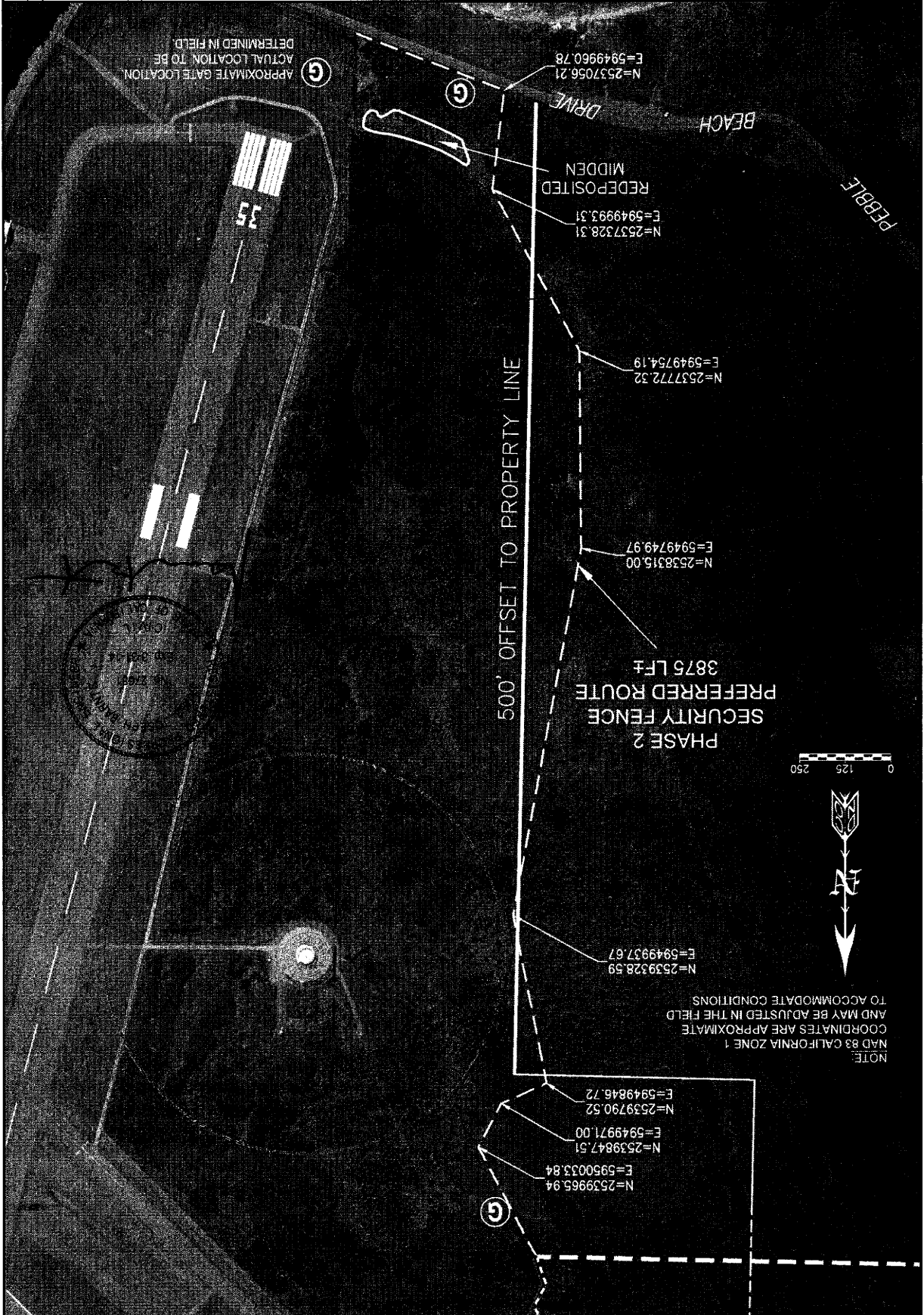


BARRICADE NOTES:

1. BARRICADES SHALL BE SPACED 8' MAXIMUM SEPARATION, OR AS INSTRUCTED BY THE ENGINEER AND AIRPORT MANAGER.
2. INSTALL WHERE INDICATED ON PHASING PLANS OR IN LOCATIONS APPROVED BY THE ENGINEER AND AIRPORT MANAGER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING, MOVING, LIGHTING AND MAINTAINING THE BARRICADES DURING CONSTRUCTION OF THE ENTIRE PROJECT. BARRICADE LINES MUST BE MAINTAINED AT ALL TIMES.
4. THE BARRICADES SHALL BE WEIGHTED AGAINST JET BLAST AND CAPABLE OF WITHSTANDING UP TO 110 M.P.H. WIND FORCES.
5. INSTALL A MINIMUM OF 2 RED FLASHING LIGHTS EQUALLY SPACED PER EACH 8' LONG BARRICADE.
6. A MINIMUM OF 2 FLARES NO MORE THAN 18" SQUARE MOUNTED TO THE BARRICADE AND NO MORE THAN 30" HIGH SHALL BE AFFIXED FOR EACH SPAN OF BARRICADES. FLARES SHALL BE AVIATION ORANGE (FED-STD-593, NO. 12197).
7. ALL BARRICADES SHALL BE LOCATED AT THE TAXIWAY OBJECT FREE AREA LIMIT OF OPERATIONAL ADJACENT TAXIWAY, OR AT TRSA.
8. BARRICADES MUST MEET CURRENT FAA ADVISORY CIRCULAR 150/5370-2E.
9. LOW-PROFILE BARRICADE INSTALLATION NOTES APPLY TO BARRICADE SET-UPS FOR BOTH NIGHTLY AND 24-HOUR APPLICATIONS.

3 TYPICAL BARRICADE DETAIL

6-105, SCALE: NOT TO SCALE



PHASE 2
SECURITY FENCE
AT
JACK McNAMARA FIELD
AIRPORT

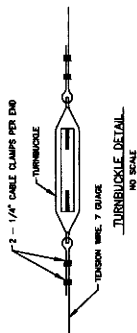


Approved by:
Airport Authority Board
David Nisgen, Chairperson

Approved by:
James D. Bernard
Airport Director

Drawn by:
Louchelet
Project
Number:

Date:
June 18, 2009



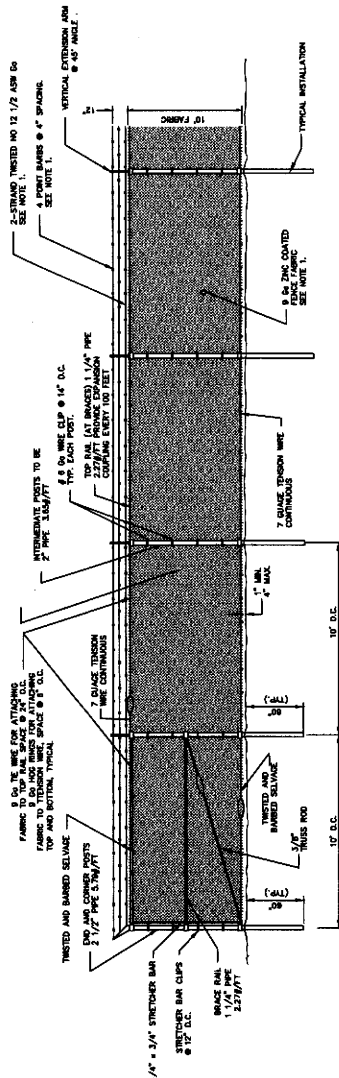
FENCE MEMBER DIMENSIONS			
PIPE SIZE DESCRIPTION	OUTSIDE DIA. INCHES	THICKNESS INCHES	USE
2 1/2"	2.875	0.203	CORNER AND END POST
2"	2.375	0.154	LINE POSTS
1 1/4"	1.660	0.140	TOP AND BENCH RAILS

NOTES:

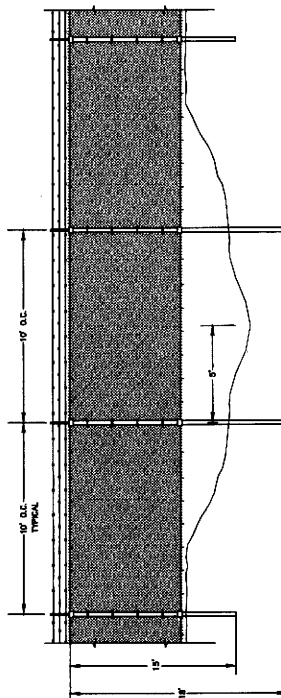
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GENERAL CONSTRUCTION NOTES:

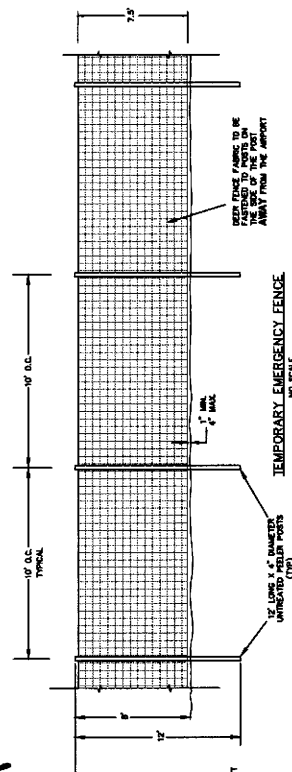
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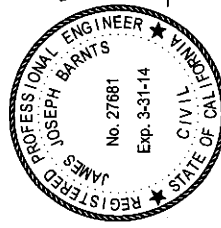
CLASS E-1 CHAIN LINK FENCE DETAIL



TYPICAL DITCH CROSSING



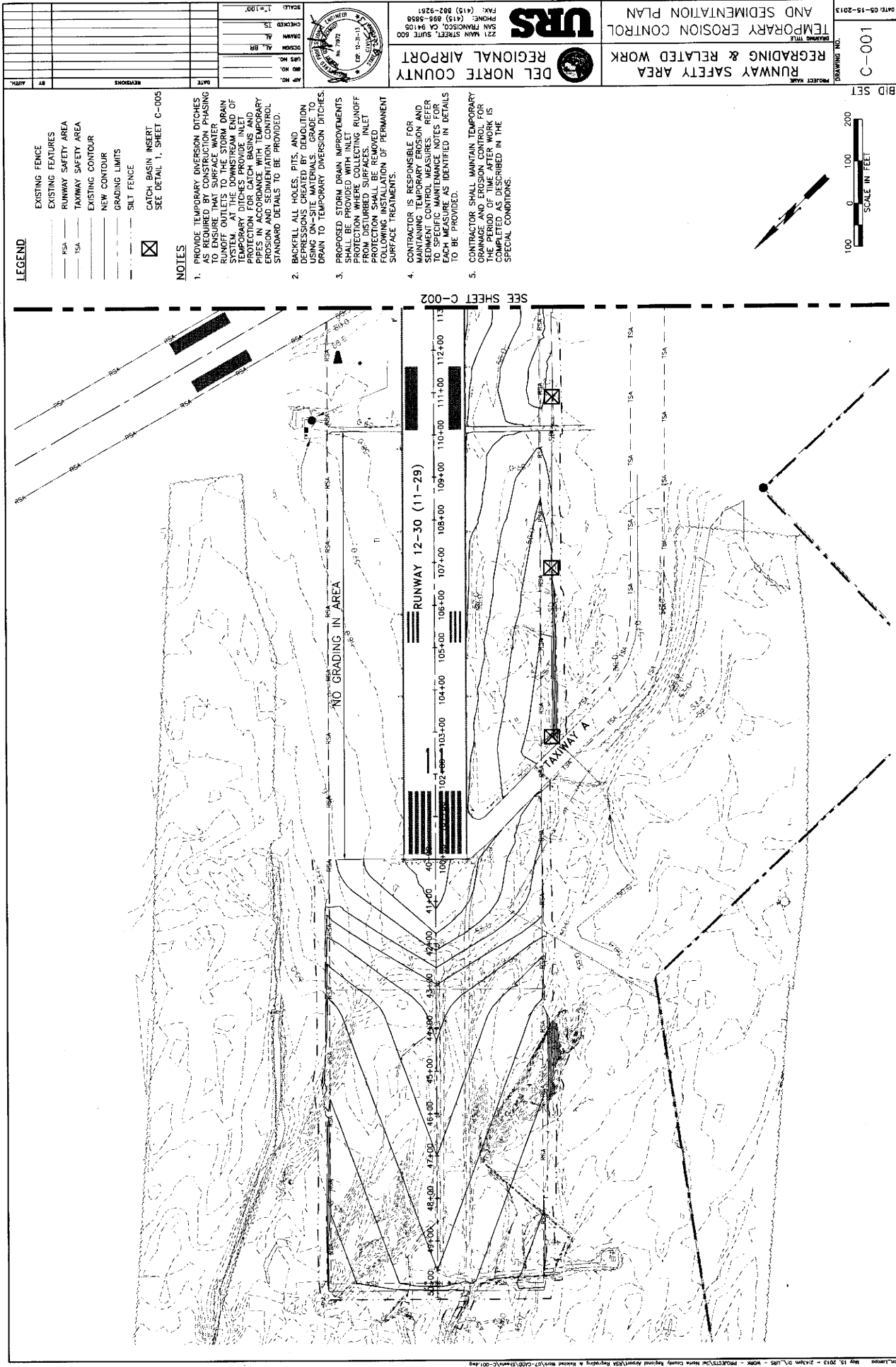
TEMPORARY EMERGENCY FENCE
NO. 80-41 E



[Handwritten signature]

DEER FENCE FABRIC SPECIFICATIONS

DESCRIPTION: BI-ORIENTED NET	
POLYMER: POLYPROPYLENE	
STABILIZER: UV STABILIZER	
COLOR: BLACK	
MESH SIZE: 1.77" X 1.98"	
MESH HEIGHT: 7.5"	
TENSILE STRENGTH*	548
WEARAGE STRENGTH	
WEARAGE STRAIN	
MO - MACHINE DIRECTION	
TO - TRANSVERSE DIRECTION	
* TEST METHOD - ASTM D 4595	



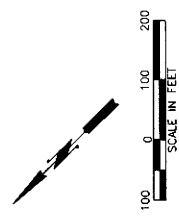
- LEGEND**
- EXISTING FENCE
 - EXISTING FEATURES
 - RUNWAY SAFETY AREA
 - TAXIWAY SAFETY AREA
 - EXISTING CONTOUR
 - NEW CONTOUR
 - GRADING LIMITS
 - SILT FENCE
 - CATCH BASIN INSERT
 - SEE DETAIL 1, SHEET C-005

NOTES

1. PROVIDE TEMPORARY DIVERSION DITCHES AS REQUIRED BY CONSTRUCTION PHASING TO MAINTAIN EXISTING DRAINAGE SYSTEM. RUNOFF OUTLETS TO THE STORM DRAIN SYSTEM. AT THE DOWNSTREAM END OF TEMPORARY DITCHES PROVIDE INLET PROTECTION FOR CATCH BASINS AND PROTECTION FOR EXISTING DRAINAGE BY EROSION AND SEDIMENTATION CONTROL. STANDARD DETAILS TO BE PROVIDED.
2. BACKFILL ALL HOLES, PITS, AND DEPRESSIONS WITH FILL. DEMOLITION USING ON-SITE MATERIALS. GRADE TO DRAIN TO TEMPORARY DIVERSION DITCHES.
3. PROPOSED STORM DRAIN IMPROVEMENTS SHALL BE PROVIDED WITH INLET PROTECTION WHERE COLLECTING RUNOFF FROM DISTURBED SURFACES. INLET PROTECTION SHALL BE REMOVED UPON COMPLETION OF PERMANENT SURFACE TREATMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TEMPORARY DIVERSION DITCHES AND CATCH BASINS. REFER TO SPECIFIC MAINTENANCE NOTES FOR EACH MEASURE AS IDENTIFIED IN DETAILS TO BE PROVIDED.
5. CONTRACTOR SHALL MAINTAIN TEMPORARY DRAINAGE AND EROSION CONTROL FOR THE PERIOD OF TIME AFTER WORK IS COMPLETED AS DESCRIBED IN THE SPECIAL CONDITIONS.

SEE SHEET C-002

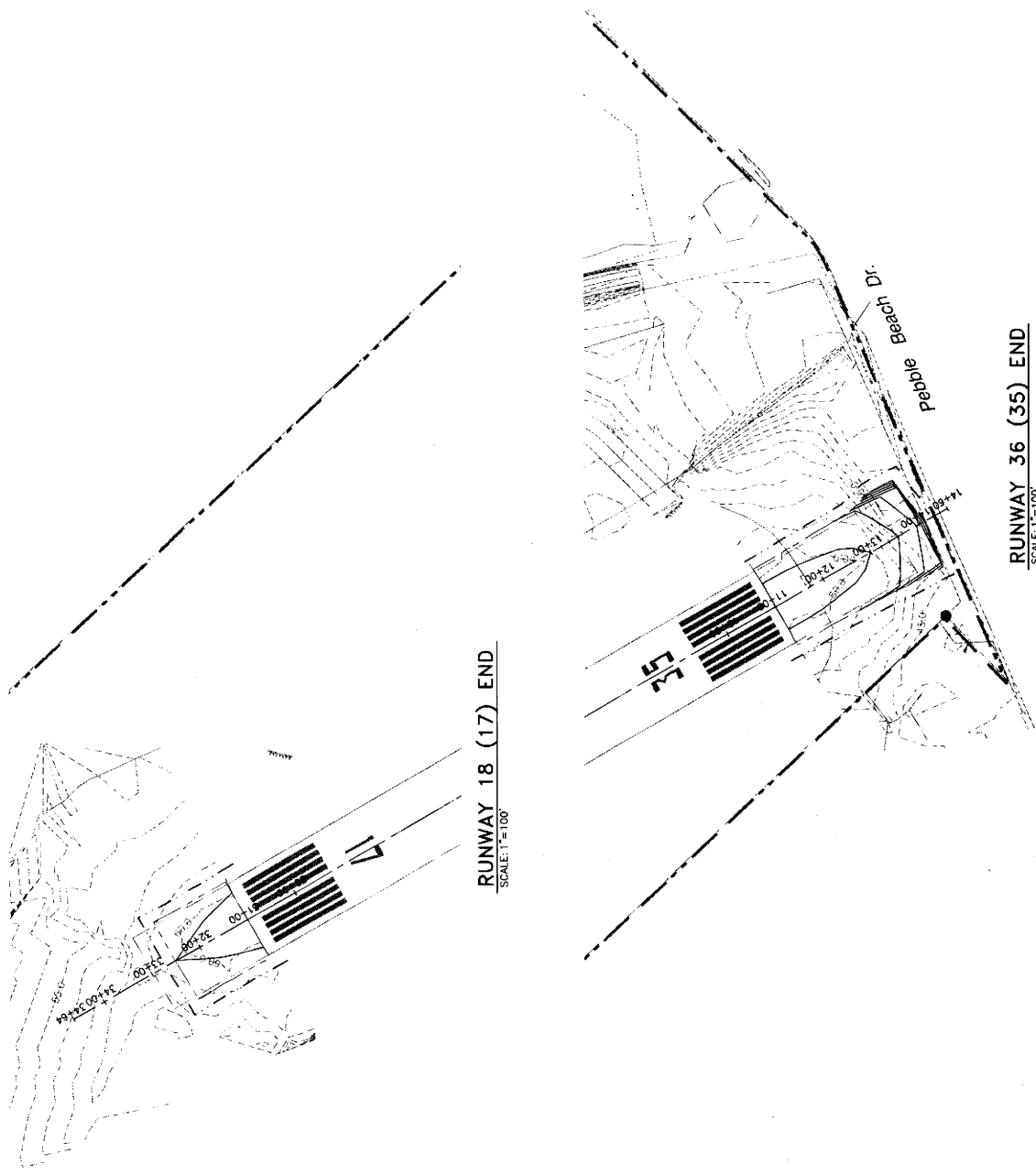
URS 221 MAIN STREET, SUITE 600 DEL NORTE COUNTY PHONE: (415) 882-9261 FAX: (415) 882-9261		DEL NORTE COUNTY REGIONAL AIRPORT 221 MAIN STREET, SUITE 600 DEL NORTE COUNTY, CA 94534 PHONE: (415) 882-9261 FAX: (415) 882-9261	PROJECT NAME RUNWAY SAFETY AREA REGRADING & RELATED WORK AND SEDIMENTATION PLAN	DATE: 05-15-2013 DRAWING NO.: 100-C-001 BID SET
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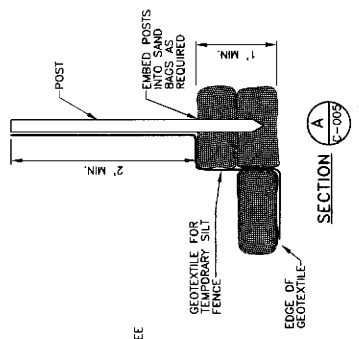
EXISTING FENCE
EXISTING FEATURES
RUNWAY SAFETY AREA
TAXIWAY SAFETY AREA
EXISTING CONTOUR
NEW CONTOUR
GRADING LIMITS
SILT FENCE

1. PROVIDE TEMPORARY DIVERSION DITCHES AS REQUIRED BY CONSTRUCTION PHASING TO ENSURE THAT SURFACE WATER RUNOFF OUTLETS TO THE STORM DRAIN SYSTEM ARE NOT OBSTRUCTED. TEMPORARY DITCHES PROVIDE INLET PROTECTION FOR CATCH BASINS AND PIPES IN ACCORDANCE WITH TEMPORARY EROSION CONTROL MEASURES. ALL STANDARD DETAILS TO BE PROVIDED.
2. BACKFILL ALL HOLES, PITS, AND DEPRESSIONS WITH APPROVED MATERIAL USING ON-SITE MATERIALS GRADE TO DRAIN TO TEMPORARY DIVERSION DITCHES.
3. PROPOSED STORM DRAIN IMPROVEMENTS SHALL BE PROVIDED WITH INLET PROTECTION WHERE COLLECTING RUNOFF FROM DISTURBED SURFACES. INLET PROTECTION SHALL BE REMOVED AFTER FINAL INSTALLATION OF PERMANENT SURFACE TREATMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR MONITORING TO ENSURE THAT TEMPORARY SEDIMENT CONTROL MEASURES REFER TO SPECIFIC MAINTENANCE NOTES FOR EACH MEASURE AS IDENTIFIED IN DETAILS TO BE PROVIDED.
5. CONTRACTOR SHALL MAINTAIN TEMPORARY DRAINAGE AND EROSION CONTROL FOR THE DURATION OF THE PROJECT. THIS IS COMPLETED AS DESCRIBED IN THE SPECIAL CONDITIONS.

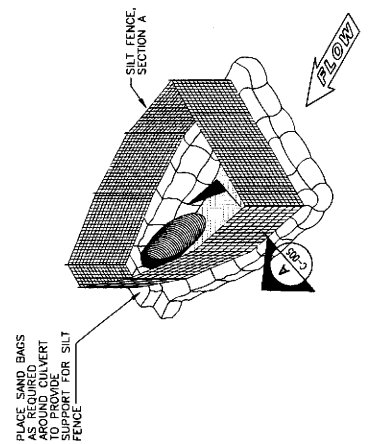


EROSION AND SEDIMENT CONTROL NOTES:

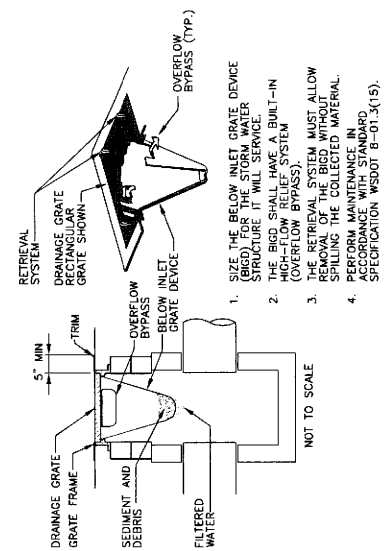
1. APPROVAL OF THIS EROSION AND SEDIMENT CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT PAYMENT OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF FACILITIES, UTILITIES, ETC.).
2. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.
3. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL PERMANENT CONSTRUCTION AS TO BE INSTALLED IN THE TRANSPORT OF SEDIMENT TO SURFACE WATERS. DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
4. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.).
5. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE SITE SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER OPERATION. WHEN REQUIRED, THE ESC FACILITIES SHALL BE REVIEWED BY THE ESC FACILITIES DURING THE WET SEASON (OCT. 1 TO APRIL 30) AND OF MONTHLY REVIEWS DURING THE DRY SEASON (MAY 1 TO SEPT. 30).
6. ANY AREAS OF EXPOSED SOILS, EMBANKMENTS, THAT WILL NOT BE COVERED WITHIN SEVEN DAYS OF CONSTRUCTION SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.). PLASTIC COVERING MAY BE USED ON STOCKPILE AREAS TO MAINTAIN OPTIMUM MOISTURE CONTENT AND PREVENT EROSION AND SEDIMENTATION.
7. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR PRECEDING AND WITHIN FORTY-EIGHT (48) HOURS FOLLOWING A STORM EVENT.
8. AT NO TIME SHALL MORE THAN ONE (1) FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE VACUATED CLEANED PRIOR TO ANYTHING OTHER THAN THE CLEANING OPERATION. SHALL NOT FLUSH SEDIMENT- LADEN WATER INTO THE DOWNSIDE DRAINAGE SYSTEM. ALL LIQUIDS AND SEDIMENTS REMOVED FROM CATCH BASINS AND STORMWATER MANHOLE STRUCTURES SHALL BE TAKEN OFF SITE FOR DISPOSAL.
9. WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2 TO 3 INCHES.
10. ALL SEEDING MUST BE COMPLETED BY SEPTEMBER 10.
11. COVER MEASURES WILL BE APPLIED IN CONFORMANCE WITH APPENDIX D OF THE 2005 DEPARTMENT OF ECOLOGY SURFACE WATER DESIGN MANUAL.
12. NO CONSTRUCTION OR SITE DISTURBANCE FOR THIS PROJECT MAY BEGIN BEFORE THE CONTRACTOR FIRST OBTAINS A CONSTRUCTION DISTURBANCE PERMIT FROM THE WASHINGTON STATE DEPARTMENT OF ECOLOGY (DOE).
13. GEOTEXTILE SHALL BE CUT FROM A CONTINUOUS ROLL TO PREVENT SEAMS. IF SEAMS ARE NECESSARY THEY WILL BE OVERLAPPED TO THE NEXT POST.
14. SILT FENCE GEOTEXTILE SHALL BE EMBEDDED 0.5' INTO SANDBAGS AND BACKFILLED WITH SANDBAGS PER DETAIL 2. GEOTEXTILE SHALL BE EMBEDDED 0.5' INTO THE FRAME. THE COST FOR INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR ITEM.
15. NEW STORM DRAIN INLETS WITHIN THE PROJECT AREA SHALL BE PROTECTED WITH INLET PROTECTION.



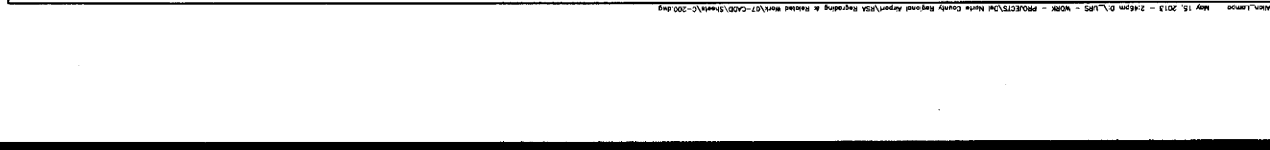
2. PIPE INLET PROTECTION - SILT FENCE
SCALE: NOT TO SCALE
C-005

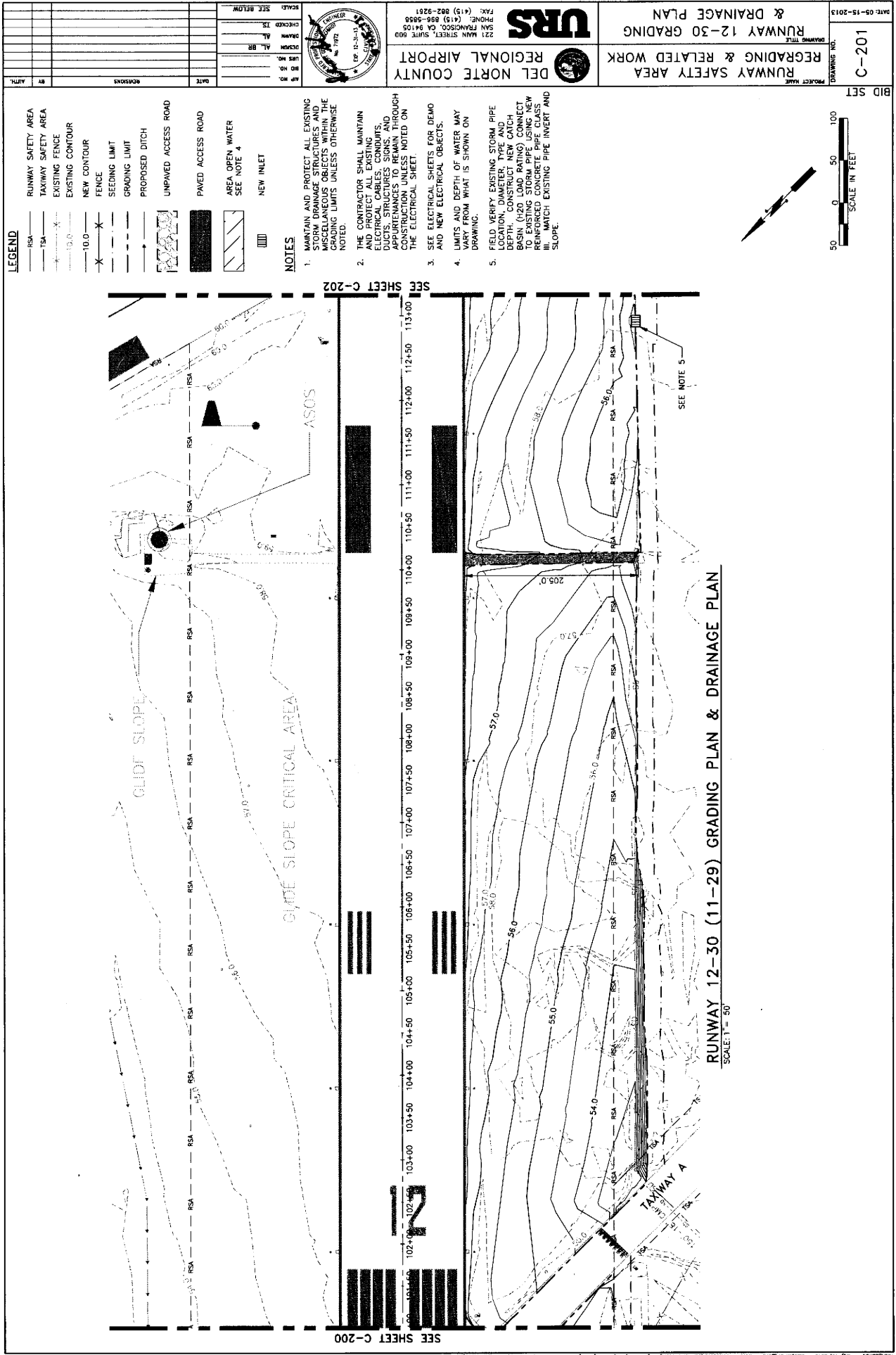


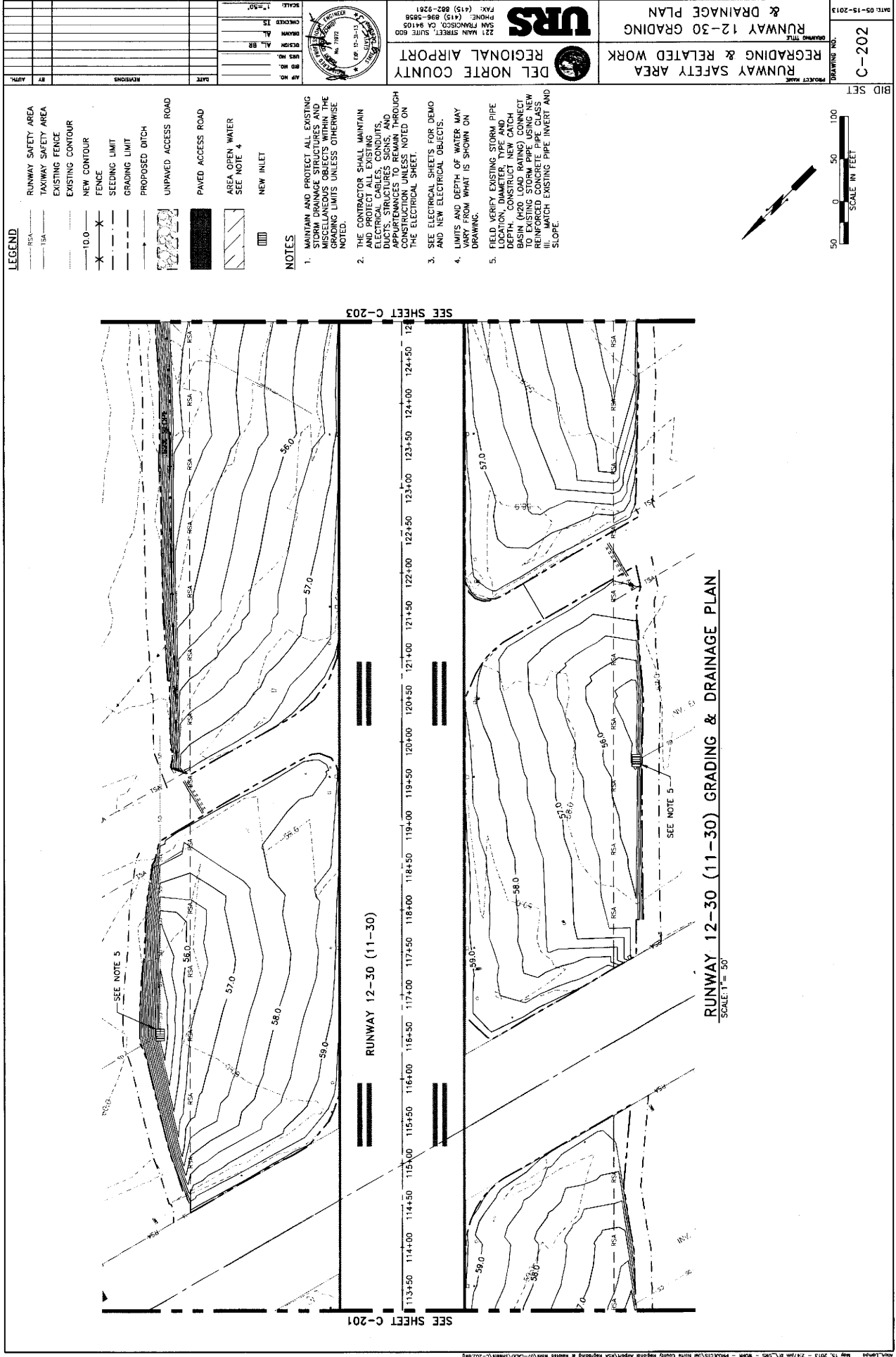
1. TEMPORARY INLET PROTECTION DETAIL
SCALE: NOT TO SCALE
C-005

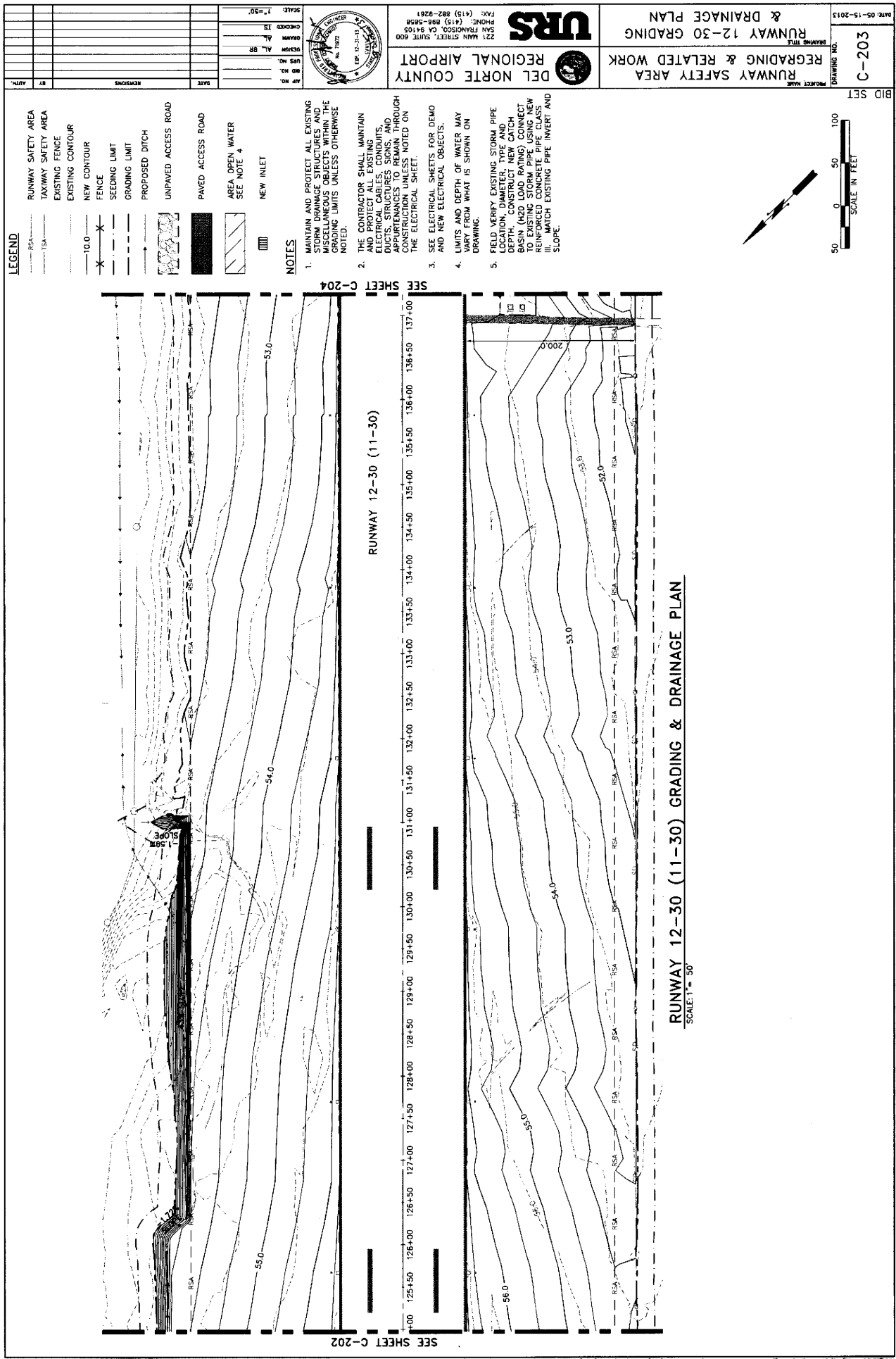


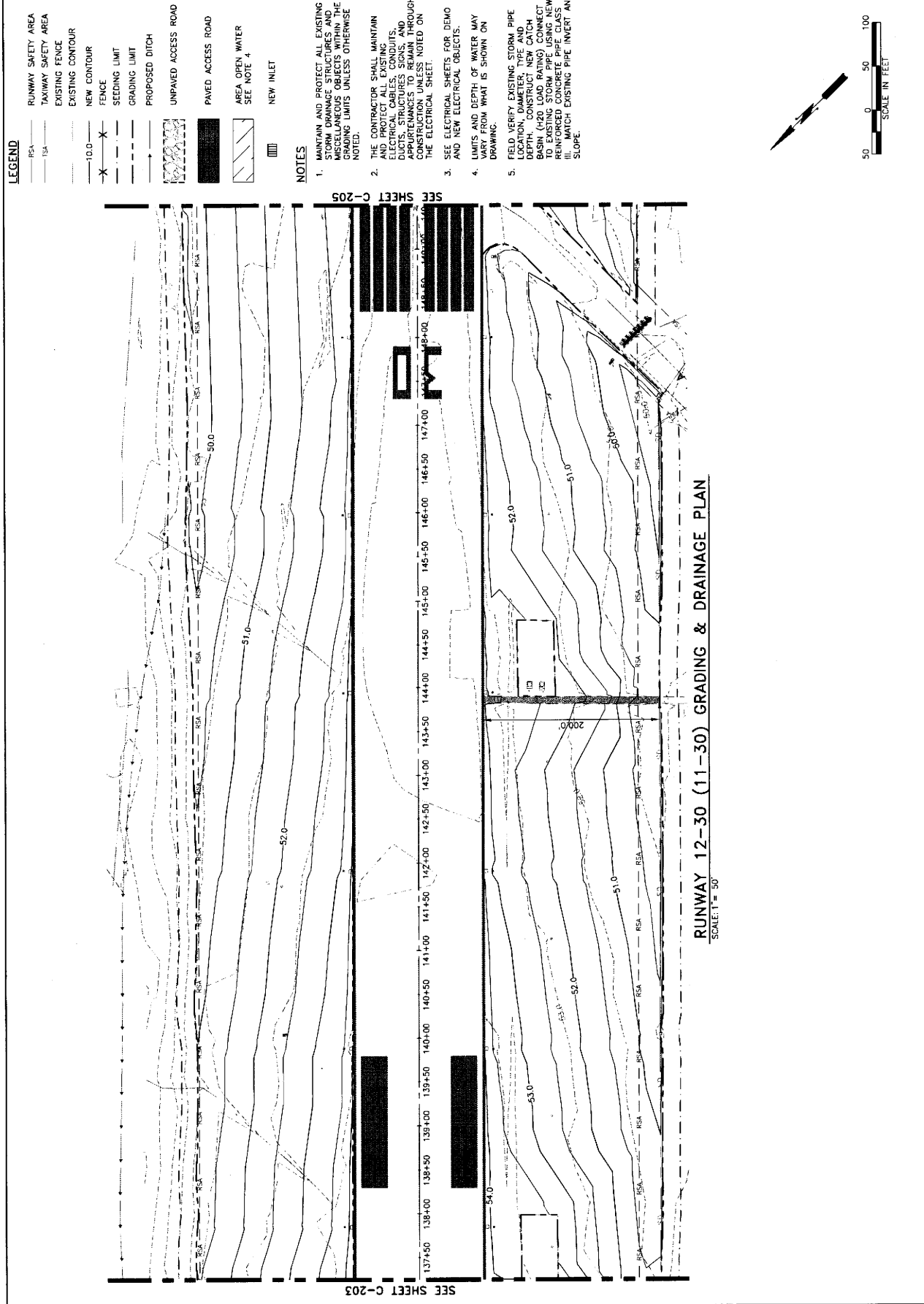
1. SIZE THE BELOW INLET GRATE DEVICE (BIGD) FOR THE STORM WATER STRUCTURE IT WILL SERVICE.
2. THE BIGD SHALL HAVE A BUILT-IN RETRIEVAL SYSTEM (OVERFLOW BYPASS).
3. THE RETRIEVAL SYSTEM MUST ALLOW REMOVAL OF THE BIGD WITHOUT SPILLING OF THE COLLECTED MATERIAL.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STANDARD SPECIFICATION WSDOT 8-01.3(15).

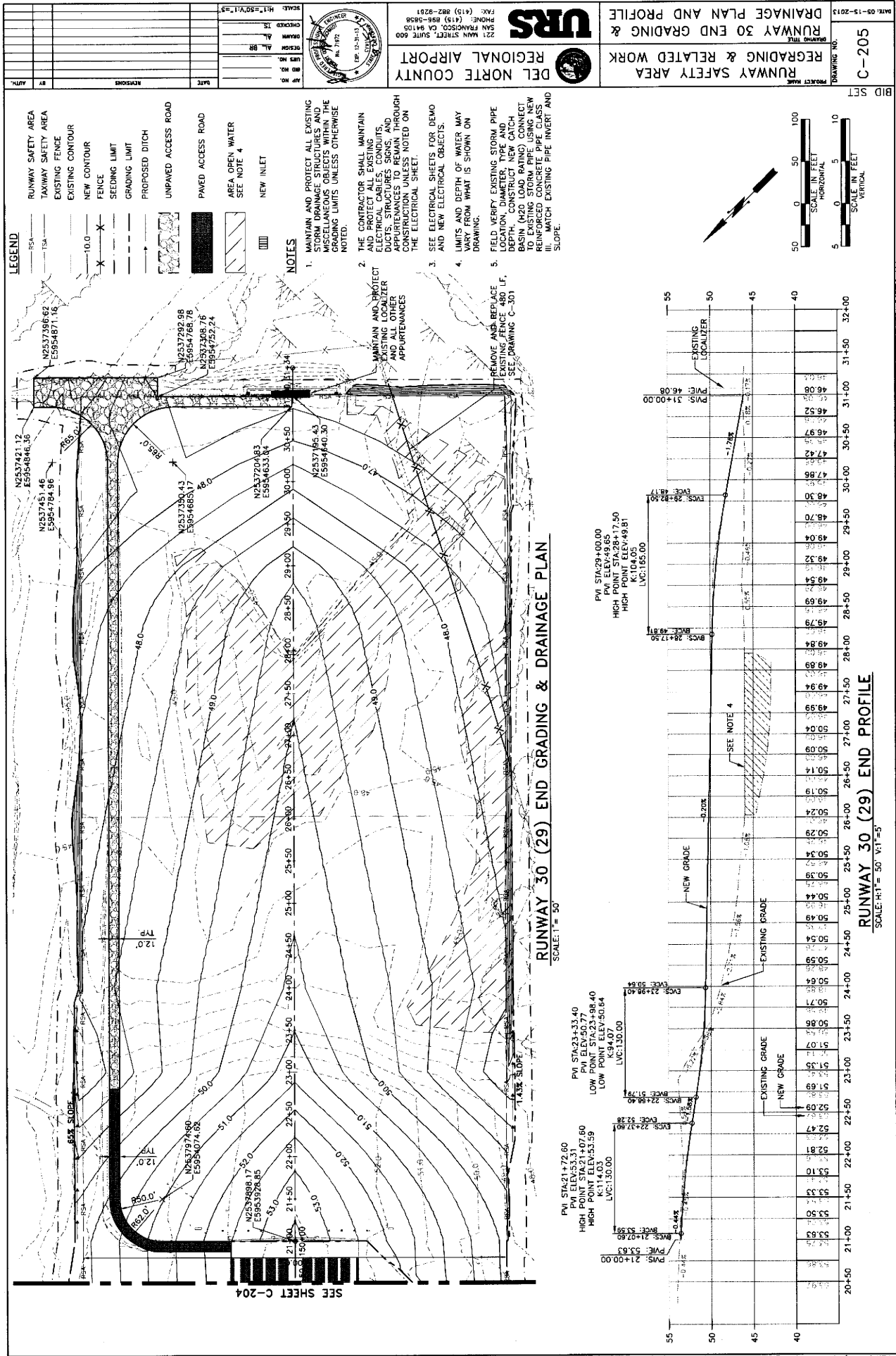


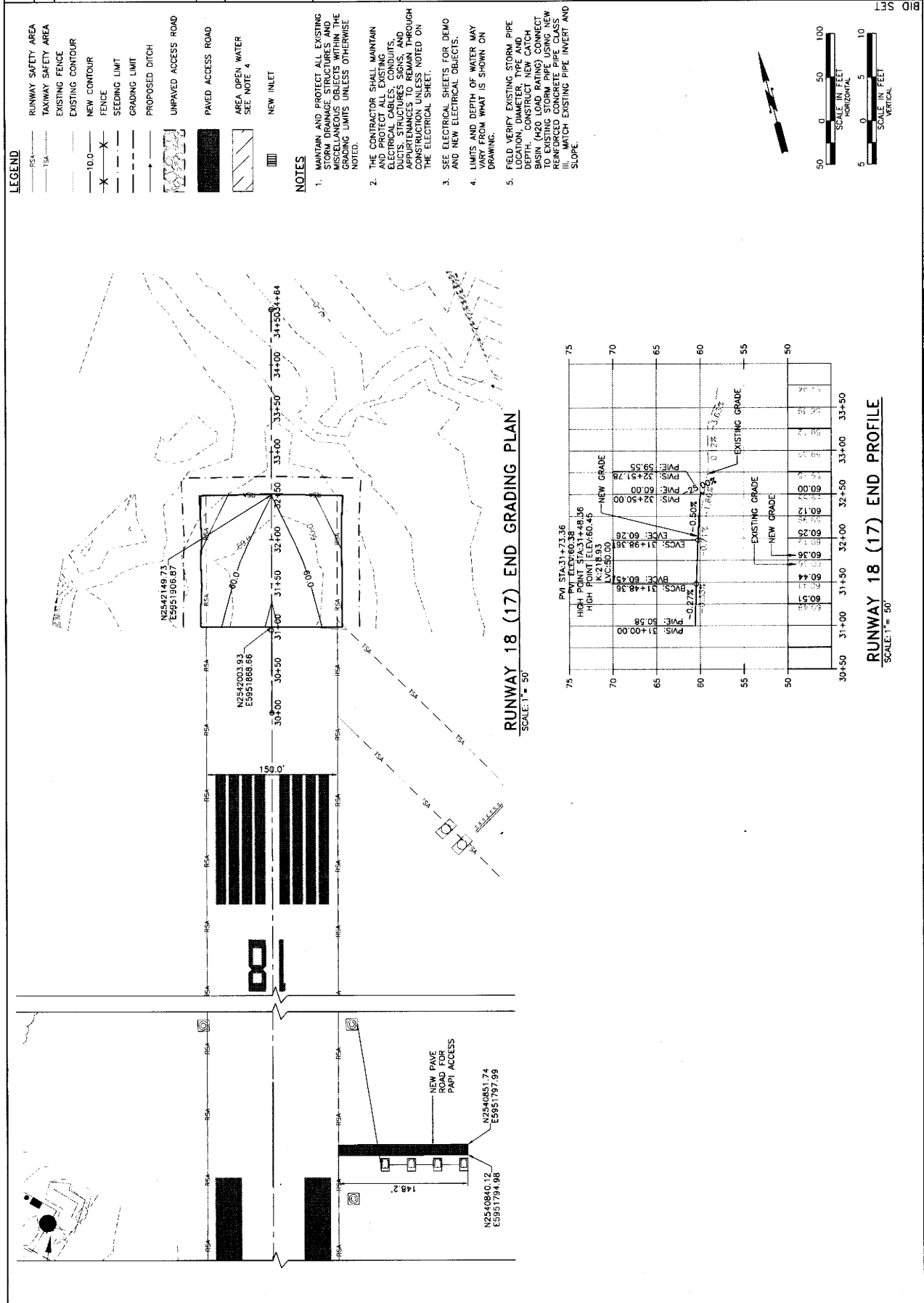












12' EXISTING ROAD

EXISTING GROUND

3" CALTRANS 1/2-INCH HOT MIX ASPHALT TYPE B

PREPARED SUBGRADE (9-15/2)

1 TYPICAL CUT AND FILL SECTIONS
C-300 SCALE: NOT TO SCALE

2 NEW PAVED ACCESS ROAD
C-300 SCALE: NOT TO SCALE

3 NEW UNPAVED ACCESS ROAD
C-300 SCALE: NOT TO SCALE

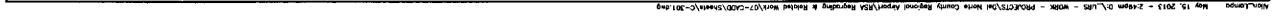
12'

MATCH EXISTING SLOPE

12.0" CALTRANS CLASS 2
AGGREGATE BASE

CALTRANS FILTER FABRIC AND
CALTRANS GEOTECHNICAL
SUBSURFACE REINFORCEMENT
(IN POOR SUBGRADE AREAS ONLY)
AT DIRECTION OF ENGINEER

PREPARED SUBGRADE (p-152)



DATE: 05-15-2013
DRAWING NO. C-500

PROJECT NAME
RUNWAY SAFETY AREA
REGRAVING & RELATED WORK
CROSS SECTIONS

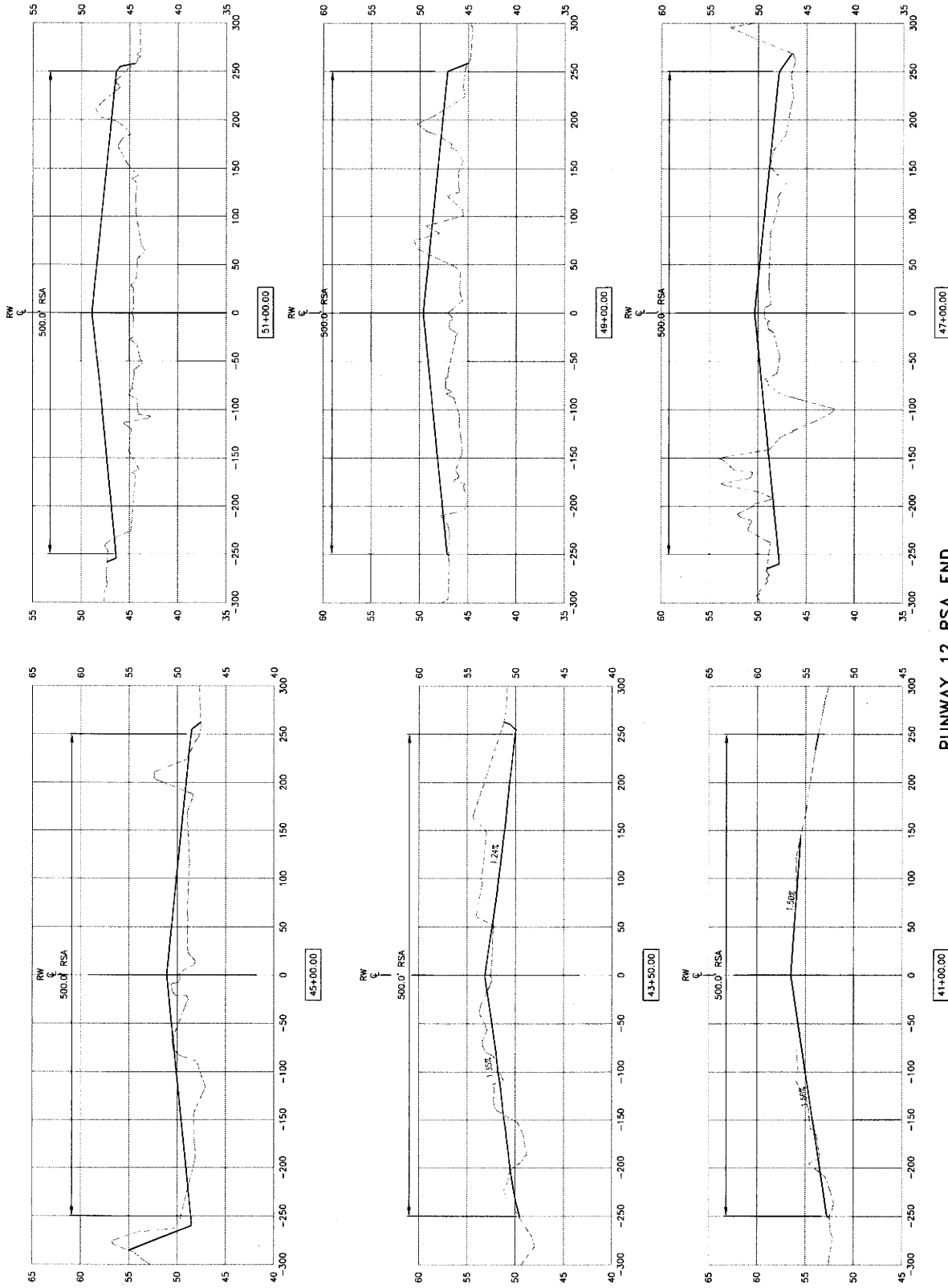
DEL NORTE COUNTY
REGIONAL AIRPORT
221 MAIN STREET, SUITE 600
SAN FRANCISCO, CA 94105
PHONE: (415) 686-5656
FAX: (415) 682-9281

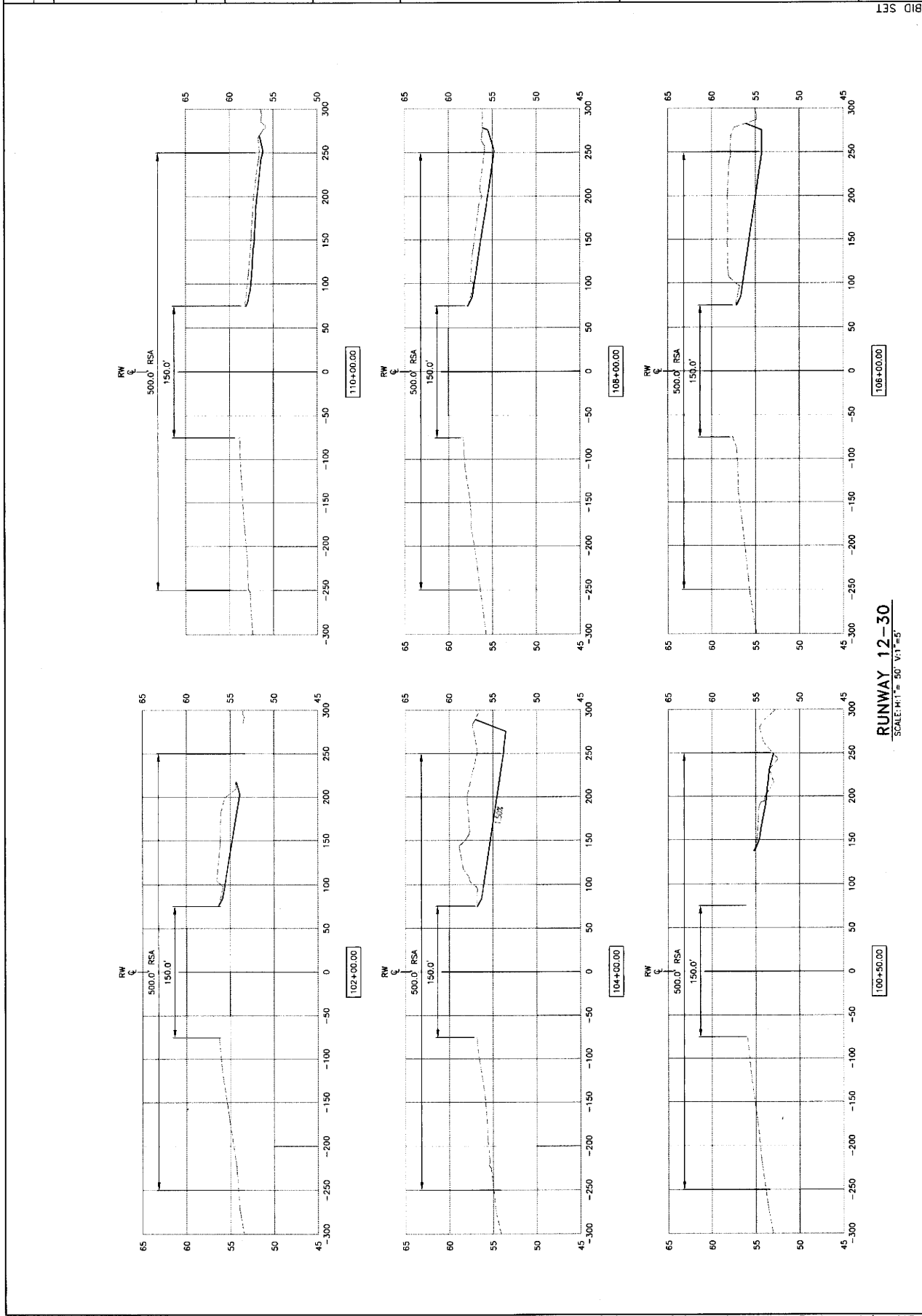


SCALE: H=1"=30' V=1"=5'
CHECKED: JS
DESIGN: AL, JR
DATE: _____
BY: _____
DATE: _____

REVISIONS	DATE	BY	APPV.

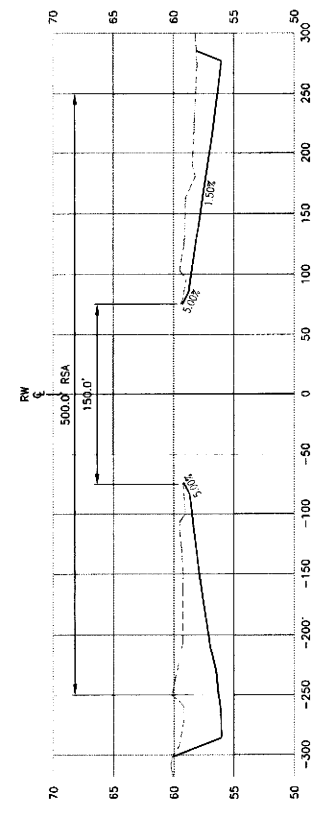
RUNWAY 12 RSA END
SCALE: H=1"=30' V=1"=5'



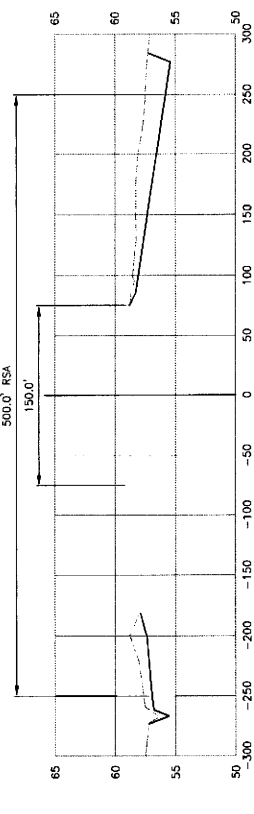




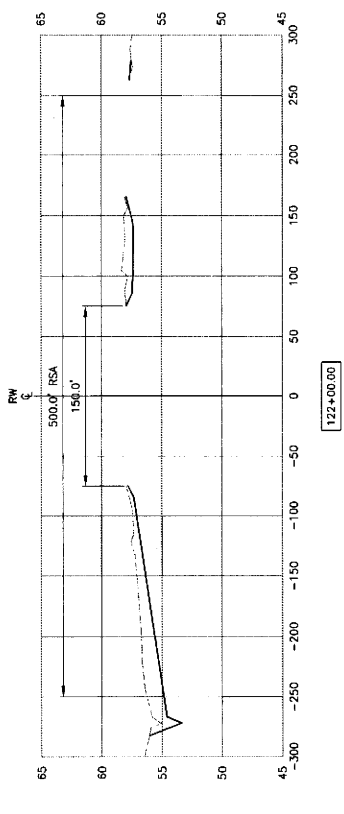
RUNWAY 12-30
SCALE: H:1"=50' V:1"=5'



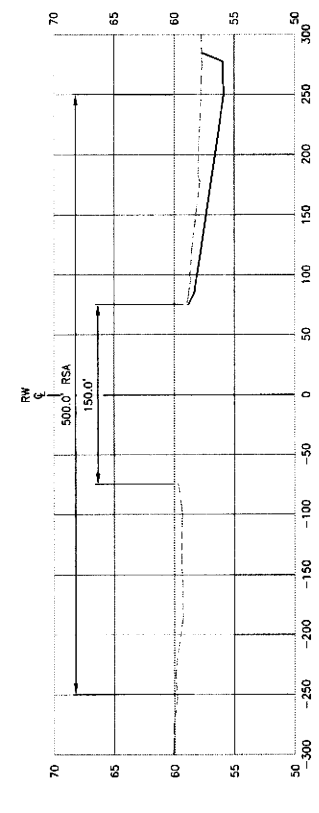
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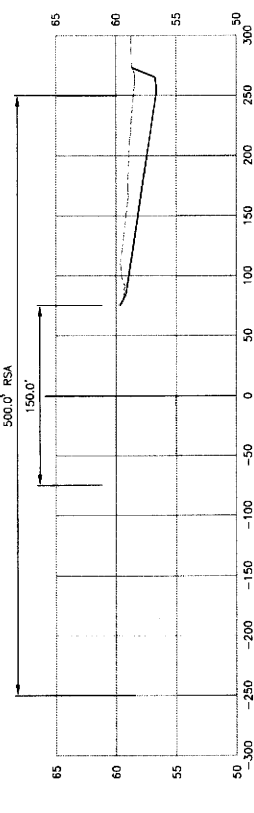
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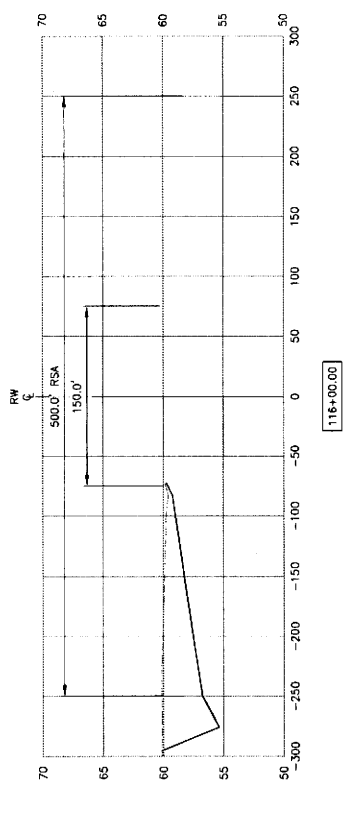
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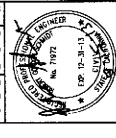
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1114+00.00

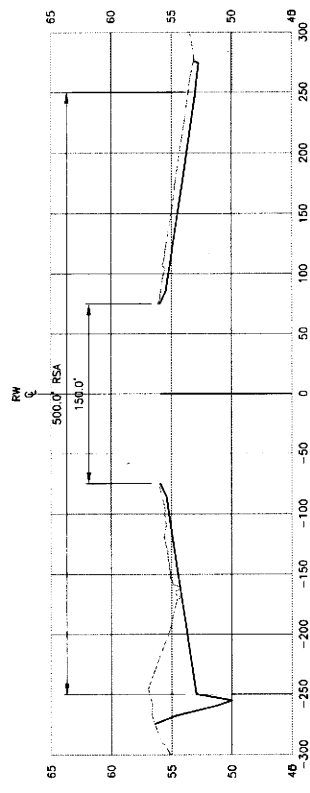


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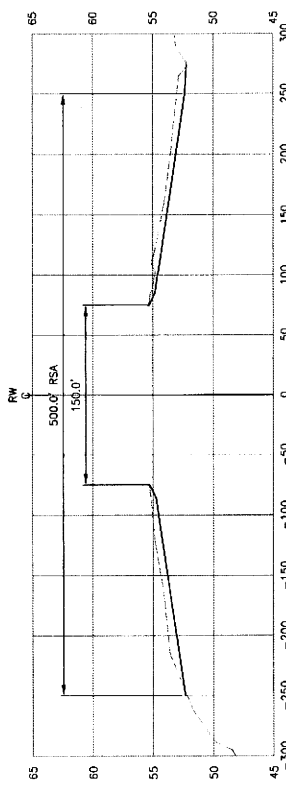


AP NO.	
BO NO.	
URS NO.	
DATE	
BY	
TITLE	

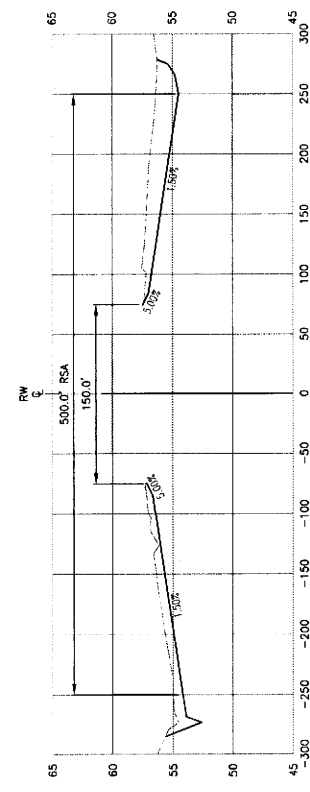
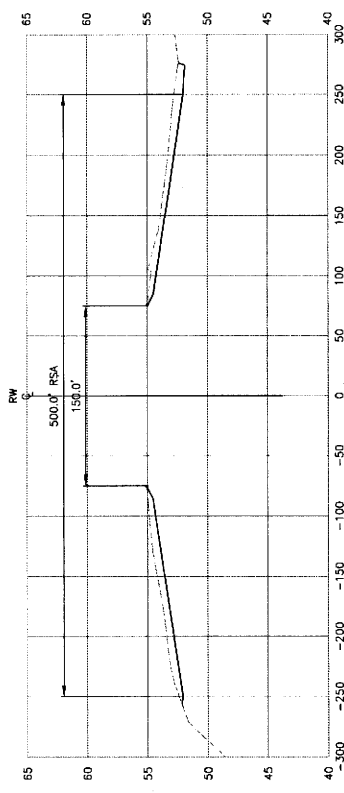
RUNWAY 12-30
SCALE: H=1"=50' V=1"=5'



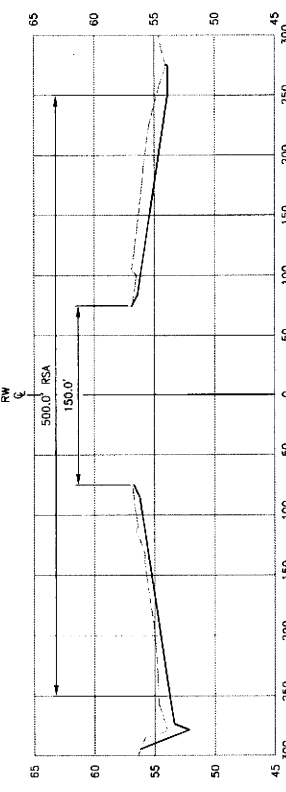
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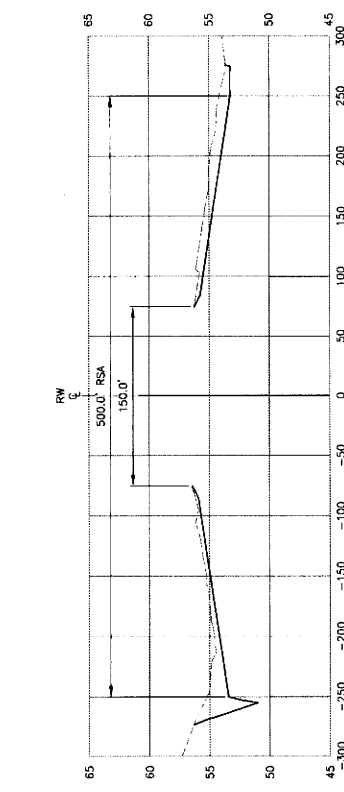
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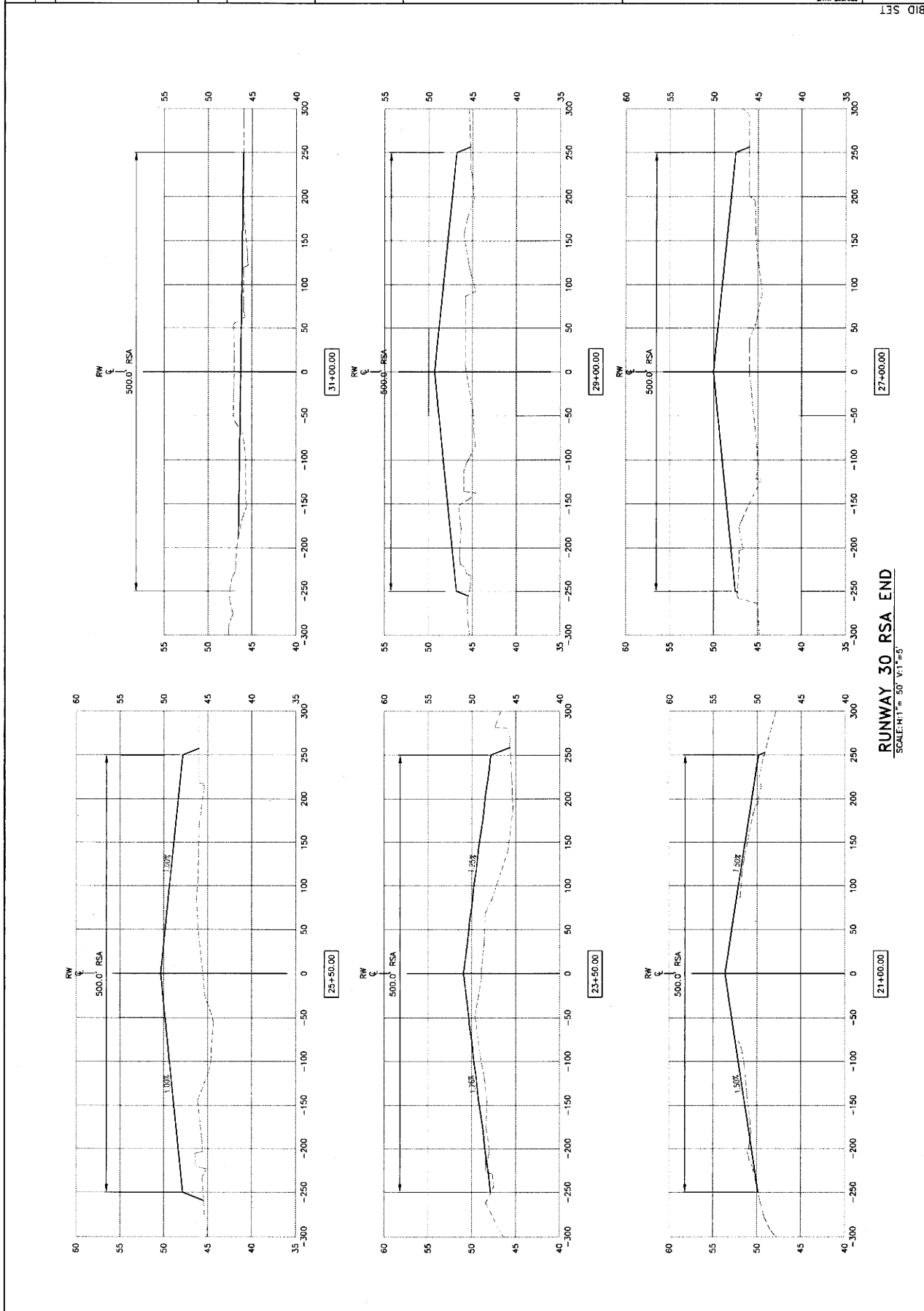


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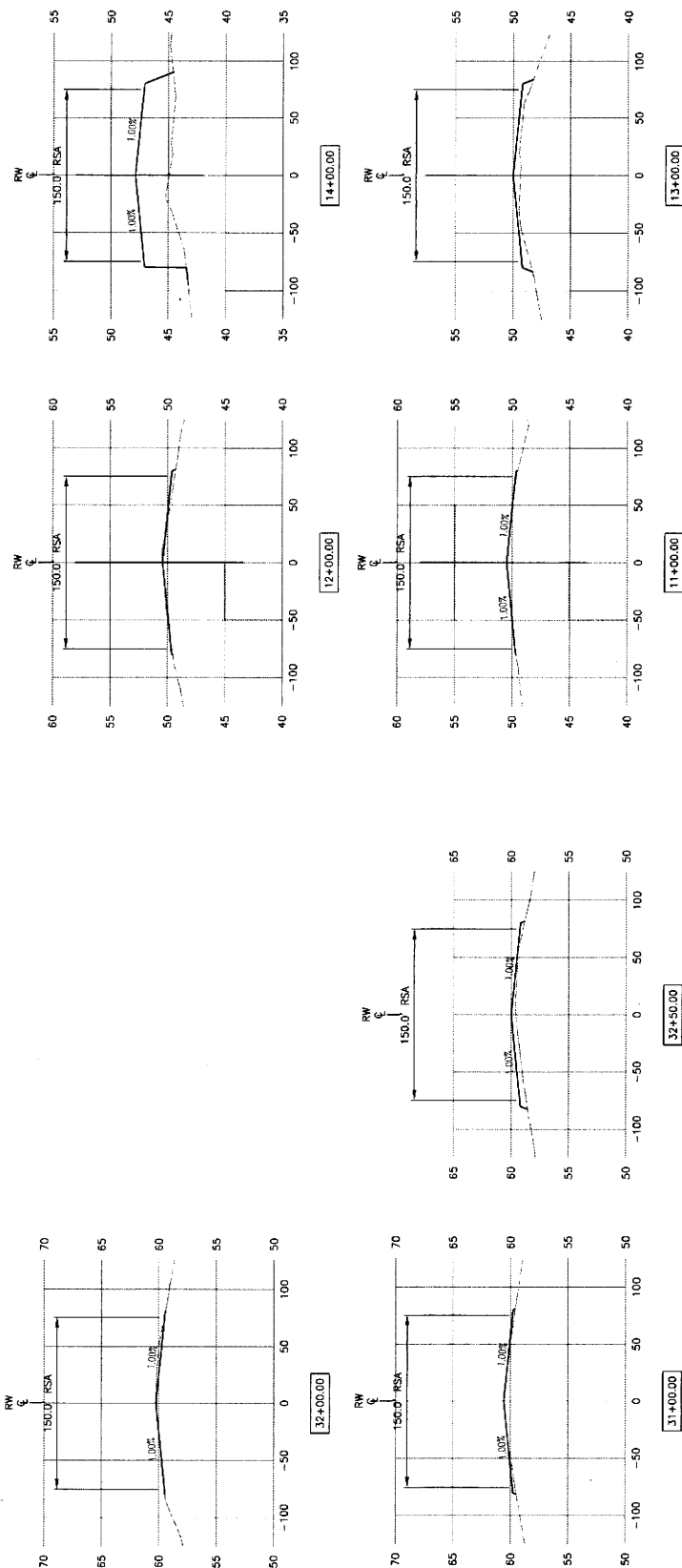


128+00.00





RUNWAY 30 RSA END
SCALE: H = 50' V = 5'



RUNWAY 36 RSA END
SCALE: H:1" = 50' V:1" = 5'

RUNWAY 18 RSA END
SCALE: H:1"= 50' V:1"=5'

DEL NORTE COUNTY REGIONAL AIRPORT, JACK MCNAMARA FIELD (CEC)

RUNWAY SAFETY AREA REGRADING AND RELATED WORK EROSION AND SEDIMENT CONTROL PLANS

EXHIBIT NO. 6
APPLICATION NO.
1-13-009 (Border Coast
Regional Airport Authority)
EROSION & SEDIMENT
CONTROL PLANS (1 of 7)

MAY 2013

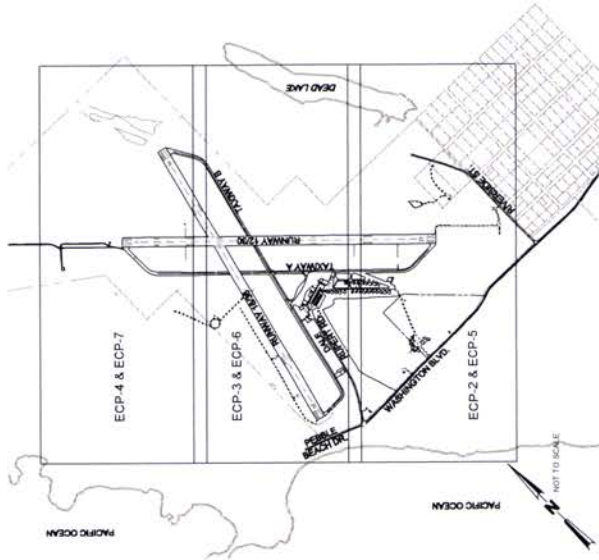
PREPARED BY



LOCATION MAP



LOCATION MAP



SHEET INDEX

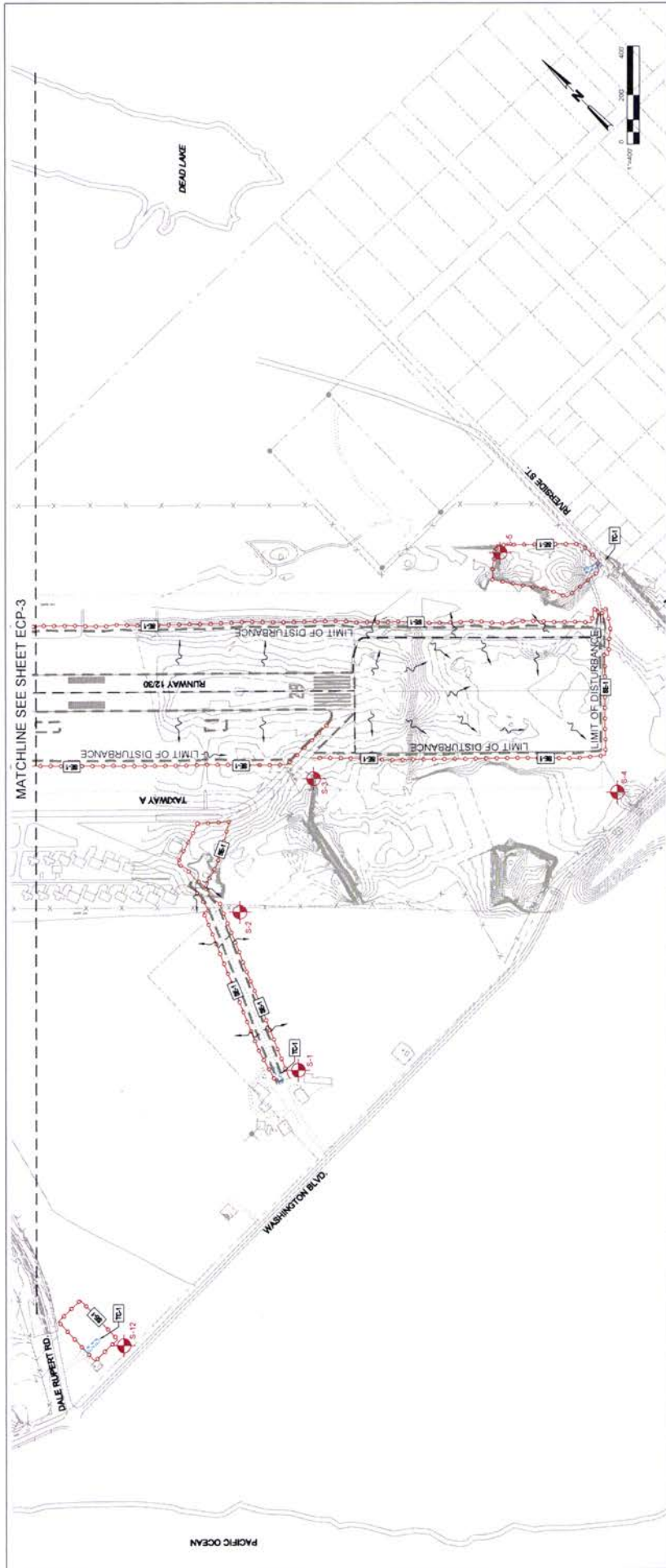
SHEET NO.	DRAWING DESIGNATION	DESCRIPTION
1	ECP-1	COVER SHEET
2	ECP-2	GRADING AND UTILITIES SITE MAP
3	ECP-3	GRADING AND UTILITIES SITE MAP
4	ECP-4	GRADING AND UTILITIES SITE MAP
5	ECP-5	PAVING AND FINAL STABILIZATION SITE MAP
6	ECP-6	PAVING AND FINAL STABILIZATION SITE MAP
7	ECP-7	PAVING AND FINAL STABILIZATION SITE MAP

FOR REVIEW ONLY			
Rev.	Description	Discipline	Date

Drawn	TMD	Design	TMD
Checked	JH	Design	JH
Approved	JH	Design	JH
Scale	AS SHOWN	Scale	AS SHOWN

7141 New Street, Suite 200, San Francisco, CA 94115 USA
P: 415.774.4400 F: 415.774.4401
www.ghd.com

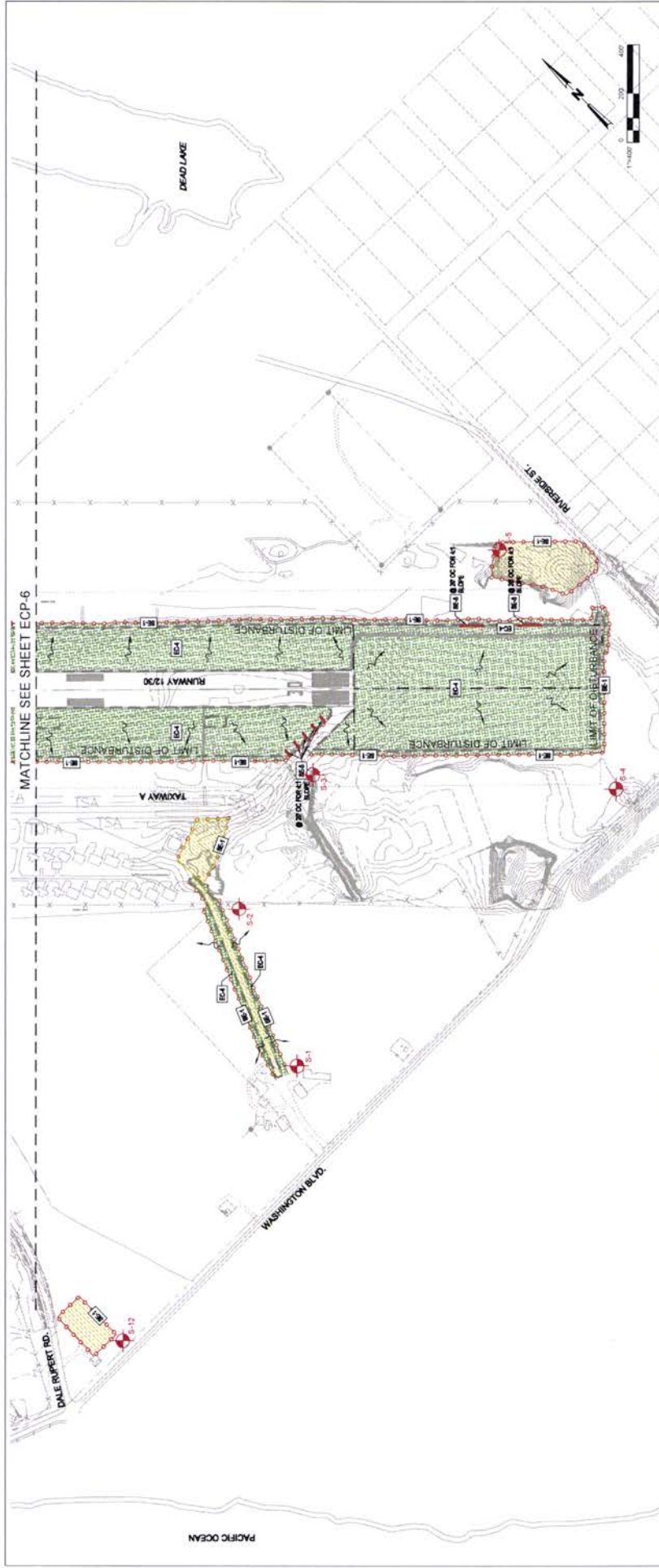
Client	BORDER COAST REGIONAL AIRPORT AUTHORITY (BCRAA)
Project	RUNWAY SAFETY AREA REGRADING AND RELATED WORK
Title	EROSION AND SEDIMENT CONTROL PLAN
Contract No.	8410135
Sheet No.	6
Drawn By	JH
Checked By	JH
Approved By	JH
Scale	AS SHOWN



GENERAL NOTES	LEGEND	BMP KEY	BMP DESCRIPTION
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BORDER COAST REGIONAL AIRPORT AUTHORITY (BCRAA)	RUNWAY SAFETY AREA REGRADING AND RELATED WORK	GRADING AND UTILITIES SITE PLAN
<p>Contract No. 8410135</p> <p>Project No. 8410135</p> <p>Sheet No. 2 of 2</p>	<p>Contract No. 8410135</p> <p>Project No. 8410135</p> <p>Sheet No. 2 of 2</p>	<p>Contract No. 8410135</p> <p>Project No. 8410135</p> <p>Sheet No. 2 of 2</p>

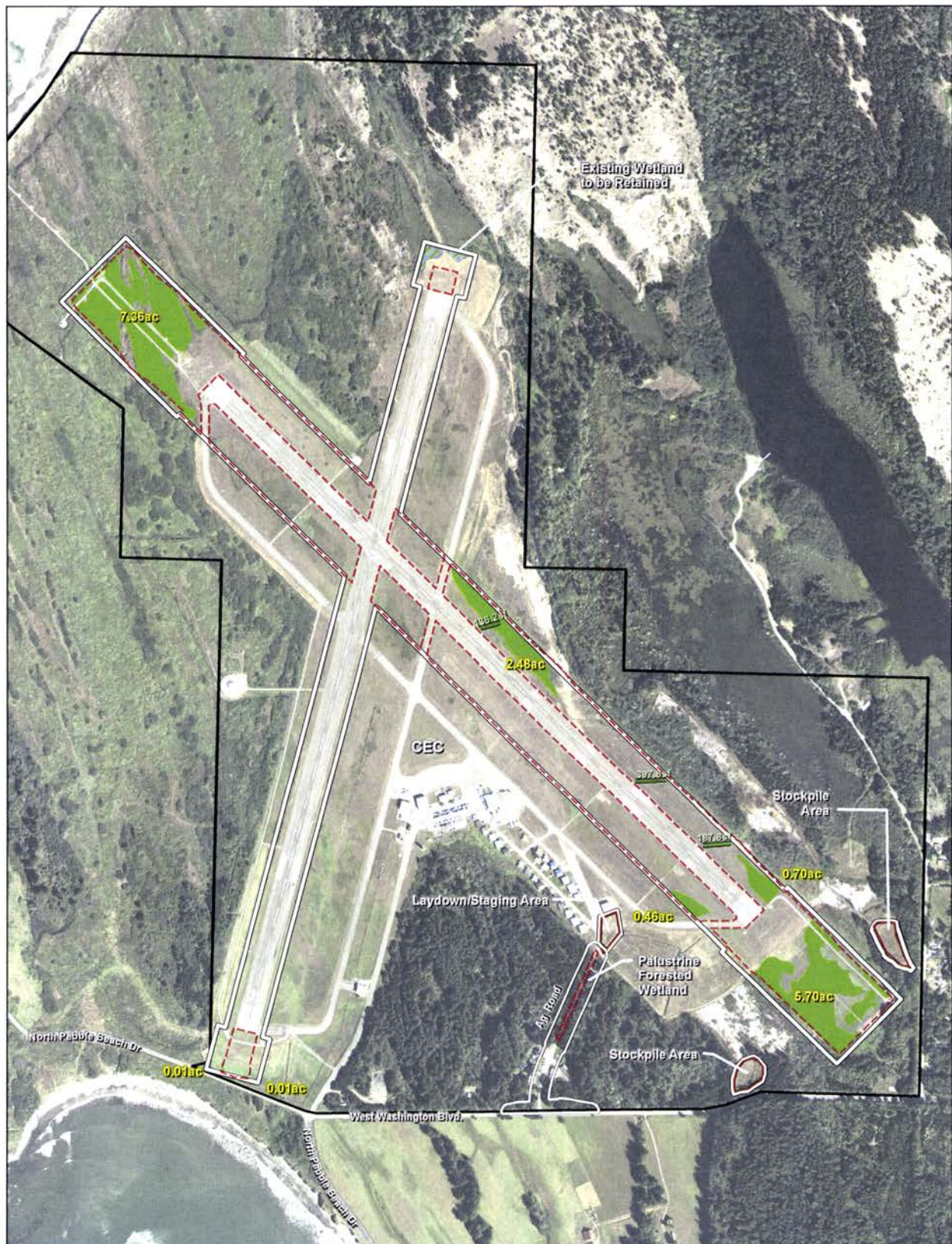


GENERAL NOTES	LEGEND	BMP KEY
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1. Initial design and construction of the project.		2. Final design and construction of the project.	
3. Final design and construction of the project.		4. Final design and construction of the project.	

Designer: TMD Checker: JW Date: 10/10/2023	Designer: TMD Checker: JW Date: 10/10/2023
Scale: AS SHOWN Project: 8410135 Drawing No: ECP-5	Project: 8410135 Drawing No: ECP-5

GHD Inc.
 110 West Street, Suite 200, Cambridge, MA 02142
 Phone: 617.444.4300
 Fax: 617.444.4301
 Email: info@ghd.com



RSA

- Project Study Area (128.6 acres)
- Project Impacts Footprint
- Wetlands to be Retained

- Palustrine Emergent Wetland (16.73 acres)
- Drainage Channels (722 sqft; 0.016 acres)

Wetland Impacts Ag Road

- Palustrine Forested Wetland (131 sqft; 0.003 acres)

Paper Size 11" x 17" (ANSI B)
 0 150 300 600 900 1,200
 Feet
 Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California 1 FIPS 5401 Feet



Border Coast Regional Airport Authority
 RSA Improvement Project

CCC and USACE
 Wetland Impacts

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EXHIBIT NO. 7

APPLICATION NO.

1-13-009 (Border Coast
 Regional Airport Authority)

WETLAND & ESHA IMPACTS
 (1 of 4)



- Project Study Area
- Project Impacts Footprint
- Staging/Stockpile Areas
- Airport Boundary
- ★ Sand dune phacelia (50 total square feet)
- Del Norte buckwheat (1,044 total square feet)
- Short-leaved avax (11,271 total square feet)

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 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

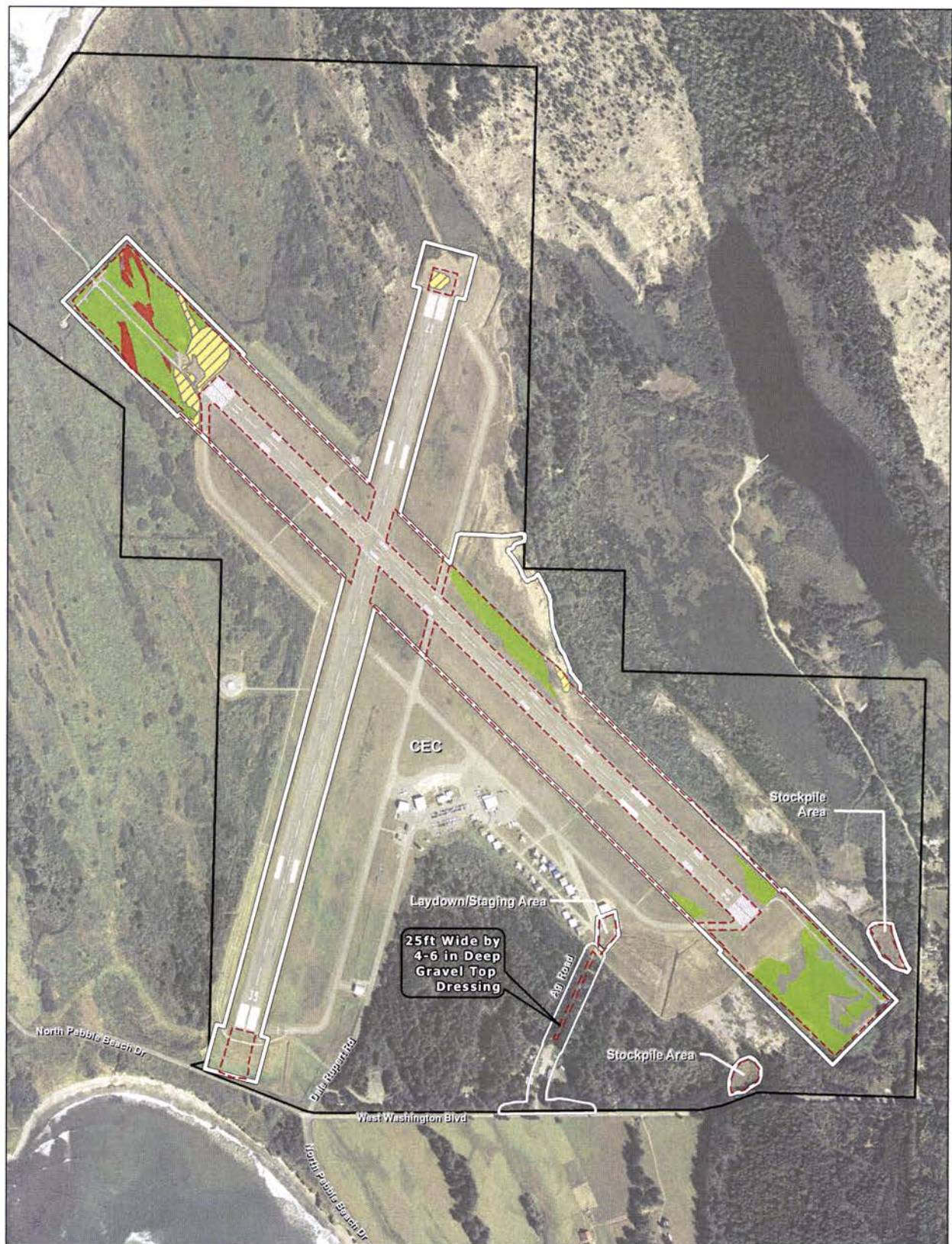


Border Coast Regional Airport Authority
 RSA Improvement Project

Job Number 8410135-28
 Revision B
 Date 14 Aug 2013

Impacts to Special-Status Plants Figure 6

ghdnet\ghd\BUSE\unwar\Project\11964 Border Coast Regional Airport\RSA\RSA_01\Map\Figures\RSA_CDP\FB_SS_Plants_130814.mxd
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 Data source: NOAA Aerial, 2011. 1 foot resolution. URS GIS RSA data, special-status plants, edited by GHD. Created by amishah.



RSA

- Project Study Area
- Project Impacts Footprint

ESHA Impacts

- Disturbed Beach Bursage-Beach Knotweed/Dune Mat (2.77 acres)
- Disturbed Shrub/Dune Mat (0.005 acres)

- Salt Rush Series/Stabilized Dune (1.44 acres)
- Palustrine Emergent Wetland (16.72 acres)

Paper Size 11" x 17" (ANSI B)
 0 100 200 400 600 800
 Feet
 Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California 1 FIPS 0401 Feet



Border Coast Regional Airport Authority
 RSA Improvement Project

Job Number 8410135
 Revision B
 Date 01 Aug 2013

Environmentally Sensitive
 Habitat Area Impacts

Figure 7

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 Data source: NOAA Aerial, 2011, 1 foot resolution; URS GIS RSA wetland layers; GHD field data, October 2011. Created by gldrsm

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- ✕ Proposed Mitigation Fence
- ▬ Airport Boundary
- ▬ Pt. St. George Mitigation Study Area
- ▨ Vegetation Removal Area

- 30 Ft Buffer from Known Lily Locations**
- 30' Buffer (0.30 ac.)
- 30' Buffer on Airport Property (0.06 ac.)

- Vegetation Removal Area**
- Vegetation Removal (9.31 ac.)
- Vegetation Removal on Airport Property (4.64 ac.)

- Upland Plant Communities**
- Coastal prairie upland (3.4 ac)
- Mixed tree-shrub thicket (5.2 ac)

Paper Size ANSI B
0 50 100 150 200
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



Border Coast Regional Airport Authority
RSA Project Permit Figures

Job Number 8410135
Revision B
Date 26 Jul 2013

Point St. George
Vegetation Removal

Figure 5b



Border Coast Regional Airport Authority

Del Norte County Regional Airport

Jack McNamara Field (CEC)

Crescent City, California

Runway Safety Area Mitigation and Monitoring Plan

Option 1: Pacific Shores Road Removal



June 2013

EXHIBIT NO. 8

APPLICATION NO.

1-13-009 (Border Coast
Regional Airport Authority)

MITIGATION & MONITORING
PLAN, OPTION 1 (1 of 74)

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1. Introduction

1.1 Summary

This Mitigation and Monitoring Plan (MMP) has been prepared for the Border Coast Regional Airport Authority (BCRAA) Runway Safety Area Improvement Project for the U.S. Army Corps of Engineers (USACE), the California Coastal Commission (CCC), United States Fish and Wildlife Service (USFWS), Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW). The Mitigation Plan was prepared as part of USACE File Number 2006-301420N. The MMP is patterned on guidance published by the USACE (2008), and expanded to include information identified in "procedural guidance for evaluating wetland mitigation projects in California's coastal zone" (CCC 2012).

The Border Coast Regional Airport Authority (BCRAA) has identified the need to enhance safety by improving the runway safety areas (RSA) because they do not meet current Federal Aviation Administration (FAA) airport design standards. Congress passed Public Law 109-115 requiring that not later than December 31, 2015 commercial airports certificated under 49 USC 44706 improve the airport's RSAs to comply with the FAA design standards required by Federal Aviation Regulations Part 139 (14 CFR part 139). The FAA has a high priority RSA program to report the progress to Congress and federal funding support may be provided through the Airport Improvement Program.

RSAs enhance the safety of aviation operations by providing a level surface in the event that an aircraft undershoots, overruns, or veers off the runway, and the area provides accessibility for fire fighting and rescue equipment during such incidents. The BCRAA is required to implement a RSA project at Del Norte County Regional Airport, Jack McNamara Field (CEC) to meet FAA design standards.

The RSA project at CEC consists of filling, grading, associated drainage, displaced threshold and declared distances to create compliant RSAs. The RSAs for the Runway 11/29 and Runway 17/35 and the sides of 11/29 would be extended, filled and graded to meet FAA design standards. Additionally, the Runway 17 threshold would be displaced 150 feet south and declared distances would be implemented, allowing for a fully compliant RSA that minimizes impacts to wetlands beyond the Runway 17 end.

The RSA project will result in impacts to protected wetlands, special-status plant species, and upland dune mat environmentally sensitive habitat areas (ESHA's). Making the proposed improvements at CEC is necessary to comply with the FAR Part 139 requirements and meet the current FAA design criteria specified in Advisory Circular 150/5300-13, Airport Design.

This Mitigation and Monitoring Plan will outline a conceptual package of mitigation actions to offset the 16.77 acres of USACE and 16.77 acres of CCC palustrine wetland habitat impacts, 0.016 acres of USACE and CCC drainage channels associated with the RSA and 19 square feet of USACE and CCC riverine unconsolidated bottom wetlands. There would

be an estimated 12.97 acres of permanent impacts to wetlands, with the balance being temporary impacts to areas graded to lower elevations and then replanted with native wetland species. In addition 2.78 acres of upland dune ESHA will be impacted, 50 square feet of sand dune phacelia (*Phacelia argentea*) and 11,271 square feet of short-leaved evax (*Hesperervax sparsiflora* var. *brevifolia*) will be impacted. All wetlands under the jurisdiction of both the USACE and CCC within the project area that will be impacted through the placement and compaction of fill material shall be mitigated for. This conceptual plan proposes to mitigate for impacts to wetlands and environmentally sensitive habitat areas as described in Table 1.

1.2 Contacts

Questions regarding the BCRAA Draft Mitigation and Monitoring Plan should be directed to:

Misha Schwarz, Project Manager
GHD, Inc.
718 Third Street, Eureka, CA 95501
Tel: 707.443.8326 | Fax: 707.444.8330

And:

Ken Mierzwa, Senior Ecologist
GHD, Inc.
718 Third Street, Eureka, CA 95501
Tel: 707.443.8326 | Fax: 707.444.8330

General administrative questions regarding the BCRAA Mitigation Package should be directed to:

James Bernard, Airport Director
Border Coast Regional Airport Authority
Del Norte County Regional Airport, Jack McNamara Field
150 Dale Rupert Road, Crescent City, CA 95531
Tel: 707.464.7288 | Fax: 707.464.1023

2. Project Description

2.1 Location

Del Norte County Regional Airport, Jack McNamara Field (CEC) is located in Del Norte County adjacent to the Pacific Ocean, approximately two miles northwest of downtown Crescent City and approximately 20 miles south of the California/Oregon border. From U.S. 101, CEC is accessed via West Washington Boulevard. A vicinity map is provided as Figure 1.

This is the first of two Mitigation and Monitoring Plans (MMP's). It includes a package of on-site and off-site, in-kind actions across three different areas: parcel acquisition and road removal at Pacific Shores Subdivision (Figure 2) located approximately five miles north of CEC, habitat enhancement and rare plant management at Point Saint George Management Area (Figure 3) and enhancement at CEC on-site (Figure 4). It also includes, as a contingency if not enough land can be acquired at Pacific Shores, the possibility of additional mitigation off-site, probably at Bay Meadows. A second MMP (July 2013) has been prepared to describe feasible additional mitigation strategies in the event that litigation precludes any mitigation at Pacific Shores.

The mitigation project is in the Coastal Zone with combined jurisdiction between the County of Del Norte, the CCC and USACE, although the county has relinquished permitting authority to the CCC.

2.2 Responsible Parties

Del Norte County Regional Airport, Jack McNamara Field is owned by the County of Del Norte and is operated and managed by the Border Coast Regional Airport Authority (BCRAA). The Project is sponsored by BCRAA, which was formed by a Joint Powers Agreement (JPA) effective October 4, 2007, whose entities include Del Norte County, the City of Crescent City, Elk Valley Rancheria, Smith River Rancheria, the City of Brookings, Oregon, and Curry County, Oregon. CEC is a commercial service airport that provides airfield, terminal, and support facilities for scheduled commercial airline service, air charter/taxi, military, and general aviation (GA) operations. CEC is a critical use public facility which facilitates public access to the coast. CEC participates in the Federal Essential Air Service Program which supports scheduled commercial airline service to remote and rural locations such as the Crescent City area. CEC plays a crucial role in providing access for emergency services and a staging area for disaster relief, fire fighting operations, and search and rescue activities for the region and state.

The BCRAA will be the responsible entity for financing and developing the Project including the implementation of the mitigation and monitoring plan which includes the subcomponents described below. BCRAA will seek federal funding support from the Airport Improvement Program administered by the FAA for eligible project components.

2.3 Project History

In 2000, the FAA completed an evaluation of the runway safety areas (RSAs) at CEC. The evaluation and later inspection determined that the existing RSAs at CEC did not meet current design standards. Required RSA dimensions are based on the Airport Reference Code (ARC) of each of the runways. The ARC is a coding system developed by the FAA to relate airport design criteria to the operational and physical characteristics of the airplane types that operate at a particular airport. The ARC is part of design standards established in the Advisory Circular (AC) 150/5300-13, Airport Design (FAA 2008). Following this determination, BCRAA and the County completed an RSA analysis in 2005 to evaluate ways to bring the RSAs into compliance. RSA improvements are mandated (Congressional Bill House of Representatives 3058: Transportation, Treasury, Housing and Urban Development, the Judiciary, District Of Columbia, and Independent Agencies Appropriations Act, 2006, PL 109-115, November 30, 2005, 119 Statute 2401) and must be completed by December 31, 2015. Subsequently, the BCRAA proposes to implement a RSA project at CEC, to meet FAA design standards for both Runway 11/29 and Runway 17/35.

RSA project impacts are described in detail in several permit applications and related documents, including:

- Section 404 individual permit application, submitted to the U.S. Army Corps of Engineers on February 22, 2013;
- Biological Assessment (Endangered Species Act, Section 7) submitted to U.S. Fish and Wildlife Service by FAA on February 27, 2013 and Biological Opinion issued by USFWS on June 5, 2013;
- 401 Water Quality certification application, submitted to the North Coast Regional Water Quality Control Board on February 22, 2013;
- Streambed Alteration Agreement application, submitted to California Department of Fish and Wildlife on February 22, 2013, and a draft notification issued by CDFW on June 5, 2013;
- Application for Coastal Development Permit package submitted to the California Coastal Commission on February 22, 2013.

Three potential mitigation areas have been identified to compensate for impacts to wetlands and sensitive species habitat as a result of RSA-related impacts. The proposed mitigation is described below.

2.4 Proposed Mitigation Project

The proposed mitigation project includes habitat re-establishment, and enhancement at Pacific Shores Subdivision (PSS) including road removal and invasive species management; and habitat enhancement at Point Saint George Management Area (Figures 1 through 3). ESHA mitigation would also occur on the CEC airport site if suitable locations are identified away from airport operations areas (Figure 4). Upland dune ESHA would likely be mitigated both on the CEC airport site and at Pacific Shores Subdivision.

Additional detail on each location is provided in sections 4 and 5. Bay Meadows (described in detail in the separate MMP for Options 2 and 3) or another off-site location would serve as an additional mitigation site in the event that additional acreage is needed to meet mitigation requirements for Option 1.

The proposed work will be funded by BCRAA. BCRAA intends to seek federal funding support for the project from the FAA. The FAA will continue to act as the federal lead agency. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers has regulatory jurisdiction over wetlands and waters of the United States. The project site is within the Coastal Zone jurisdiction regulated by the California Coastal Commission, and will also require a Lake and Streambed Alteration Agreement with CDFW.

3. Goals and Objectives

3.1 Mitigation Goals

The purpose of the mitigation project is to compensate for impacts resulting from Runway Safety Area improvements at CEC. RSA improvements are mandated (Congressional Bill House of Representatives 3058: Transportation, Treasury, Housing and Urban Development, the Judiciary, District Of Columbia, and Independent Agencies Appropriations Act, 2006, PL 109-115, November 30, 2005, 119 Statute 2401) and must be completed by December 31, 2015.

The overall goal of the proposed mitigation package is to re-establish or establish self-sustaining natural palustrine emergent wetlands, re-establish or establish upland coastal grassland and/or dune mat, rehabilitate disturbed upland dunes that have been invaded by European beachgrass (*Ammophila arenaria*) and other exotic species, enhance special-status CNPS listed dune species, enhance USFWS listed endangered western lily habitat, enhance host and nectar plant populations for the Oregon silverspot butterfly (*Speyeria zerene hippolyta*), and acquire lands for preservation and conservation.

3.2 Mitigation Objectives

Specific project objectives include:

1. Pacific Shores Subdivision re-establishment, rehabilitation and enhancement
 - a. A net increase in the area of palustrine persistent emergent freshwater wetland;
 - b. Enhance Oregon silverspot butterfly habitat (larval and nectar plants);
 - c. Re-establish upland dune habitat.
2. Enhance western lily and rare plant habitat on Point Saint George Management Unit;
3. Enhance and establish upland dune mat ESHA on the CEC site;
4. Remove and manage invasive plant species at all mitigation project sites;
5. Acquire lands for preservation and conservation

3.3 Target Habitats and Community Types

Plant community types to be established, re-established, rehabilitated, or enhanced include: palustrine persistent emergent freshwater wetlands, dune mat with or without CNPS listed species, coastal terrace prairie, western lily habitat, and northern red-legged frog foraging, breeding, and dispersal habitat. Mitigation ratios and acreages are identified in Table 1 for the impacts associated with the CEC RSA project.

Table 1: Proposed BCRAA Mitigation Package Table for RSA Project

Current Habitat	Proposed Habitat	Proposed Action	Location	Wetlands Established	Wetlands Enhanced	Total Acres Uplands
Road	Re-establish/ Establish Wetlands	Remove Road; Grade and Revegetate with Native Wetland Species	Pacific Shores	13		--
Upland Dunes/ Borrow Area	Upland Dunes within RSA & Borrow Area	Remove Non-native/Plant Native Dune Species	Airport		--	4.0
Upland Dunes (Ammophila or Non-native or pine saplings)	Dune Mat/ Coastal Terrace Prairie	Non-native Removal, Revegetate with Native Dune Species + OSB Host and Nectar Plants	Pacific Shores Location		--	3.6
Wetlands/ Uplands Dune	Wetlands/ Upland Dune	Land Acquisition/Conserve and Preserve (Parcels)	Pacific Shores Location		64.1	21.4
Coast Shrub/Forest	Endangered Lily and Rare Plant Habitat	Wildlife Fence/Tree Removal and Scrub Encroachment Maintenance	Point Saint George		7.0	7.0
Road ROW Off Pavement	Enhance Upland/ Wetland	Acquisition (no work proposed)	Pacific Shores		15.8	5.3
Road	Upland Dunes	Removed Roads to Dunes	Pacific Shores Location		--	1.1

Based on acreage potentially available as of July 24, 2013. Off-site contingencies not included in this table.

4. Mitigation Site Selection

4.1 Location Constraints

The FAA does not recommend airport onsite wetland mitigation because wetlands can create wildlife attractants that are hazardous to aviation operations. As provided for in AC 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*, the FAA recommends immediately correcting, in cooperation with local, state, and federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports.

Portions of the required mitigation (western lily habitat enhancement, dune mat ESHA) can be done on-site without creating wildlife attractants. However, wetlands typically would attract wildlife and would create a potential hazard. Thus, wetland establishment or re-establishment is proposed for off-site locations beyond 10,000 feet from the end of a runway as required for airports serving turbine-powered aircraft by AC 150/5200-33B.

4.2 Mitigation Site Selection

Limited opportunities are available in Del Norte County for near-coastal mitigation. CEC is at the southern limit of a coastal dune complex extending north from Point Saint George to the mouth of the Smith River (Helley and Averett 1971). Because the impact area is within the coastal dune complex, true in-kind mitigation is limited to this same region. However much of the area is already in public ownership (Tolowa Dunes State Park and Lake Earl Wildlife Area), and with limited exceptions state policy generally does not allow credit for mitigation activities on state land.

The only large area of private land within the Lake Earl dune complex is the Pacific Shores Subdivision. This area includes a patchwork of private and state-owned half-acre lots, with about half in each type of holding but distributed unevenly across the site. The extensive road complex within the subdivision, with roads generally centered within a 50-foot right-of-way, is owned by Del Norte County. Removal of these roads, where feasible, and enhancement activities on adjacent right-of-way and on parcels acquired from willing sellers, offers one of the largest and potentially one of the most valuable opportunities for habitat restoration in coastal Del Norte County.

According to the subdivision map act, direct access is required to private property (Added by Stats. 1974, Ch. 1536. Effective March 1, 1975.), indicating that road access must be retained to any private landowner at Pacific Shores Subdivision. Therefore, when identifying road segments to be considered for removal for mitigation purposes, private ownership must be considered along the road corridor desired for removal. If roads are removed to or in front of a private parcel, it is proposed that the parcel would be purchased as part of the mitigation package from willing sellers. Where one or more parcels cannot be readily acquired this would limit mitigation opportunities on any particular segment of road.

To identify potential road removal segments, a GIS optimization review was conducted (GHD Inc. 2013a). The initial optimization considered a series of constraints including roads designated by Del Norte County to remain intact for site access; road segments so heavily overgrown with willows or other vegetation that they could not be surveyed in a timely manner; adjacent private parcels with other constraints; and presence of butterfly host or nectar plants or other rare or sensitive plants within the removal area. A second optimization was then run without private parcel constraints and without host and nectar plant constraints at the request of regulatory agencies, and this optimization is used as the basis for wetland re-establishment at PSS. The optimization generated a draft map of remaining constraints. The optimization map (Figure 5) served as the basis for initial landowner contact to discuss potential acquisition from willing sellers, although owners beyond the potentially affected parcels were also contacted. As of July 2013 a total of approximately 172 lots had been identified as potentially available through various means.

Some mitigation opportunities are also available at Point Saint George Management Unit immediately adjacent to CEC, although proximity to the runways limits this to vegetation enhancement and precludes wetland establishment. A limited amount of dune mat ESHA replacement and enhancement would occur at the airport.

5. Site Protection Instrument

After completion of mitigation activities and at the end of the monitoring period or when performance criteria have been met, it is anticipated that ownership of right-of-way where roads have been removed and of acquired parcels would be transferred to a responsible public agency. A memorandum of understanding or other instrument would be prepared in advance of construction activity to formalize this arrangement and to specify the timing and mechanism of transfer.

At the county owned Point Saint George, a conservation easement or equivalent instrument would be established for the management area. This would restrict future development and specify that the area is subject to vegetation management to benefit the western lily.

6. Environmental Baseline

6.1 Baseline Conditions

This mitigation and monitoring plan covers three proposed mitigation areas for the Del Norte Regional Airport (CEC) Runway Safety Area Improvement project:

- Pacific Shores Subdivision wetlands and sensitive species mitigation area
- Point Saint George western lily and rare plant management area
- On-airport replacement of dune mat ESHA

Baseline conditions at each of these locations are described below.

6.1.1 Pacific Shores Subdivision

The Pacific Shores area was subdivided into 1,535 lots of approximately 0.5-acre each in the 1960s, and about 27 miles of roads were constructed. The California Coastal Commission declined to certify the subdivision and it remains a "white area" within the certified Del Norte County Local Coastal Plan (California Coastal Conservancy 2004) which implies that primary permitting authority lies with the Coastal Commission. Although a few trailers are present within the area, it cannot at present be legally occupied. Most of the site retains a semi-natural character fragmented by unmaintained, deteriorating and sometimes overgrown paved roads.

Pacific Shores is part of an 11-mile long dune system extending from Point Saint George north to the Smith River. The dune system macrosite is referred to as the Tolowa Dunes or Lake Earl Dunes (Pickart and Sawyer 1998) depending on the source. At the widest point the dune system extends about 1.7 miles inland, and within the subdivision it covers the entire area between the Pacific Ocean on the west and Lake Earl to the southeast. Because it is bordered by public lands including Tolowa Dunes State Park and Lake Earl Wildlife Area, and because of its central locations within these public lands, Pacific Shores Subdivision currently fragments the larger dune system macrosite.

The area is characterized by active dunes partially burying an older stabilized dune system (Cooper 1967); nearshore sand deposited by the Smith River has been blown by prevailing northwest winds into a series of dunes, most conspicuous in the western part of the site (Roberts 2003; Weidemann 1984). Close to the coastline typical dune communities occur, including foredunes almost entirely stabilized by European beachgrass, remnant areas of dune mat, and dune hollows with slough sedge or willow communities (Pickart and Sawyer 1998). Pacific Shores is unusual because on the relatively level deflation plains in the center of the site, large areas of coastal terrace prairie remain intact, with some areas of fairly good natural quality. In the eastern part of the site conifer forests of mixed Sitka spruce (*Picea sitchensis*) and beach pine (*Pinus contorta* ssp. *contorta*) alternate with deciduous woodlands dominated by willow and red alder.

Because Pacific Shores Subdivision includes a range of plant communities from early seral dunes through grasslands to conifer forest, including a full soil moisture range from wet to

xeric, all within a relatively small area, it is able to support a very diverse assemblage of plant and animal species. However some ecological processes have been disrupted by the road network and the near absence of land management within the patchwork of private and state owned parcels, resulting in a gradual shift toward later successional stages. As early seral stages become less common and increasingly fragmented, some species of conservation concern are likely to suffer.

Plant communities are characterized in a biological resources report (GHD Inc. 2013b), following the nomenclature of Sawyer et al (2009). Major vegetation alliances, generally presented from the shoreline (west) to inland (east), include:

- Beach strand (not affected by the project)
- *Ammophila arenaria* Semi-Natural Herbaceous Stands (non-native)
- *Abronia latifolia* – *Ambrosia chamissonis* Herbaceous Alliance (dune mat)
- *Deschampsia caespitosa* Herbaceous Alliance (coastal terrace prairie)
- *Calamagrostis nutkaensis* Herbaceous Alliance (coastal terrace prairie)
- *Festuca rubra* Herbaceous Alliance (coastal terrace prairie)
- *Holcus lanatus* – *Anthoxanthum odoratum* Semi-Natural Herbaceous Stands (annual grassland)
- *Carex obnupta* Herbaceous Alliance
- *Schoenoplectus americanus* and *Schoenoplectus acutus* Herbaceous Alliances (freshwater to brackish marshes)
- *Typha* Herbaceous Alliance (brackish marsh)
- *Salix hookeriana* Shrubland Alliance
- *Pinus contorta* ssp. *contorta* Forest Alliance
- *Picea sitchensis* Forest Alliance

Invasive species including European beachgrass and Scotch broom have become widely established in parts of the site. By stabilizing foredunes, invasives have disrupted windborne transport of sand, once a primary ecological process in the dune ecosystem.

A simplified habitat map is shown in Figure 6, with documentation included in a technical memorandum (GHD Inc. 2013c).

Historically, Lakes Earl and Tolowa fluctuated in elevation with winter rains impounded by a sand bar at the mouth. Eventually the sand bar would breach, lowering the lake level. For many years the sand bar was artificially breached from time to time. According to Lauck (1997) the lake level management philosophy changed about 1990 and he believed that higher lake levels posed a threat to Oregon silverspot butterfly populations because of winter and early spring flooding of western dog violets (*Viola adunca*). Since that time it appears that plant communities have adapted to somewhat higher lake levels which more closely approximate a natural condition, although the road network at Pacific Shores may

allow flooding of some interior areas once protected from higher water by dune ridges. In December 2012 the sand bar breached naturally at an elevation of 9.7 feet.

6.1.2 Point Saint George

The western lily management area adjacent to CEC has become overgrown with dense shrub and sapling cover, shading out early successional low herbaceous wetlands which formerly provided western lily habitat. Roberts (2003) noted that during the intervening 12 years since the study done by Theiss (1991), the plant community composition had noticeably changed at Point Saint George. Although Theiss (1991) mapped sensitive species and not communities, her mapped western lily localities are shown in the subsequent Roberts (2003) report as "mixed tree-shrub thicket." In the absence of active management, this successional trend would be expected to continue, eventually precluding the onsite persistence of western lily as a result of shading and hydrology/soil moisture changes resulting from increased evapotranspiration (USFWS 2009).

Primary habitat types within the proposed management area include:

- *Carex obnupta* Herbaceous Alliance
- *Salix hookeriana* Shrubland Alliance
- *Pinus contorta* ssp. *contorta* Forest Alliance

Small inclusions of other habitat types may be present. In general, much of the site is heavily overgrown with woody vegetation and it is difficult to access.

6.2 On-airport ESHA Mitigation Areas

Some areas to be impacted by RSA improvements currently support sensitive plants or ESHA. Upon completion of grading, part of the "borrow area" or other appropriate locations away from airport operations areas may be used for dune mat re-establishment or enhancement.

7. Determination of Credits

Impacts and mitigation credits are measured in acres, and mitigation would be applied at ratios agreed upon by BCRAA and the regulatory agencies. Ratios above 1:1 are intended to compensate for temporal lag and uncertainty of success. Because many of the wetland and upland plant communities at the mitigation sites are early seral stage communities the dominant plant species tend to be fast-growing and adapted to rapidly colonize newly available habitat; thus the probability of success is believed to be higher than is typical for some other habitats of comparable complexity.

8. Mitigation Work Plan

8.1 Mitigation Project Area

The Pacific Shores mitigation project area includes all of Pacific Shores Subdivision, including roads, right-of-way, and lots (although only lots acquired as part of the project or, with CDFW concurrence and where appropriate, portions of lots currently owned by CDFW, would be considered for mitigation activities) but excluding the westernmost portion of the subdivision close to the Pacific Ocean. The limits of the Pacific Shores Subdivision mitigation project area are shown in Figure 2.

The Point Saint George vegetation management project area includes about 14 acres immediately west of CEC. The boundary is shown in Figure 3.

On-airport (CEC) mitigation would occur within limited areas yet to be determined and away from airport operations areas. The CEC airport site and approximate potential enhancement areas is shown on Figure 4.

8.2 Construction Methods

8.2.1 Pacific Shores Subdivision

The Project would involve the following activities at Pacific Shores Subdivision:

- Seed collection
- Mobilization
- Implementation of traffic control devices
- Installation of BMPs to protect drainages and coastal waters.
- Garbage removal. This would include removing and disposing of garbage materials from designated areas. It may include general garbage, hazardous materials, and structures. Areas to be removed would be flagged in advance.
- Salvaging of rare plants. This would include salvaging plant materials (primarily gumplant, *Grindelia stricta*) from within the 24-foot wide pavement width. Plants would be removed manually with a sharp spade or soil knife and stockpiled for a short time before being replanted in adjacent right-of-way or in an area of removed road. Known areas of nectar plants on roads or in adjacent right-of-way are shown in Figure 7. OSB host plants are off of pavement and would be protected and avoided.
- Removal of invasive species. Selected areas of European beachgrass, Scotch broom, and other invasive species would be removed from adjacent right-of-way, from parcels acquired as part of the project, and possibly in limited cases from adjacent state owned parcels. Removal would be manually done unless specified otherwise elsewhere in this document or in project specifications. Materials would

be bagged and removed to an appropriate off-site green waste disposal facility. Selected areas of potential invasives removal are identified in Figure 8.

- **Clearing and Grubbing.** This would include clearing of trees, shrubs, and herbaceous vegetation and debris from the existing 24-foot road surface where roads are to be removed. Some pine and willow would be stockpiled for later re-use as barriers, with all other material to be disposed of off-site.
- **Asphalt removal.** This would include cold plane removal of asphalt and concrete road surface and base. The planing machine shall be one that is specifically designed and built for the planing of bituminous pavements without the addition of heat. Cold planing machines shall be equipped with a cutter head not less than 30-inches in width and shall be operated so that no smoke or fumes will be produced. Material would be removed from the site as quickly as practical, and disposed of at an approved off-site location. Roads to be potentially removed are shown in Figure 9.
- **Excavation.** This includes all earthwork activities related to excavation of roadbed rock, excavation of frog ponds, dune re-connections, topographic variation in road removal areas, and road entry barriers. Excavation work would occur during dry weather. Potential dune and frog pond locations are shown in Figure 10, but this work would occur only where parcel availability allows road removal.
- **Ripping.** This would include scarifying soils beneath removed roads to a depth of at least 10 inches to loosen compacted material. Work would occur during dry weather.
- **Grading.** After completion of the above tasks, final grading of frog ponds, dune reconnections, topographic variation in road removal areas, and road entry barriers would occur. Frog pond locations are, when possible, clustered in groupings adjacent to existing wetlands and are typically in proximity to dune re-connections to provide a sand source. Dune re-connection locations are adjacent to existing dunes which were bisected during original subdivision layout. Topographic variation would occur throughout road removal areas to encourage habitat heterogeneity.
- **Road barriers.** Pine saplings and willow branches stockpiled during clearing and grubbing would be used to create barriers at removed roadway entries to discourage ATV access. Pines would be stacked, and willow stakes planted among them to create a physical and visual barrier.
- **Revegetation.** Areas of removed roadway and adjacent invasives management areas would be planted with the appropriate planting mix. Dune mat, coastal terrace prairie, and transitional wetland areas would be planted using broadcast seeding or hydroseeding. Wetland areas would be planted with plugs. Deeper centers of frog ponds (greater than 18-inches below grade) would not be planted to encourage formation of an open water center. Details of seed mixes and quantities are provided below in the planting plan section of this document. The planting mix would include OSB nectar species within the appropriate habitat types (generally dune mat and coastal terrace prairie).

- Ongoing management of invasive species during the five year monitoring period.

A GIS-based optimization report (GHD Inc. 2013a) identifies potential road segments to be removed, pending agreements to acquire adjacent parcels from willing sellers. This mitigation plan evaluates all road segments identified as suitable for possible removal in Figure 7. However since lots would be acquired only from willing sellers and some landowners have expressed an unwillingness to sell, it is expected that some segments will not be feasible because adjacent lots cannot be acquired and those specific road segments would not be removed to retain access. Technical or practical considerations may also restrict opportunities along some road segments. Specific road segments to be removed will not be known until acquisition agreements have been signed.

It is anticipated that equipment would include bulldozers, front end loaders, dump trucks, graders, asphalt planers or grinders, chainsaws, chippers, and other standard construction equipment. Only hand tools would normally be utilized beyond the limits of pavement.

Additional detail on construction methods is available in the Basis of Design Report (GHD Inc. 2013d).

8.2.2 Point Saint George

The project would involve the following activities at Point Saint George:

- Management of areas immediately adjacent to the airport, initially through removal or thinning of woody vegetation and later through vegetation management as specified in Biological Opinion conservation measures, to maintain or re-establish potentially suitable conditions for the western lily;
- Relocation of the airport fence to protect the management area (Figure 3)

Clearing of woody debris would be done by hand (chainsaw) and removed from the site by hand or with light mechanized ATV equivalent depending on location, access, and sensitivity. Material may be removed whole, chipped adjacent to the site, or burned adjacent to the site depending on end use and resource agency approval.

8.2.3 CEC

Grading of runway safety areas would be done separately as part of the RSA project. Mitigation-related activities are expected to be limited to re-seeding and invasives removal. Most mitigation work would be done by hand, with some light vehicle use to transport tools and materials to small staging areas adjacent to the work sites. No sensitive species would be planted in proximity to airport operations areas.

8.2.4 Access and Staging

Access to and from the PSS project area would be from existing roads, with staging on closed segments of existing roads and cul-de-sacs. An offsite staging area may be established out of the project area. If this occurs it would be 1) on upland, 2) away from sensitive habitat or sensitive species presence, 3) outside of the coastal zone, and 4) on disturbed or developed land leased from a willing landowner. No heavy equipment or

materials stockpiling would be allowed on dunes or coastal prairie, in wetlands, or in any other sensitive habitat.

Access to Point Saint George could be from within CEC or from within the management area and is likely to be determined on the basis of ease of access and lowest risk of damage to sensitive habitat. Staging would be adjacent to the work area.

Access to the runway safety areas and the "borrow pit" at CEC would be via runways or taxiways, with vehicles or equipment parked off of pavement on mowed/maintained grass areas to avoid disruption to airport operations. Staging would likely be on disturbed ground immediately adjacent to the work areas.

8.3 Construction Timing and Sequence

The mitigation component of the project is expected to commence in late summer of 2013. The schedule would generally occur in the following phases:

- Land acquisition, August 2014 to August 2015.
- Invasive species removal, seed collection and planting of butterfly nectar species: August 2014 to March 2015.
- Equipment mobilization and site preparation: August 2015 to September 2016.
- Construction: August 2015 to November 2015.
- Clean up and demobilization: November 2015.
- Implement site restoration, replanting in removed roadway areas: October 2015 to April 2016.
- Monitoring of restoration: June 2016 to August 2021.
- Ongoing maintenance: June 2016 to August 2020, or as mandated by permit conditions. BCRAA would be responsible for maintenance through the monitoring period.

Construction activities would be conducted in compliance with applicable federal, state and local requirements and in a manner that minimizes disturbance to adjacent properties and disruption to traffic. Construction would occur between the hours of 7 AM and 6 PM, Monday through Friday, and 10 AM to 5 PM on Saturdays. No construction would be allowed on Sundays, except in an emergency. The number of construction workers present on the project site at any given time is anticipated to be up to 20. The number of motor vehicles is anticipated to be up to 20. Up to 15 pieces of heavy machinery are anticipated to be in use at any one time. The project would also require the delivery of equipment, workers and materials via Kellogg Road and other public roads in the area.

8.4 Hydrology

Much of the Pacific Shores Subdivision is wet during and immediately after the rainy season, with standing water in or immediately adjacent to some of the roads to be removed. Wetlands would be re-established in a location or locations where suitable

hydrology is demonstrated by the presence of jurisdictional wetlands contiguous with or adjacent to the mitigation area at elevations within the range specified for final grading and consistent with groundwater monitoring data.

8.5 Soils

Lower elevation areas of the mitigation site are or historically were wetland, and have hydric soils. Removal of road segments and excavation to appropriate elevations will expose native hydric soils beneath the road bed. Presence of hydric soils in targeted locations has been verified by field investigations and groundwater monitoring.

8.6 Grading Plan

8.6.1 Road Removal

The depth of cut will depend on the thickness of asphalt concrete and aggregate base. From the geotechnical report, this depth of asphalt concrete and aggregate base varies from 5.0 to 11.0 inches. The width spans from the edge of pavement to edge of pavement, which is approximately 24 feet. Removed asphalt must be disposed of at a legal off-site location; rock may be re-used on remaining roads on site or removed.

8.6.2 Grading

In order to create a more natural surface undulation, a grading tolerance of +/- 4 inches was specified in the design. There are also engineered "grade variations" located throughout Pacific Shores. These sites vary the graded surface by increasing the grade by 12 inches for a distance of 30 feet, and then decrease the grade by 12 inches for a distance of 30 feet.

8.6.3 Substrate modification

After road removal the areas will be scarified to a depth of 10 inches at the road removal sites, loosening compacted material under the removed roads, and tilling any minimal remaining aggregate with native subgrade before planting.

8.6.4 Re-connection of SE-NW dunes

Where existing roads bisect selected historical dunes, the existing road section will be removed and sand placed to re-connect the dune. Work would extend beyond the right-of-way limits only where adjoining lots have been acquired as part of the project or if CDFW has provided written authorization for work on adjacent state lands. Excavated sand from the frog pond construction will be used for the sand in the dune reconnections. The cut from the ponds will balance the fill for the dunes; no new material will be brought on-site or mined from onsite areas outside of roadways. The physical characteristics of the existing sand restricts placement to maximum cut or fill slope of 3 horizontal to 1 vertical, per the project geotechnical report.

8.6.5 Frog Ponds

In wetland areas adjacent to dune structures, frog ponds will be excavated to mimic northern red-legged frog breeding habitat. The ponds are clustered in groups of approximately four to five near each dune.

8.7 Erosion Control

Temporary erosion control measures shall be implemented during construction to avoid adverse impacts to coastal resources, adjacent property, or to sensitive habitat in the project vicinity. Erosion control measures proposed for implementation prior to and concurrent with construction activities include straw wattles, silt fence, plastic stormwater berms and straw bale barriers and will be shown on the final grading plans and will include details and specifications. Measures to be implemented after construction is completed include revegetation. It is anticipated erosion will not be a significant problem as the substrate is sand with a high infiltration rate and low erosion susceptibility and most mitigation areas will be relatively flat.

Biodegradable straw matting will be applied on any slopes that exceed 3:1. The matting will have a mesh netting that will biodegrade within several months to minimize long-term impacts to wildlife. Straw wattles may also be used to function as runoff diversions.

8.8 Planting Plan

A detailed planting plan has been developed for four habitat types included in this mitigation plan: palustrine emergent wetland – PSS Planting Zone A; Coastal Prairie- PSS Planting Zone B; Dune – PSS Planting Zone C; and CEC dune mat - Planting Zone D. No planting is anticipated at Point Saint George. The tables below are intended to be representative based on information available at this time and species quantities shown below have been developed using acres as the unit of measure. After agency permitting discussions are complete, parcel acquisition agreements signed, and the final road removal areas are determined updated tables would be included in specifications. The wetland and dune planting plugs are currently spaced using 12 feet on center because the site contains a high quantity of native plants and a strong native seed bank where natural recruitment is expected. OSB nectar plants are included in each seed mix and can be identified by the asterisk next to the scientific name in each planting table.

In addition to the planting zones above, willow cuttings will be planted within barriers to be constructed at the ends of removed roads. Barriers would be constructed of stacked pines removed elsewhere on the site, and planting locations and quantities of willows will be included in final plans and specs.

Table 3 PSS Planting Zone A: Palustrine Emergent Wetland

Planting Zone A- Wetland								1.00
Overall Spacing (feet off center)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Individual Spacing (ft.)
12	303			HERBACEOUS				
		20	61	<i>Juncus patens</i>	spreading rush	4" plug	cluster	27
		20	61	<i>Deschampsia cespitosa</i>	tufted hairgrass	4" plug	cluster	27
		15	45	<i>Sidalcea malviflora</i>	dwarf checker-mallow	4" plug	cluster	31
		15	45	<i>Scirpus microcarpus</i>	panicked bulrush	4" plug	cluster	31
		30	91	<i>Viola adunca**</i>	Western dog violet	4" plug	cluster	22
		100	303	= total				
N/A	20			NATIVE SEED				
		20	4	<i>Lupinus polyphyllus</i>	broad-leaf lupine	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Calamagrostis nutkaensis</i>	Pacific reed grass	LB of P.L.S. 76 %	SEED	N/A
		25	5	<i>Carex obnupta</i>	slough sedge	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Juncus patens</i>	spreading rush	LB of P.L.S. 76 %	SEED	N/A
		15	3	<i>Deschampsia cespitosa</i>	tufted hairgrass	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Oenanthe sarmentosa*</i>	Pacific water parsley	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Scirpus microcarpus</i>	panicked bulrush	LB of P.L.S. 76 %	SEED	N/A
		100	20	= total				

*OSB nectar plants **OSB host plant

Note: *Viola adunca* and *Sidalcea malviflora* shall be planted on the wetland edges.

Table 4 PSS Planting Zone B: Coastal Prairie

Planting Zone B- Coastal Prairie								1.00
Overall Spacing (feet off center)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Individual Spacing (ft.)
12	303			HERBACEOUS				
		20	61	<i>Deschampsia caespitosa</i>	hairgrass	4" plug	cluster	27
		30	91	<i>Solidago spathulata*</i>	dune goldenrod	4" plug	cluster	22
		20	61	<i>Festuca rubra</i>	red fescue	4" plug	cluster	27
		15	45	<i>Symphyotrichum chilense*</i>	California aster	4" plug	cluster	31
		15	45	<i>Juncus lesueurii</i>	salt rush			31
		100	303	= total				
N/A	50			NATIVE SEED				
		30	15	<i>Achillea millefolium*</i>	yarrow	LB of P.L.S. 76 %	SEED	N/A
		20	10	<i>Deschampsia caespitosa</i>	hairgrass	LB of P.L.S. 76 %	SEED	N/A
		20	10	<i>Festuca rubra</i>	red fescue	LB of P.L.S. 76 %	SEED	N/A
		25	12.5	<i>Solidago spathulata*</i>	dune goldenrod	LB of P.L.S. 76 %	SEED	N/A
		5	2.5	<i>Symphyotrichum chilense*</i>	California aster	LB of P.L.S. 76 %	SEED	N/A
		100	50	= total				

*OSB nectar plants

Table 5 PSS Planting Zone C: Dune Mat

Planting Zone C- Dune Mat								1.00
Overall Spacing (feet off center)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Individual Spacing (ft.)
12	303			HERBACEOUS				
		20	61	<i>Anaphalis margaritacea*</i>	pearly everlasting	4" plug	cluster	27
		15	45	<i>Armeria maritima*</i>	sea pink	4" plug	cluster	31
		10	30	<i>Artemisia pycnocephala</i>	coastal sagewort	4" plug	cluster	38
		15	45	<i>Eriogonum latifolium*</i>	coast buckwheat	4" plug	cluster	31
		10	30	<i>Festuca rubra</i>	red fescue	4" plug	cluster	38
		20	61	<i>Grindelia stricta*</i>	gumplant	4" plug	cluster	27
		10	30	<i>Polygonum paronychia</i>	beach knotweed	4" plug	cluster	38
		100	302	= total				

*OSB nectar plants

Table 6 Planting Zone D: CEC Dune Mat

Planting Zone D-CEC Dune Mat								1.00
Overall Spacing (feet off center)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Individual Spacing (ft.)
6	1210			HERBACEOUS				
		10	121	<i>Anaphalis margaritacea</i>	pearly everlasting	4" plug	cluster	19
		10	121	<i>Achillea millefolium</i>	yarrow	4" plug	cluster	19
		15	182	<i>Armeria maritima</i>	sea pink	4" plug	cluster	15
		10	121	<i>Artemisia pycnocephala</i>	coastal sagewort	4" plug	cluster	19
		10	121	<i>Eriogonum latifolium</i>	coast buckwheat	4" plug	cluster	19
		10	121	<i>Festuca rubra</i>	red fescue	4" plug	cluster	19
		15	182	<i>Fragaria chiloensis</i>	coastal strawberry	4" plug	cluster	15
		10	121	<i>Juncus lesueurii</i>	salt rush	4" plug	cluster	19
		10	121	<i>Polygonum paronychia</i>	beach knotweed	4" plug	cluster	19
		100	1211	= total				

8.8.1 Source of Propagules

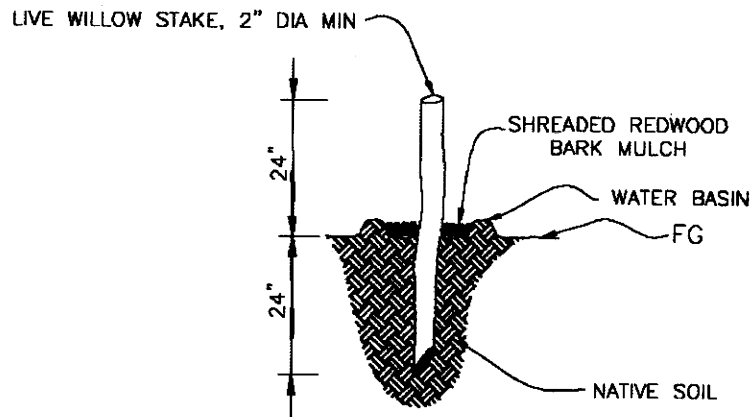
In order to preserve the unique genetic diversity common to seasonal wetland, grassland and dune communities in Del Norte County, plants will be purchased from local nurseries. The nursery shall grow the plant material from local genetic stock. All plant stock will be inspected to ensure it meets the design plan by a Restoration Construction Oversight Manager supplied by BCRAA. The Restoration Construction Oversight Manager (RCOM) shall be informed at least five days prior to plant stock being transported to the site to ensure they are available upon delivery for inspection. The nurseries will be selected well in advance so that timing to collect seed and to ensure adequate quantities and sizes (for container stock) of species will be available at time of planting. By using plant material from sources in close proximity to the site, and within the boundaries of the watershed, there will likely be high success due to the well adapted ecotypes being utilized.

Seed: The seed mix selected will consist of native hydrophytic plants that are local to the region. Seed shall be delivered to the site tagged and labeled in accordance with the California Agricultural Code and shall be acceptable to the County Agricultural commissioner. Bag tag figures shall be evidence of purity and germination. Time since date of seed test shall not exceed nine months. An agreement with a native plant nursery should be made well in advance of restoration planting to collect seed, and/or propagation and germinating by the subcontractor. In addition, consideration should include supplemental and/or incidental planting in anticipation of long-term maintenance efforts for the following year.

Native Plants: Plants will be purchased from nurseries and shall be grown from the local watershed, within a 20 miles radius, of the mitigation site, or from the mitigation site.

Willow cuttings: Cuttings can be gathered and planted on site with adherence to the following directions. Willow cuttings shall be taken from large vigorous-growing shrubs and trees from December 15 through February 1 (when plants are dormant) prior to bud swelling. The willow-cutting source shall be within a 15-mile radius of the mitigation site or directly from the mitigation site. Length of cuttings shall be three feet with a minimum ¾ inch diameter at the base and maximum of 3 inches. It is recommended that the bottom of the willow cuttings be cut at a 45-degree angle in order to keep track of the correct

orientation of the cutting and to facilitate planting. Cuttings shall be placed in a bucket filled with water prior to planting to avoid desiccation and shall be planted within 24 hours of cutting.



8.9 Mitigation Implementation

8.9.1 Seeding

Broadcast Seeding: this method can be used throughout the site, but is intended to cover bare soil areas in-between container plantings and for areas prone to erosion or where the Contractor will access the site for revegetation implementation.

It is recommended that the following seed quantities be used for revegetation seeding:

- Wetland broadcast seeding mixture shall be 30 lbs per acre per application
- Dune Mat broadcast seeding mixture shall be 20 lbs per acre per application
 - OSB nectar plant species shall be included in this seed mix
- Coastal Prairie broadcast seeding mixture shall be 40 lbs per acre per application
 - OSB nectar plant species will be included in this seed mix

Following the broadcast seeding application, straw mulch shall be applied at a rate of 1,500 pounds per acre (Pickart and Sawyer 1998). A tackifier is not required, but may be used if desired. The mulch will consist of natural fiber (virgin wood fiber is preferred), be free of synthetic materials (e.g., plastic), and contain no more than seven percent ash or 250 parts per million of boron. The seed and mulch can be applied separately, or mixed dry then spread evenly onsite. After application, the seed/mulch mixture will be lightly raked into the soil surface to help ensure good soil/seed contact. Application shall not occur when heavy rainfall is anticipated within 24 hours. When planting after broadcast seed application has occurred, planting activities will be performed carefully so as to result in minimum damage to the broadcast seeded areas.

Additionally, natural plant recruitment is expected to occur on site.

8.9.2 Plant Installation

The following plant material protocols should be considered prior to all plant installations:

1. Contractor shall be responsible for coordination and timing of plant material delivery to site or pick up. Plant material will be picked up no later than three days prior to installation.
2. Plants shall be graded and tagged in accordance with the American Standard for Nursery Stock as sponsored by American Association of Nurserymen, Incorporated (ANSI 260.1). Tags shall remain on plants until inspected and accepted by BCRAA RCOM. Notify BCRAA RCOM when plants are on-site to allow for an inspection to verify species or variety and acceptability of plants for robustness, and branching structure.
3. Plants shall comply with federal and state laws requiring inspection for plant diseases and infestations. Inspection certificates, as required by law, shall accompany each shipment of plants and shall be submitted to the BCRAA RCOM. Nurseries are to demonstrate protocols and strategies for managing fungal pathogens, non-native plants, and non-native insects through submittals to the BCRAA RCOM prior to placing the nursery order.
4. Plants will be purchased from nurseries and shall be grown from local Watershed genetic stock within a 20 miles radius of the project site or directly from the mitigation site. Plant material will be inspected, any diseased or root bound stock will be rejected.

The following steps are recommended for container stock plant installation:

1. Planting sites shall mimic a natural pattern spacing type and individual spacing as specified in the planting plan and will not be planted in a grid like pattern.
2. Remove grasses, weeds, and other non-native vegetation that adjoins the planting site.
3. Planting depth should be two times deeper and two times wider than the dimensions of the root ball. Depending on the soil, the planting hole can be excavated by hand digging or using an auger, shovel, Pulaski, pick or pry bar. Scarify bottom of planting pit to a depth of two to three inches. Repeat cultivation in areas where equipment used for hauling and spreading topsoil has compacted subsoil to enable root penetration.
4. Nursery stakes in plant containers shall be removed before planting. The container should be moist to reduce friction when removing plant. Roll or squeeze container to break surface tension between the plant and container. Tap the outside of the container, cradle till the plant is removed; do not pull on the stem.
5. Scarify each side of the root ball. Matted roots on the sides shall be sliced longitudinally 1/8-1/4 inch deep at least once per side. Matted roots on the bottom of the root ball shall be sliced a 1/4 inch deep.
6. Do not allow "J" bending to occur to the tap root or root ball during installation. The crown of the plants will be a minimum of 2 inches above finish grade to account for any settling. The crown shall remain above finish grade after any adjustments have been made. Plant should not be deeper than the original soil line; no roots shall be left exposed.
7. Install plant protection measures such as foliage and root protectors made of fine mesh wire fencing material, as appropriate.

8. An initial watering will be conducted to further eliminate air spaces and ensure adequate contact of the root surface with the soil medium after planting, taking care to avoid erosion and ensuring no roots are exposed after watering.
9. Maintain the planting area from weeds by hand scraping with a hoe to bare soil around each planting to reduce competition from weeds and to reduce thatch utilized by small mammals. Install weed-mats or provide continual weed maintenance. If weed mats are used ensure they are biodegradable fabric such as coconut, or core fiber and attached to the surface using ground staples or equivalent. No plastic filament or other non-biodegradable material that could entrap wildlife will be used.

Willow (*Salix ssp.*) Planting Instructions:

1. Prior to planting soak cuttings (in a pond, ditch, garbage can or deep enough water) so the cutting is protected from wind and sun exposure during the soak for at least 24 hours to increase root and shoot production.
2. Willow cuttings shall be placed with the basal 2/3 of the slip (painted top) in the ground, with approximately 10-12 inches above the soil surface, spaced 15' apart.
3. If holes are dug or augured for the willows the soil shall be tamped around each willow slip so no air void occurs.

8.10 Invasive Plant Control

Invasive plant species at the mitigation site are identified as plant species listed with a rating of high or moderate by the California Invasive Species Council (Cal-IPC), as well as, the Humboldt/Del Norte Weed Management Area (WMA) Strategic Management Weed List. Invasive and non-native plants currently present within the mitigation project areas are listed in Table 7 below.

There are a variety of invasive plants adjacent to road removal segments and within the complex dune/coastal prairie matrix. Once the mitigation implementation begins, there is potential for these non-native plants to persist in areas of fresh disturbance and they are expected to increase in some locations after the canopy adjacent to the roadways has been removed or thinned resulting in increased light and exposed seed bank.

This section summarizes locations and suggested removal or management methods for invasive species at the mitigation sites. In general, manual removal or other minimally intrusive methods will be used in or near sensitive species habitat with other techniques limited to already heavily disturbed areas where pre-construction surveys document the absence of OSB host or nectar plants and subject to resource agency approval. A more detailed discussion of a full range of potential control methods is included in Appendix B.

Table 7 Invasive Plant Species Distribution in Project Area

<i>Scientific Name</i>	<i>Common Name</i>	<i>Cal-IPC Rating</i>	<i>Humboldt/ Del Norte WMA</i>	<i>Habitat</i>
<i>Ammophila arenaria</i>	European beach grass	High	High	Coastal Dunes
<i>Cytisus scoparius</i>	Scotch broom	High	High	Dunes, Roadside, Widespread
<i>Rubus armeniacus</i>	Himalayan blackberry	High	High	Riparian areas, Dunes, Wetlands

Scientific Name	Common Name	Cal-IPC Rating	Humboldt/ Del Norte WMA	Habitat
<i>Anthoxanthum odoratum</i> ¹	sweet vernal grass	Moderate	NL	Coastal prairie, Coniferous forest
<i>Cirsium vulgare</i>	bull thistle	Moderate	High	Riparian areas, Wetlands, Coastal prairie
<i>Bromus hordeaceus</i> ²	soft chess	Limited	High	Grasslands, sagebrush, serpentine soils, many other habitats
<i>Dactylis glomerata</i> ³	orchard grass	Limited	NL	Grasslands, Broadleaved forest, Woodlands
<i>Hypochaeris glabra</i>	smooth cat's ear	Limited	Moderate	Scrub, Woodlands, Widespread
<i>Plantago lanceolata</i> ²	English plantain	Limited	NL	Many habitats
<i>Cortaderia jubata</i>	pampas grass	High	High	Coastal dunes, coastal scrub, Monterey pine, riparian, grasslands, wetlands
<i>Dipsacus fullonum</i>	Indian teasel	Moderate	Moderate	Grasslands, Riparian, Wetlands, Impacts regionally variable, forms dense stands on occasion
<i>Foeniculum vulgare</i>	sweet fennel	High	High	Grasslands, Scrub
<i>Hedera helix</i>	English ivy	High	High	Roadside
<i>Holcus lanatus</i>	velvet grass	Moderate	Moderate	Coastal grasslands, Wetlands, Widespread, Impacts can be more severe locally, especially in wetland areas
<i>Senecio jacobaea</i> ⁴	tansy ragwort	Limited	High	Wetland, Riparian, Coastal

1. Little information available on impacts and limited ecological range

2. Very widespread, but monotypic stands uncommon. And/or in converted grasslands

3. Widespread. Impacts appear to be minor; some local variability. Low density and impact in wildlands

4. OSB host plant and removal is permitted in this restoration plan; can be locally important in NW CA.

Ammophila arenaria (European beachgrass)

On site at CEC

Ammophila removal at the CEC is in the area described as the "borrow area." In any areas adjacent to sensitive habitat and species, the *Ammophila* will be removed manually.

PSS

Ammophila is present throughout the dune community at PSS. Those areas where the dunes are proposed to be reconnected will have the adjacent *Ammophila* removed. *Ammophila* removal will include occurrences on purchased parcels or from CDFW parcels adjacent to project actions areas in order to reduce the parent populations and re-occurring seed bank and rhizome growth. For example populations along Marish Street and Martin Street shall be removed from both the road segment slated for mitigation as well as the adjacent parcels depending on ownership (Figure 8). In the areas adjacent to sensitive habitat and species, the *Ammophila* will be removed manually. Once *Ammophila* is removed the area will be revegetated with the native species planting palette appropriate for each removal location including OSB nectar plant species.

Scotch broom (Cytisus scoparius)

Scotch Broom can be found in both scattered and dense patches along many of the roadways proposed for wetland re-establishment including portions of Marish Street, Martin Street, Tell Blvd., Hinckley Dr., and Ocean Dr. (Figure 8) This plant is capable of prolifically re-sprouting thus it is unlikely that this plant can be controlled without either long-term repeated management or careful application of herbicide using the cut stump, hand paint technique in areas of large infestations. Small infestations and occurrences close to sensitive habitats or species can be manually removed using a specialized tool that can pull the entire root.

Pampas grass (Cortaderia jubata)

Small to medium sized stands of pampas grass were observed in coastal prairie and dune mat habitats. Considering the size of the population manual removal is recommended.

Harding grass (Phalaris aquatica)

The known occurrences at the PSS mitigation project site occur as small clusters along the edges of wetlands and coniferous forests; hand pulling is the recommended method for controlling this plant on the site. Additionally, in northern red-legged frog (NRLF) or rare plant sensitive species habitat mowing is preferred for control; the blade height on the mower shall be a minimum of eight inches to ensure no adverse impacts to native flora and fauna.

Teasel (*Dipsacus sativus*):

The known occurrences at PSS are found in small scattered locations within the coastal prairie and along edges of coniferous forest, dune and wetland habitat.

Velvet grass (*Holcus lanatus*)

This species can be found in most habitats at PSS including coastal prairie, wetlands, dune mat and edges of coniferous forests.

English Ivy (*Hedera helix*)

The known occurrences at PSS includes an occurrence located on Tell Blvd. Additional occurrences may be noticed in the project action areas in coniferous forests as this species is shade tolerate. When observed within action areas of the project the entire plant including roots and stems shall be carefully removed.

9. Maintenance Plan

9.1 Maintenance

The re-established habitats have been designed to be as self-sustaining as possible. However, natural ecosystems are dynamic and subject to change over time. This is especially true in modern fragmented preserves, where the vast landscapes and ecological processes which once maintained a habitat mosaic may have been partially or completely disrupted. Natural processes include flood and drought, fog, fire, wind, disturbance by burrowing animals, and grazing.

As a result of human-induced change, management is usually required to maintain preserves and prevent gradual degradation. In the short term, management will likely be necessary to minimize aggressive invasive plant species that may recruit within the re-established wetland, grassland and dune communities. The following discussion identifies maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

The construction contractor will be responsible for habitat planting. The BCRAA will be responsible for implementing and financing the initial plant establishment maintenance period to ensure the site has been prepared properly and does not have deficiencies or damages, that invasive plants comprise no more than 5% of the re-established habitat areas, and that rooted stock is planted correctly and is exhibiting healthy and vigorous growth. After the initial plant establishment maintenance period, the BCRAA will be responsible for implementing and financing maintenance activities for the duration of the five year monitoring period.

The following discussion identifies approaches for maintaining the site at the end of the construction and planting period.

9.2 Inspection Activities and Frequencies

The following inspections will be generally performed on a bi-annual basis throughout the mitigation monitoring timeframe unless a different interval is specified below. Field notes will document if conditions are normal or abnormal, and the annual monitoring report will recommend remedial adaptive management actions to address any significant issues, as deemed necessary. In addition to the annual monitoring criteria listed above, annual monitoring will also note whether the following conditions are observed within each habitat type:

1. Are planting areas exhibiting excessive water or drought stress (too much or too little water as evidenced by leaf wilt, leaf drop, plant die off, etc.)?
2. Is there any presence of new or re-established populations of invasive or undesirable plants?
3. Is there a distinctive pattern of plant die off (i.e., all species of a single plant or a cluster of plants within a small area)?

Inspections shall occur bi-annually and be documented in a maintenance logbook as to the date, time, site conditions, general observations, type of work to be done, and equipment used or required for follow-up maintenance. Inspection frequency may be altered depending on ambient conditions or the amount of work required at the site. The logbook will be submitted on an annual basis with the annual monitoring report.

9.3 Maintenance Schedule and Activities

Maintenance shall be conducted bi-annually for five years; one time in the early spring and once in early fall. Maintenance activities may include revegetation irrigation, maintenance of herbivory root and foliage protectors, supplemental planting, and/or weeding.

The work will be guaranteed against invasive plants (listed above, Table 7) and weed growth during the plant establishment period. Weed management such as with a mower, weed whacker, weed wrench or extractigator, or hand pulling, applications should be done seasonally, throughout the year until plants are established. The NRLF is common on coastal sites and can be active at any time of year. Highest risk of impacts during vegetation maintenance is from middle to late summer when juveniles are dispersing or anytime in the rainy season. No herbicides are allowed during maintenance activities. If timing of maintenance needs to be modified for certain items, the rationale for the decision will be documented in annual monitoring reports and in the maintenance logbook. Inspections and Maintenance shall occur bi-annually using the schedule for maintenance during the monitoring period is shown in Table 8 as a guide for determining when to visit the mitigation site.

Table 8 Schedule for Wetland and Riparian Maintenance during the Monitoring Period

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Revegetation Inspection and Maintenance	I, M			I, M	M	M	I, M	M	M	I, M		
Unnamed tributary (T1) Inspection and Maintenance*	I			I			I			I		
Invasive Plant Inspection and Maintenance	I, M			I	M	M	I, M	M	M	I, M		

I = Inspection, M = Maintenance Predators (bullfrogs) are not expected to be a significant issue in the seasonal wetlands of the PSS site. (*Maintenance- Management will occur only if inspections identify an issue).

Revegetation Inspection and Maintenance

Revegetation maintenance will be conducted bi-annually to ensure wetland revegetation out-planting is becoming established.

- Supplemental planting for areas that have deficiencies in the seeding or planted material stock (may be in-kind, or if a particular species is not doing well at the

site, a suitable replacement species can be supplemented for original plant species);

- Supplemental replacement plants for when a plant becomes damaged or injured by maintenance activities (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
- Supplemental watering to maintain adequate moisture depth in soil to insure vigorous growth;
- In years one and two of the maintenance period, the Contractor shall establish an agreement with a native plant nursery to collect seed to propagate and germinate for supplemental and/or incidental planting in anticipation of long-term replanting efforts for the following year;
- Watering will be provided through an informal irrigation system and the timing and frequency of irrigation will be reduced after year two of maintenance to allow for the plant to acclimate to the existing moisture conditions.
- The wetland areas will be maintained with minimal weeds; weed mats can be used to help achieve this criterion.

Invasive Plant Inspection and Maintenance

Invasive species are defined as those listed by the California Invasive Council (Cal-IPC) with a rating of high or moderate. Invasive or non-native plants that need to be removed on the PSS site includes velvet grass (*Holcus lanatus*), bull thistle (*Cirsium vulgare*), European beachgrass (*Ammophila arenaria*), Scotch broom (*Cytisus scoparius*), Himalaya blackberry (*Rubus discolor*) and sweet vernal grass (*Anthoxanthum odoratum*) and any other species identified that propagates within the re-established wetland shall be treated immediately upon detection. Invasives plant inspections and maintenance will be conducted during the growing season. The tansy ragwort (*Senecio jacobaea*) is an invasive plant that is utilized by the OSB, and it shall not be removed unless and until planting of nectar species to offset the plant removal has proven successful.

Mowing or weed whacking in late February through April has been successful in coastal areas (Anderson 2001) and may be utilized in selected areas. Collaboration with The Nature Conservancy in Oregon (at Cascade Head) may be sought to understand how they have managed invasives in OSB habitat.

- Routine weeding will be implemented as part of the maintenance.
- Where invasive and weedy plants have been removed, maintenance activities shall ensure they do not readily re-propagate within the mitigated habitats.
- All corrective landscaping work including non-native vegetation removal will be done by hand when possible.

10. Performance Standards

10.1 Success Criteria

Performance standards for the RSA mitigation project are intended to be measurable by systematic monitoring methods.

10.1.1 Hydrology Criteria

H1: Palustrine Wetland: During an average year of rainfall (75 inches), the wetland will hold (saturated to the surface or ponding on the surface) water until at least May 1st.

H2: Palustrine Wetland: At the end of five years, the total re-established area shall be at least 33.2 acres as determined by a jurisdictional delineation.

10.1.2 Vegetation Criteria

V1: Palustrine wetland post-planting cover shall meet the annual criteria identified in Tables 8:

Table 8 Palustrine Emergent Wetland Habitat Success Criteria (PSS)

Palustrine Wetland* (per road segment or block)	<p>Year 1: 40% or greater absolute cover of native wetland species. No more than 25% absolute cover of target invasive plants*. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation.</p> <p>Year 2: 50% or greater absolute cover of native wetland species. No more than 20% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation.</p> <p>Year 3: 70% or greater absolute cover of native wetland species. No more than 15% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation.</p> <p>Year 4: 75% or greater absolute cover of native wetland species. No more than 15% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation. <i>Carex obnupta</i> shall have a 50% relative cover in the herbaceous layer.</p> <p>Year 5: 80% or greater absolute cover of native wetland species. No more than 10% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation.</p>
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V2: Coastal prairie post-planting cover shall meet the annual criteria identified in Table 9:

Table 9 Coastal Prairie Success Criteria (PSS)

Coastal Prairie*	<p>Year 1: 40% or greater absolute cover of native coastal prairie species. No more than 25% absolute cover of target invasive plants*. No evidence of oversaturation or permanent inundation. OSB plants shall have at least 10% relative cover.</p> <p>Year 2: 50% or greater absolute cover of native coastal prairie species. No more than 20% absolute cover of target invasive plants. No evidence of oversaturation or permanent inundation. OSB plants shall have at least 10% relative cover.</p> <p>Year 3: 60% or greater absolute cover of native coastal prairie species. No more than 15% absolute cover of target invasive plants. No evidence of oversaturation or permanent inundation. OSB plants shall have at least 15% relative cover.</p> <p>Year 4: 70% or greater absolute cover of native coastal prairie species. No more than 5% absolute cover of target invasive plants. No evidence of oversaturation or permanent inundation. OSB plants shall have at least 15% relative cover.</p> <p>Year 5: 75% or greater absolute cover of native coastal prairie species. No more than 5% absolute cover of target invasive plants. No evidence of oversaturation or permanent inundation. OSB plants shall have at least 20% relative cover.</p>
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V3: Dune mat post-planting cover shall meet the annual criteria identified in Table 10:

Table 10 Dune Mat Success Criteria (PSS)

Dune Mat (per dune connection location and upland dune enhancement areas)	<p>Year 1: >5% or greater absolute cover of native dune species. No more than 25% absolute cover of target invasive plants*. At least 5% relative cover of OSB nectar plants.</p> <p>Year 2: 15% or greater absolute cover of native dune species. No more than 20% absolute cover of target invasive plants.</p> <p>Year 3: 20% or greater absolute cover of native dune species. No more than 15% absolute cover of target invasive plants.</p> <p>Year 4: 25% or greater absolute cover of native dune species. No more than 5% absolute cover of target invasive plants.</p> <p>Year 5: 30% or greater absolute cover of native dune species. No more than 5% absolute cover of target invasive plants. OSB plants shall have at least 20% relative cover.</p>
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V4: Rare plant post-planting cover at CEC shall meet the annual criteria identified in Table 11:

Table 11 Plant Success Criteria at CEC (dune mat and rare plants)

Rare Plants (Dunes at CEC)	<p>Year 1 55% success of planted dune species with CNPS rarity ranking. 10% or greater absolute cover of native dune species. No more than 15% absolute cover of target invasive plants.</p> <p>Year 2: 10% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 10% absolute cover of target invasive plants. Year 3: 15% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 10% absolute cover of target invasive plants. Year 4: 20% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 5% absolute cover of target invasive plants. Year 5: 25% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 5% absolute cover of target invasive plants</p>
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Western Lily Success Criteria at PSG:

V5: In each monitoring year, the vegetative cover at PSG in areas cleared for the western lily shall be no greater than 42 inches high and shall contain no more than 15% total cover of invasive plants, woody species over 12 inches tall, or *Spiraea douglasii* (a native wetland plant, which can form monocultures).

11. Monitoring

11.1 Hydrology Monitoring

Monitoring of hydrology will be completed through physical survey measurement for seasonal wetland hydrology. If there are changes in ground elevations at these locations as a result of storm damage, excessive inundation, excessive drought, or excessive accumulation of vegetation corrective actions will be evaluated. If determined appropriate, a solution to remediate impacts will be proposed to the regulatory agencies. Monitoring will occur for five years and reports are due annually by December 31st and will be submitted to the USACE, CCC, CDFW, and USFWS.

Hydrology monitoring will document precipitation and weather conditions. In the event of prolonged (more than one year) drought, extension of the monitoring period or other appropriate adaptive management action will be proposed. Methods for quantifying the hydrologic function of the wetlands are described below.

Palustrine Emergent Wetland: Methods for quantifying the geomorphic and hydrologic function of the wetlands will include:

- Install a staff gage within excavated frog ponds for the purpose of measuring depth and duration of water inundation.
- During the rainy season, the staff gages shall be monitored a minimum of one time per month (November through May).
- The Technical Standard for Wetland Hydrology will be met if wetland hydrology occurred in at least 50 percent of years (EPA 2005).
- Install monitoring wells and monitor weekly, five consecutive times, for one month, during the winter season (November through April).

Soils will be evaluated annually in at least three selected wetlands to identify hydrologic indicators on the PSS site. Soils will be evaluated to a depth of 15 inches.

The re-established wetland area in the PSS project area will be determined by a jurisdictional delineation.

11.2 Vegetation Monitoring

Vegetation sampling will occur every year in the re-established palustrine emergent wetland, coastal prairie, and dune mat habitats for the duration of the five year monitoring period. The goal is to estimate the percent surface area cover and document the species composition once road removal construction activities are complete where roads are removed at PSS and for revegetation areas at CEC. Monitoring should occur between June 1 and July 31st and should occur roughly within one month each monitoring year for best comparison of results.

Either the quadrat or point-line intercept methods may be used to estimate absolute vegetative cover, native cover, hydrophytic cover, and non-native invasive cover. The method to be used will be selected by the biological monitors after discussion with

resource agencies. The selected method will be used in each re-establishment and enhancement habitat type areas (wetland, coastal prairie, dune mat) and will be used to determine whether mitigation areas are meeting set success criteria for vegetative cover. Within any site methods shall be consistent through the monitoring period.

Determining Sample Size

Power analysis. An *a priori* power analysis will be used to determine the monitoring effort required. We define the specific question to be addressed as follows:

Is the true value of the percent cover less than or equal to the percent cover requirement?

The allowable certainty for percent cover will be a margin of error of +/- 10% at the 95% confidence interval. The confidence interval is the probability that the true value would be encapsulated in the margin of error around the reported percentage; the lower the confidence interval, the smaller the margin of error. Margin of error (ME), confidence interval and required number of sampling points (n) are related by the following equation for the 95 % confidence interval:

$$ME = 0.98/\text{sqrt}(n)$$

The number of sampling points required to evaluate percent cover will be calculated using this equation.

Monitoring Protocol and Analysis for Estimating Vegetative Cover

Monitoring for wetlands and upland dunes at PSS will be linear due to the fact that wetlands and upland dune habitats are to be re-established within the 24-foot wide roadways at PSS.

If quadrat methods are used, transects will be located randomly within the width of road removal segments to be monitored, and each transect will run parallel to the centerline of the road. The location of the first quadrat will be randomized relative to the beginning of the road segment, with quadrats at set distances thereafter. Percent absolute vegetative cover, native cover, hydrophytic cover, and non-native or invasive cover will be estimated within each quadrat.

Alternatively, point-line intercept surveys may be used to estimate absolute vegetative cover, native cover, and hydrophytic cover in palustrine emergent wetland, coastal prairie, and dune mat habitats. Point-line intercept surveys may also be used to estimate non-native invasive species cover in all habitats. The number of sampling points would be determined using the power analysis method above¹. Each transect should be labeled for identification.

Each line will be established at a random location within the 24-foot width of the street, and the line will begin at a random location from the beginning of the road segment or the

¹ Note that a margin of error will increase the uncertainty around the percent cover of invasive species. The threshold for invasive species 5% cover, however, a value of 4% could represent a value of 0 to 9% cover of invasive species (at the 95% confidence interval). Reducing the margin of error requires increasing the sampling effort, and margins of error within 1% would require prohibitively intensive sampling efforts.

beginning of a habitat unit. Data will be collected at points established by placing a 2-meter metal rod vertically (perpendicular to the ground) at defined intervals (one or five meters) along a transect tape. The plant species touching the rod within each height category (low, medium, and high) will be recorded. Plant species that touch the rod in more than one height category will be recorded in each height category. The two smallest vegetation height categories, Low (0.0 meter to 0.5 meter) and Medium (0.5 meter to 2 meters), are captured by the height of the rod (2 meters tall). The High category (over 2 meters) will be estimated using eyesight (but may not be present in re-established herbaceous wetlands). In addition to vegetative cover, each point where there is no vegetation, bare ground will be noted.

A t-test will be used to evaluate whether or not percent cover is less than or equal to the interim or final success criteria. Trend analysis may be more informative than examining threshold exceedance because invasive species percent cover increases often are predictive of long-term ecological composition.

Non-native Invasive Plant Monitoring

During spring or early summer of Years one to five, non-native invasive plant cover will be calculated from the data collected, as described above. In addition to this monitoring, areas with greater than five percent cover of target non-native species will be mapped using GPS as long as areas are safely accessible. Maintenance activities to control non-native invasive species will be targeted in these areas. Each year the acreage of mapped highly invasive species will be compared.

A spring inspection in subsequent years comparing mapped non-native invasive cover from the prior year will be conducted to determine if a non-native invasive species population has spread or a new species has invaded. In either scenario, maintenance activities may be required.

Additional Data Collection

In addition to point data collected along random transects, quantitative and qualitative data will be collected each year of monitoring. These general site assessments are intended to help determine if data from sampling transects is an accurate representation of site conditions, to help assess the overall functioning of the site as a whole, and also to help identify localized or low-level trends such as new invasive species formations, localized changes in species abundance, and other changes that might be overlooked if only transect data are analyzed.

The following data will be collected during the site assessment:

- Species richness: this general site data will be used for calibrating similar data taken at transects, and is not intended for comparison with success criteria. Data will also help to evaluate whether invasive or non-native species are outcompeting native plants, and whether more active management might be required.
- Assessment of the health and vigor of the planted stock will be documented using the attributes in Table 12.

- Other site characteristics, including patterns of plant die-offs, erosion, hydrological issues, trespass, herbivory or grazing pressure, or other land use issues. This information is intended for use in recommending management actions as necessary

Table 12 Qualitative Score for Assessing the Health and Vigor of Planted Stock

Score	Description of Score
Excellent	No evidence of stress; minor pest or pathogen damage may be present. No chlorotic leaves, no or very minor herbivory (browse). Evidence of new growth, flowering, seed set on majority (greater than 75 %) of plants observed.
Good	Some evidence of stress. Pest or pathogen damage present, few chlorotic leaves (> 5%), minor evidence of herbivory (browse). Evidence of new growth, flowering, seed set on most (greater than 50%) of plants observed.
Fair	Moderate level of stress; high levels of pest or pathogen damage, some chlorotic leaves (> 10%), some herbivory damage (few snapped leaves, stems, wear marks etc.). Evidence of new growth, flowering, seed set on some (less than 50%) of plants observed.
Poor	High level of stress; high levels of pest or pathogen damage, many chlorotic leaves (> 30%), severe herbivory damage (massive forage damage, main stems/leaves stripped etc.). No evidence of new growth, flowering, or seed set, or only a few plants (less than 25%) with these characteristics.

11.3 California Rapid Assessment Method

The California Rapid Assessment Method (CRAM) will be applied to selected wetland assessment areas within the PSS site. The number of assessment areas will be sufficient to include at least two examples of each major wetland habitat type. Field work and subsequent analysis will be done by ecologists who have completed the CRAM depressional wetland training module. Results will be compared to pre-construction reference site data and documented in a technical memorandum. A CRAM workplan will be prepared prior to construction and will be subject to review by the USACE and RWQCB.

11.4 Oregon Silverspot Butterfly Habitat Monitoring

Surveyors shall be able to recognize all of the OSB host and nectar plants documented for PSS. Where OSB habitat enhancement is occurring, site specific surveys for these plants will occur. Transects monitored along removed roadways will document and report host and nectar species. Areas of dune re-connection or invasive plant removal outside of roadways will be monitored with quadrats established randomly along transects within each unit and measured in the same way as for roadway transects. Results will be included in annual reports.

11.5 Western Lily Habitat Monitoring

The cleared areas at PSG shall be monitored annually documenting success of removed vegetative cover to determine whether the PSG mitigation area is meeting set success criteria. In years one and five, the site shall be intuitively walked to discern the effect of targeted removed vegetation. Each monitoring effort should document observations such as approximate percent cover of the overall canopy, mean height, and cover for all

species. Areas where vegetative growth regenerates past 42" in height during the growing season, and for areas where *Spiraea* occurs in dense stands, shall be documented on a map, for follow up maintenance (USFWS 1998). Additionally, the site shall be surveyed to understand the trends of species which are re-colonizing the vegetation removal areas. Invasive plants such as velvet grass, gorse, Himalayan blackberry, among others shall be monitored for and immediately removed if they are regenerating on-site (USWS 1998).

The western lily survey protocol from the Arcata and Oregon Fish and Wildlife Office dated September 10, 2008 shall be reviewed prior to qualitative observations at PSG so that no direct adverse impacts occur to the lily as a result of monitoring vegetation removal areas. Survey for western lily habitat shall ideally take place between June 15 -July 15 as this is the optimal flowering period for the lily and surveys shall not take place before May 1 and after August 15 since the species emerges in late April and dies back by mid August (USFWS 2009). If the western lily population is regenerating, then a more focused protocol level survey may be done by the USFWS. However, the success of the PSG mitigation area is not dependent on the maintenance or enhancement of western lily populations, but rather is geared to the success of clearing woody vegetation in western lily suitable habitat. There will be no required western lily surveys as part of this MMP, however any observations of western lily while monitoring habitat shall be noted and reported to USFWS.

At a minimum, surveyors shall be able to recognize *Blechnum spicant* (deer fern), *Lotus formosissimus* (seaside birdsfoot trefoil), *Hypericum formosum* ssp. *scouleri* (western St. John's wort), *Maianthemum dilatatum* (false lily-of-the-valley), *Sanguisorba officinalis* (great burnet), *Carex obnupta* (slough sedge), *Calamagrostis nutkaensis* (Pacific reedgrass), tufted hairgrass (*Deschampsia cespitosa*), and *Holcus lanatus* (velvet grass). As these plants may occur within suitable habitat (USFWS 2008).

When rare plant occurrences are observed they shall be reported to the California Natural Diversity Database.

11.6 CEC Monitoring

A floristic survey of the dune mat and rare plant revegetation areas at CEC shall be conducted annually during the five year mitigation period. The survey shall follow the vegetation monitoring methods as stated above for PSS.

11.7 Photo Monitoring Stations

Permanent photo-documentation points will be established within the project site. One photopoint is required for each monitored re-established or enhanced habitat unit at PSS, PSG, and CEC. GPS coordinates will be obtained for each photopoint, and the points included on a GIS map of the sites.

Photographs will be taken throughout the monitoring period, during each monitoring event. Four photographs will be taken from the monitoring point, looking north, south, east, and west. Photos will be taken with a digital camera with a moderate wide angle lens (approximately 35mm focal length if a full-frame sensor, approximately 24mm focal length if a DX sensor, at the widest setting if a consumer-level digital camera with a built in zoom).

The make and model of camera and type and focal length of lens will be noted in monitoring documentation. Photographs will be taken from about five feet in height, ideally from a tripod with the height noted and consistent from year to year.

11.8 Monitoring Schedule

Monitoring will be implemented annually for five years. The wetland community will be monitored once in June or July. Western lily habitat survey shall take place between June 15 and July 15 as this is the optimal flowering period. Some flexibility to account for annual variation in weather conditions is acceptable. The site will be inspected for general parameters including observations of invasive and non-native plants, signs of erosion, illegal dumping, ATV use, and vitality of plant survivorship.

12. Long-term Management Plan

12.1 Long Term Management

Long-term management is a strategy for managing the site once the performance standards are achieved to ensure the long-term viability of the resource. While the site has been designed to restore self-sustaining ecological processes and functions and to perform in perpetuity, there will still be a need to make occasional inspections and if necessary, perform remedial actions. Once the five year monitoring time period is over and CEC satisfies the permit requirements outlined in this mitigation plan, the ownership of the mitigation site is anticipated to be transferred to CDFW or another responsible entity. At this point in time, the new owner will be responsible for the long-term management of the mitigation site and shall inspect and finance all activities moving forward.

The western lily habitat enhancement area at Point Saint George will be preserved and maintained at a height not less than eight inches and not greater than 48-inches by appropriate management methods identified in Biological Opinion conservation measures and conducted every two to three years as part of the airport routine vegetation maintenance. BCRAA will be the responsible entity for pursuing on-going long-term vegetation maintenance for the area on the airport side of the fence. This agreement will be formalized in a way agreeable to BCRAA, FAA, and USFWS.

13. Adaptive Management Plan

13.1 Adaptive Management

Adaptive management is a tool used to cope with the inherent changes and instability fundamental to natural resources and the ecological processes that encompass them. It is a process derived from a collection of practical methods based in research and monitoring. As a philosophy, it holds that conservation and restoration programs should be designed in ways that accumulate knowledge as quickly and accurately as possible so that the management plan can be adapted promptly to better management efforts. This approach allows managers to learn by experience within site specific environments and apply lessons learned to remedy deficiencies using a controlled and scientific approach.

Adaptive management procedures will be recommended on a case-by-case basis, to address any issues identified at the site during monitoring or maintenance activities.

Adaptive management actions could include one or more of the following activities (not exclusive) if success criteria are not met:

1. Adjusted weeding method to reduce weeds around the planted wetland or upland to decrease competition from non-native grasses and forbs;
2. Supplemental planting for areas that have deficiencies in the seeding or planted material stock (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
3. Supplemental replacement (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
4. Supplemental watering (for non-performing plants that required supplemental planting);
5. Additional erosion control;
6. Hydrologic modification or minor regrading

Unpredictable natural changes could alter the mitigation areas and consequently necessitate changing the goals, objectives, strategies, and actions set forth in this plan. These changed conditions include but are not limited to:

- Unusual weather patterns, such as extended drought or excessive rainfall;
- Change in species composition, such as through invasion of a new non-native invasive plant or wildlife species to the site, or increase in spread of existing non-native plants listed as limited in Table 7, yet exhibits similar adverse characteristic of a plant ranked moderate or high and wildlife species in this particular habitat setting, or a change in the ranking of invasive plants;
- Change in the listing of species status that could occur or have potential to occur in the habitat mitigation area;
- Erosion or deposition of sediments;
- Successful colonization of re-establishment sites by Oregon silverspot butterfly host or nectar plant species, necessitating avoidance or surveys prior to management or maintenance.

13.2 Initiating Procedures

Standards for when to implement adaptive management will be if the percent cover in any monitoring year (averaged over sample plots) is 15 percent below the target level described under "Annual Success Criteria," or if absolute cover of target invasive species is over five percent in monitoring years three, four or five; or if additional final criteria are not met.

The hydrologic triggers that will dictate remedial actions are erosion and sedimentation. If an annual performance criterion is not met, a report shall be prepared analyzing the cause of failure and, if necessary, proposing remedial action.

13.2.1 Revegetation

Replanting would be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria if there is a lack of survival from targeted planting efforts. Vegetation monitoring surveys may reveal the presence of poor survival rates of planted stock or natural recruitments. Replanting would be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria if targeted planting is 15 percent below the target level of cover or 15 percent below success criteria on years three, four, or five.

Replanting may be deemed appropriate to replace dead plants. Plants should be replaced during the next rainy season. This should be considered throughout the monitoring period, considering the six month window may not include potential casualties during the dry season. This scenario is most likely to be triggered to increase coverage of OSB nectar or larval plants.

- Replanting will also be incorporated if success criteria are not being met to remedy the lack of live plant stems. There is potential to change the plant palette if a lack of diversity has occurred and is coordinated with the BCRAA Project RCOM.
- If a particular species has poor success throughout the site it may be replaced with a new species of botanical equivalence to the restoration habitats.
- If selected areas are receiving too much or too little water, the system may be modified accordingly.
- Use of weed mats or mulch as remedial action to reduce invasive plant recruitment.
- Potential application of fertilizer for plants that are nutrient deprived.

13.2.2 Hydrologic Modification

Hydrologic modification by regrading or re-contouring could be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria.

- Re-grade if sediment accumulation augments the seasonal water regime of the targeted palustrine emergent habitat type.
- Re-grade if hydrologic regime is not met in year three, assuming normal precipitation (within NRCS WET tables).

13.2.3 Invasive Species Control

An early detection rapid response mechanism should be in place for weed management throughout the year. Reducing non-native invasive plants should occur throughout the year if needed. No more than five percent cover of target invasive plants should occur during monitoring years one through five.

Machinery should not be used at the site during wet conditions. Invasive species control will likely require repeated effort for at least several years and possibly throughout the monitoring period. Specific needs will be identified based on each year of monitoring, and documented in annual reports. Appropriate control methods will be utilized depending on the species, the abundance and distribution of the species, and the location within the site and relative to wetlands or other sensitive resources.

- Mowers can be used to weed around the western lily mitigation site, as needed and with procedures in place to prevent harm to sensitive animal species or butterfly host or nectar plants.
- If using weed whackers or mowers it should be timed to occur in the early or mid-summer after annuals have desiccated and turned brown. Hand removal of weeds using a hoe to scrape the surface is adequate if this is done in the spring, there will be a reduction of annual grass seeds in the soil (McCreary 2009).
- Reducing non-native annuals and invasive plants should occur throughout the year if needed.
- Periodic grazing in the spring and late summer can be implemented as an adaptive management activity.
- When any new plant is listed or if a ranking status has been revised by the California Invasive Plant Council (CAL IPC) as medium or high priority, and it has been identified during monitoring it should be removed according to the most recent up to date methods.
- When new control methods are released that are more effective than a previously employed method for control and removal the plan should accommodate the new techniques for the remainder of the monitoring period.
- Invasive plants will be removed extending three to five feet into areas surrounding the re-established habitat.
- Routine weeding will be implemented as part of the maintenance.

13.2.4 Browsers and Predators

Deer and rodents are the main concern for browsing on the plantings. The BCRAA Project Representative and the monitoring staff may meet and confer from time to time to revise the adaptive management plan to better meet management objectives and preserve the restored and enhanced habitat and conservation values of the property. Any proposed changes to the plan shall be discussed with the necessary agencies. Any proposed changes will be designed with input from all parties. Amendments to the plan shall be approved in writing, shall include required management components, shall be implemented by the land manager and have the coastal permit amended if legally appropriate.

14. Financial Assurances

BCRAA will establish a performance bond or other suitable instrument agreeable to BCRAA, FAA, and the resource agencies to assure adequate funding to complete required mitigation activities. The intent is to ensure that mitigation is completed even in the event of unforeseeable future circumstances.

15. Literature Cited

- California Coastal Conservancy. 2004. Staff recommendation: Pacific Shores phase 2 feasibility study. File No. 04-031.
- Cooper, W. S. 1967. Coastal dunes of California. Geological Society of America Mem. 104, 117p.
- GHD Inc. 2013a. Roadway segment selection methodology for wetland and habitat mitigation at Pacific Shores subdivision (optimization report). 18p.
- GHD Inc. 2013b. Draft biological resources report, Pacific Shores Subdivision.
- GHD Inc. 2013c. Habitat map, Pacific Shores Subdivision.
- GHD Inc. 2013d. Draft basis of design report, CEC terminal and runway safety area mitigation sites.
- Helley, E. J. and R. C. Averett. 1971. A preurbanization reconnaissance study of Lake Earl, Del Norte County, California. U.S. Geological Survey Water resources Division, Open File report. Menlo Park CA. 17p.
- Lauck, D. R. 1997. 1997 studies of the Oregon silverspot butterfly (*Speyeria zerene hippolyta*) and the host violets (*Viola adunca* and *Viola langsdorffii*) near Lake Earl in Del Norte County, California. Report to the Pacific Shores Water District.
- Pickart, A. J., and J. O. Sawyer. 1998. Ecology and Restoration of Northern California Coastal Dunes. California Native Plant Society, Sacramento. xi + 152p.
- Roberts, C. 2003. Summary of information about wetlands at Point Saint George. Report to the County of Del Norte Community Development Department and the California Coastal Conservancy. 13p. + appendices.
- Sawyer, J. O., T. Keeler-Wolf, and J. Evans. 2009. A manual of California Vegetation. Second Edition. California Native Plant Society, Sacramento.
- U.S. Fish and Wildlife Service. 1998. Recovery Plan for the Endangered Western lily (*Lilium occidentale*). Portland, Oregon. 82 pp. U.S. Fish and Wildlife Service. 2001. Oregon silverspot butterfly (*Speyeria zerene hippolyta*) revised recovery plan. U.S. Fish and Wildlife service, Portland. 113p.
- U.S. Fish and Wildlife Service. Arcata Fish and Wildlife Office. February 17, 2009. Western Lily Species Profile. Arcata. <http://www.fws.gov/arcata/es/plants/westernlily/lilly.html>
- U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office. January 2009. *Lilium occidentale* (Western lily) 5-Year Review: Summary and Evaluation. https://ecos.fws.gov/docs/five_year_review/doc2408.pdf
- Weidemann, A. M. 1984. The Ecology of Pacific Northwest Coastal Sand Dunes: A Community Profile. FWS/OBS-84/04.

Winzler & Kelly. 1995. Administrative draft environmental impact report: Pacific Shores
Subdivision local coastal program land use plan adoption and certification. Prepared for
Del Norte County Planning Department.

16. List of Preparers

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Katherine Ross, Planner, GHD Inc., Santa Rosa CA

James Bernard, BCRAA Executive Director

Camille Garibaldi, Environmental Protection Specialist, FAA, Brisbane CA



- | | | |
|--|---------------------------------------|-------------|
| RSA Project Location | Point St. George Lily Management Area | U.S Highway |
| Pacific Shores Project Mitigation Location | | Major Roads |
| | | Local Roads |

Paper Size ANSI A
 0 1 2
 Miles
 Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California 1 FIPS 0401 Feet



Border Coast Regional Airport Authority
 Mitigation and Monitoring Plan

Job Number 8410135
 Revision A
 Date 04 Jun 2013

Vicinity Map

Figure 1



Project Mitigation Area Study Boundary Pacific Shores Parcels

Paper Size 8.5" x 11" (ANSI A)

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Feet

Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

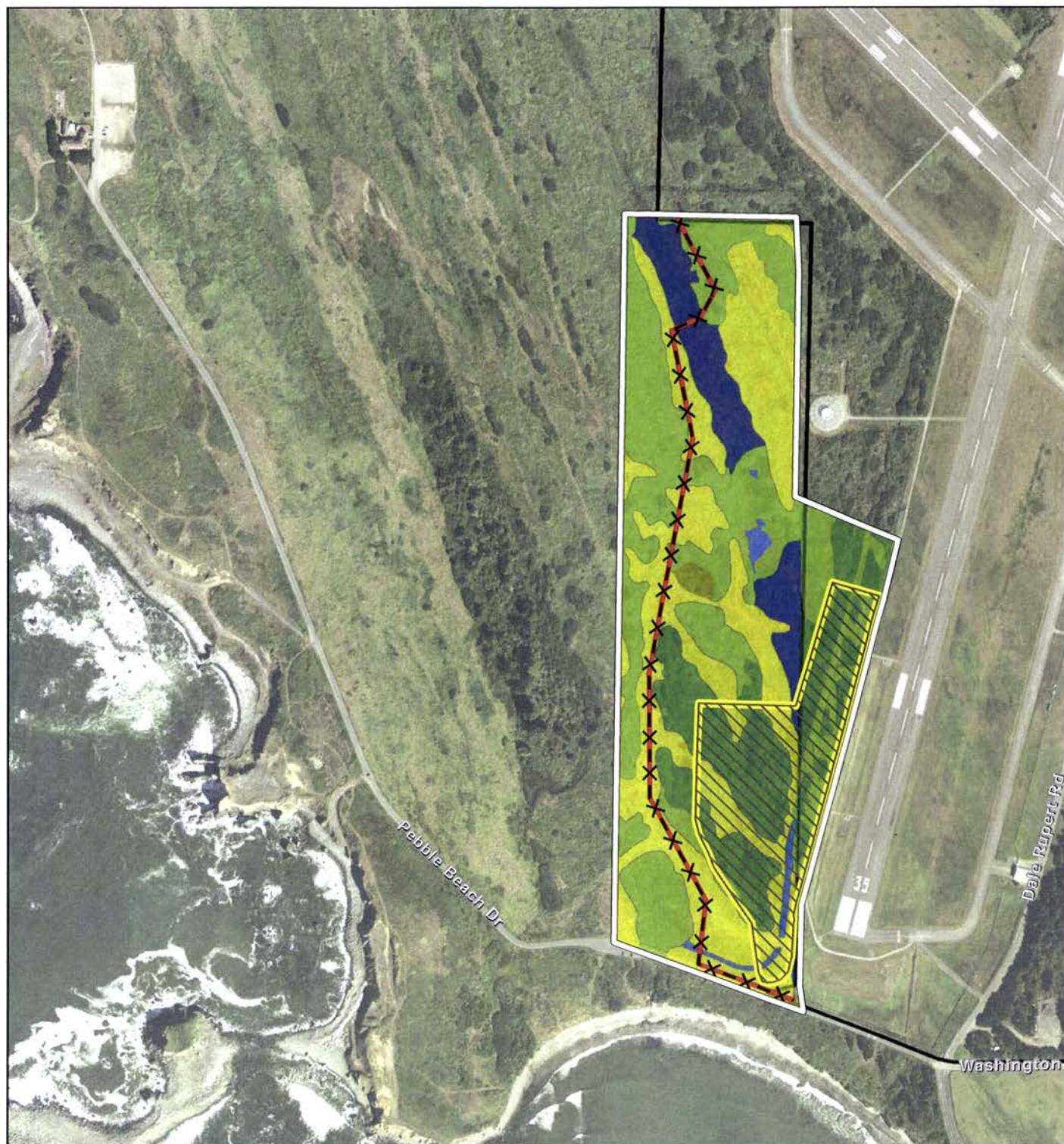


Border Coast Regional Airport Authority
Mitigation and Monitoring Plan

Job Number 8410135
Revision B
Date 04 Jun 2013

Project Site
Pacific Shores Subdivision

Figure 2



Point St. George

Point St. George Mitigation Study Area

Airport Boundary

X-X Proposed Mitigation Fence

Vegetation Management Area (13.96 acres)

Fence Construction Buffer (1.42 acres)

Plant Communities Associated with Security Fence

Coastal prairie upland (1.12 acres)

Mixed tree-shrub thicket - upland (0.001acre)

Palustrine Scrub shrub wetland (0.001acre)

Slough-sedge marsh (0.26 acres)

Willow shrub wetland (0.04 acre)

Water body

Paper Size 8.5" x 11" (ANSI A)

0 120 240 360 480 600 Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



Border Coast Regional Airport Authority
Mitigation and Monitoring Plan

Job Number 8410135
Revision B
Date 04 Jun 2013

Point St. George Western Lily
Management Project Area

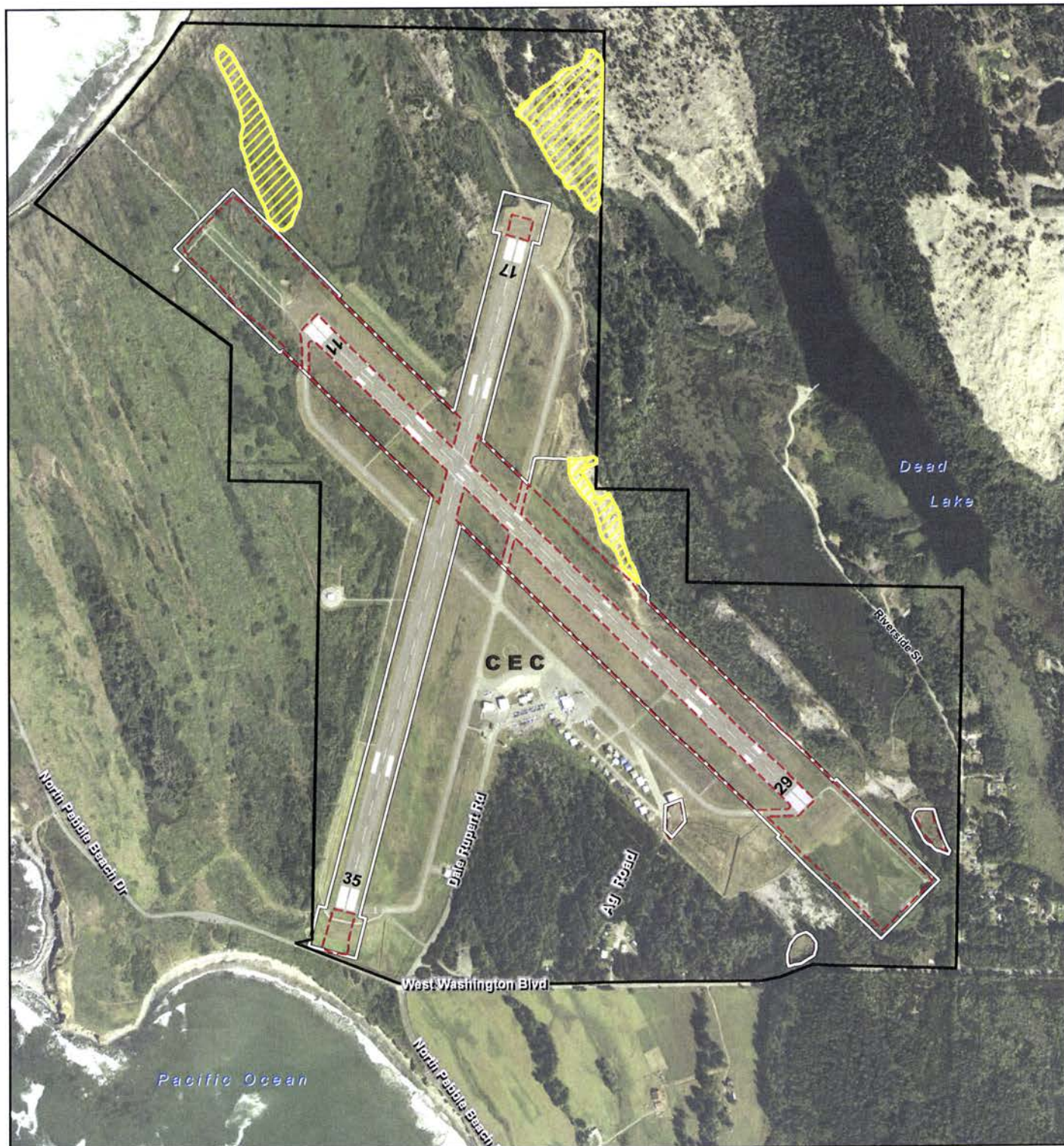
Figure 3


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Data source: NOAA - aerial, 1ft res, 2011. GHD, URS, Winkler & Kelly. Created by gldavidson

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 Project Study Area



Potential Rare Plant Relocation/Establishment and
Dune Restoration/Stabilization Areas (5.34 ac)

 Airport Boundary

 Project Impacts Footprint

Paper Size 8.5" x 11" (ANSI A)

0 200 400 600 800 1,000

Feet

Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

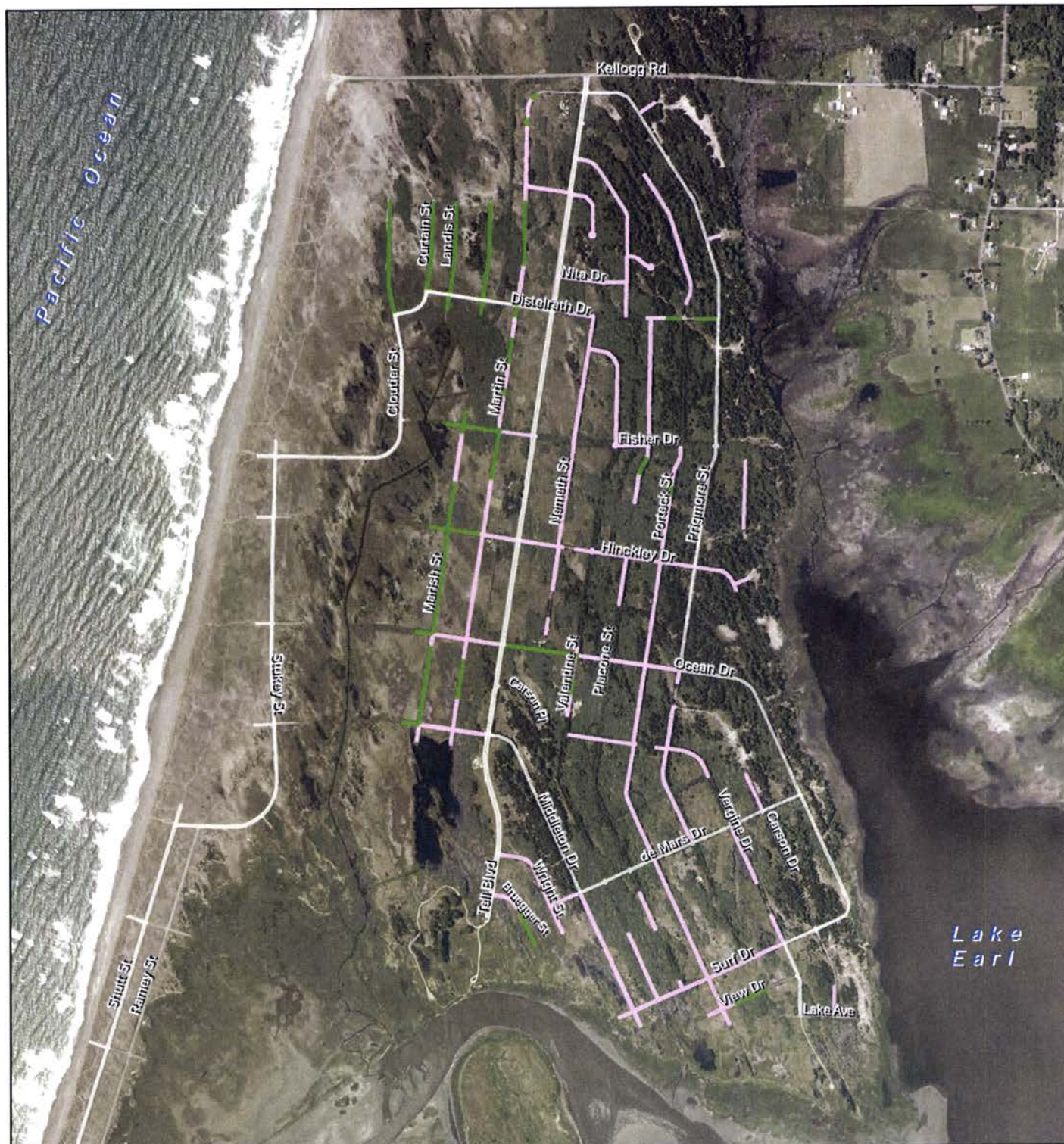



Border Coast Regional Airport Authority
Mitigation and Monitoring Plan


Job Number | 8410135
Revision | B
Date | 05 Jun 2013

Dune Restoration/Stabilization and
Special-Status Plants Replacement Areas **Figure 4**

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Data source: NOAA Aerial, 2011, 1 foot resolution; URS GIS RSA data, special status plants, edited by GHD. Created by gldavidson



 Recommended Roads to Remove for Mitigation
(Pink roads recommended for removal because removing these roads would result in the establishment of wetlands without conflicting with constraints) (23.1 acres)

 Road Not Recommended for Remove for Mitigation
(Even though removing these green roads would create wetlands, removing these roads would conflict with constraints) (7.2 acres)

Roads Retained for Access

Paper Size 8.5" x 11" (ANSI A)
0 300 600 900 1,200 1,500
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California 1 FIPS 0401 Feet



Border Coast Regional Airport Authority
Mitigation and Monitoring Plan

Job Number 8410135
Revision B
Date 04 Jun 2013

Optimization Report
Mitigation Road Segments

Figure 5



Project Mitigation Area
Study Boundary

Habitats



Brackish marsh



Conifer



Foredune & dry sedge



Water



Coastal prairie



Deciduous



Wet sedge



Bare earth

Paper Size 8.5" x 11" (ANSI A)

0 375 750 1,125 1,500

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983

Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



Border Coast Regional Airport Authority
Mitigation and Monitoring Plan

Job Number 8410135
Revision B
Date 04 Jun 2013

Pacific Shores Subdivision
Habitat Mapping

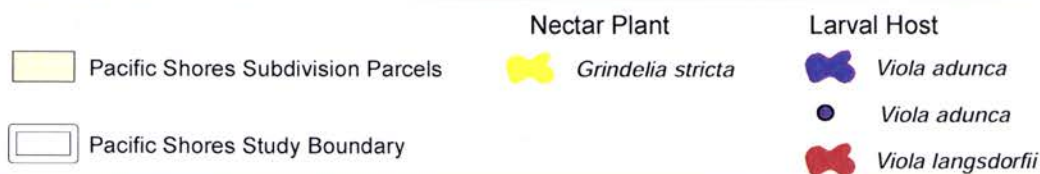
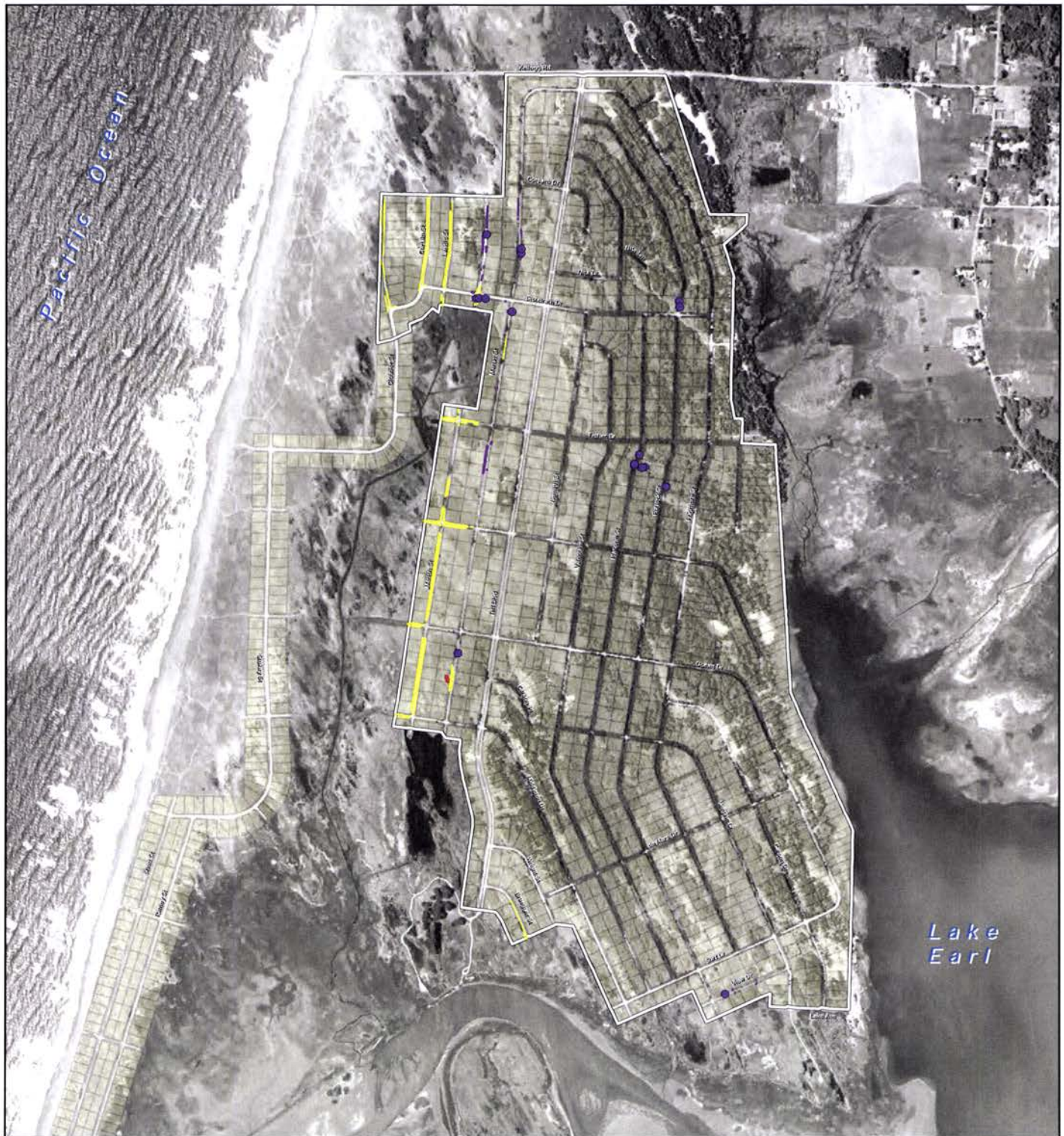
Figure 6

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Data source: Del Norte County GIS: parcel data; TIGER: roads; NAIP: aerial, 1m resolution. Created by gldavidson

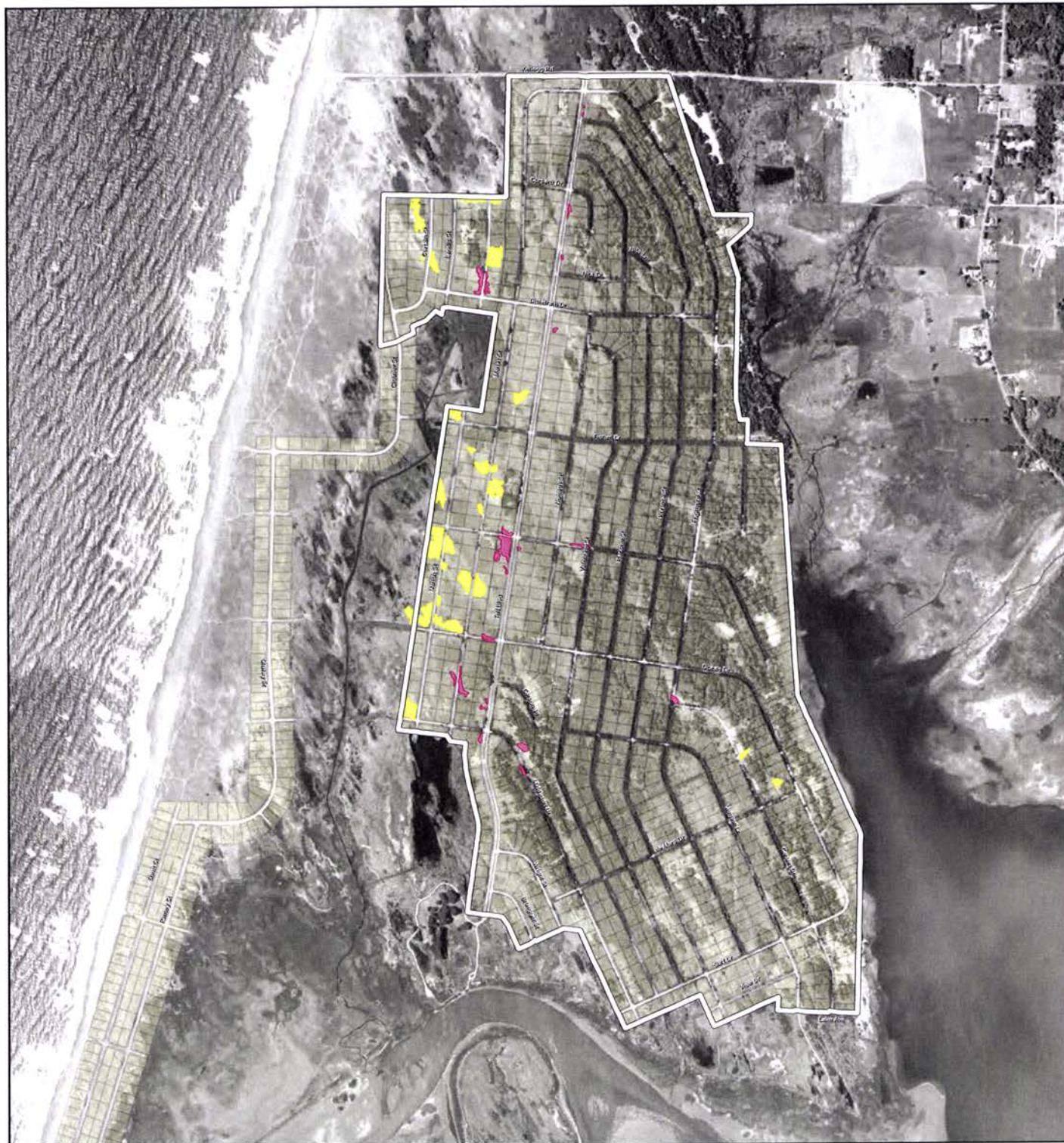
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




Border Coast Regional Airport Authority
Mitigation and Monitoring Plan
Pacific Shores Subdivision
Oregon Silverspot Butterfly -
Host and Nectar Plants

Job Number XX-12345
Revision B
Date 04 Jun 2013

Figure 7



- | | | |
|---|------------------------------------|---|
|  | Pacific Shores Study Area | Type |
|  | Pacific Shores Subdivision Parcels |  European Beach Grass (Invasive) |
| | |  Scotch Broom (Invasive) |

Paper Size 8.5" x 11" (ANSI A)

0 300 600 900 1,200 1,500

Feet

Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



Border Coast Regional Airport Authority
Mitigation and Monitoring Plan

Pacific Shores Subdivision
Invasive Species

Job Number	8410135
Revision	B
Date	04 Jun 2013

Figure 8

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Data source: ESRI: Bing Aerial, 2011 (1 foot resolution); GHD: Redesignated Roadway Segments, 2012; County of Del Norte: Parcels. Created by: gldavidson

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Location of Proposed Roads
to be Removed (33.15 ac)

Roads Retained for Access

Paper Size 8.5" x 11" (ANSI A)

0 300 600 900 1,200 1,500

Feet

Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



Border Coast Regional Airport Authority
Mitigation and Monitoring Plan

Job Number 8410135
Revision A
Date 04 Jun 2013

Pacific Shores Subdivision
Road Removal Locations

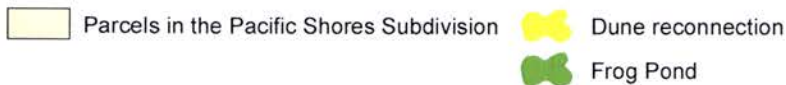
Figure 9

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Data source: ESRI: Bing Aerial, 2011 (1 foot resolution) GHD: Recommended Roads for Removal, 12/20/12 GHD: Roads not Recommended for Removal, 12/20/12. Created by gldavidson

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Paper Size 8.5" x 11" (ANSI A)
 0 300 600 900 1,200 1,500
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 Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



Border Coast Regional Airport Authority
 Mitigation and Monitoring Plan

Job Number 8410135
 Revision A
 Date 04 Jun 2013

Pacific Shores Subdivision - Dune
 Reconnection/Frog Pond Locations

Figure 10

Appendix B

Invasive Plant Control Methods

INVASIVE PLANT CONTROL METHODS

Invasive plant species at the mitigation site are identified as plant species listed with a rating of high or moderate by the California Invasive Species Council (Cal-IPC), as well as, the Humboldt/Del Norte Weed Management Area (WMA) Strategic Management Weed List. Invasive and non-native plants currently present on the site are listed in Table B1.

There are a variety of invasive plants adjacent to road removal segments and within the complex dune/coastal prairie matrix. Once the mitigation implementation begins, there is great potential for these non-native plants to persist in areas of fresh disturbance and they are expected to increase in some locations after the canopy adjacent to the roadways has been removed or thinned resulting in increased light and exposed seed bank.

This section describes control techniques for European beachgrass (*Ammophila arenaria*), Scotch broom (*Cytisus scoparius*), pampas grass (*Cortaderia jubata*), teasel (*Dipsacus sativus*), Harding grass (*Phalaris aquatica*), English ivy (*Hedra helix*), and velvet grass (*Holcus lanatus*). The remaining invasive plants listed in Table B1 below are plants found in the coastal prairie or adjacent to the road segments slated for wetland restoration or dune re-connections.

Table B1 Invasive Plant Species Distribution in Project Area

Scientific Name	Common Name	Cal-IPC Rating	Humboldt/Del Norte WMA	Habitat
<i>Ammophila arenaria</i>	European beach grass	High	High	Coastal Dunes
<i>Cytisus scoparius</i>	Scotch broom	High	High	Dunes, Roadside, Widespread
<i>Rubus armeniacus</i>	Himalayan blackberry	High	High	Riparian areas, Dunes, Wetlands
<i>Anthoxanthum odoratum</i> ¹	sweet vernal grass	Moderate	NL	Coastal prairie, Coniferous forest
<i>Cirsium vulgare</i>	bull thistle	Moderate	High	Riparian areas, Wetlands, Coastal prairie
<i>Bromus hordeaceus</i> ²	soft chess	Limited	High	Grasslands, sagebrush, serpentine soils, many other habitats
<i>Dactylis glomerata</i> ³	orchard grass	Limited	NL	Grasslands, Broadleaved forest, Woodlands
<i>Hypochaeris glabra</i>	smooth cat's ear	Limited	Moderate	Scrub, Woodlands, Widespread
<i>Plantago lanceolata</i> ²	English plantain	Limited	NL	Many habitats
<i>Cortaderia jubata</i>	pampas grass	High	High	Coastal dunes, coastal scrub, Monterey pine, riparian, grasslands, wetlands
<i>Dipsacus fullonum</i>	Indian teasel	Moderate	Moderate	Grasslands, Riparian, Wetlands, Impacts regionally variable, forms dense stands on occasion
<i>Foeniculum vulgare</i>	sweet fennel	High	High	Grasslands, Scrub
<i>Hedera helix</i>	English ivy	High	High	Roadside
<i>Holcus lanatus</i>	Velvet grass	Moderate	Moderate	Coastal grasslands, Wetlands, Widespread, Impacts can be more severe locally, especially in wetland

Scientific Name	Common Name	Cal-IPC Rating	Humboldt/Del Norte WMA	Habitat
				areas
<i>Senecio jacobaea</i> ⁴	tansy ragwort	Limited	High	Wetland, Riparian, Coastal

1. Little information available on impacts and limited ecological range

2. Very widespread, but monotypic stands uncommon. And/or in converted grasslands

3. Widespread. Impacts appear to be minor; some local variability. Low density and impact in wildlands

4. OSB host plant and removal is permitted in this restoration plan; can be locally important in NW CA.

***Ammophila arenaria* (European beachgrass)**

European beachgrass (*Ammophila arenaria*) referred to herein as *Ammophila*, is a semi-naturalized, high rated invasive plant from Europe, found in coastal dunes along the entire northwest coastline from Southern California to Washington. *Ammophila* tends to be an aggressive dune stabilizer negatively affecting the dynamics of natural dune systems. Invasion and expansion of this plant typically occurs in the foredune and inland dunes. *Ammophila* was originally introduced to the Pacific Northwest, in 1869 at Golden Gate State Park, with the intention of serving as a sand dune stabilizer and protection of valuable infrastructure abutting coastal land. *Ammophila* was thus planted along naturally complex and dynamic coastlines, without anticipating that this plant has the ability to adversely affect natural dune systems.

As a result of the invasive nature of *Ammophila* and its direct impacts on native dune processes and habitat structure, this BCRAA mitigation package includes the removal of this unwanted plant species on-site at CEC and within portions of Pacific Shores Subdivision (PSS). *Ammophila* occurs throughout Pacific Shores, but is most widespread on dunes in the western and southern parts of the site.

Species Biology

Ammophila arenaria is a hardy, perennial herbaceous grass, growing in stiff, erect clumps reaching up to four feet tall. The leaf blade is between 0.1-0.25 inches (2-5 mm) wide and 12-44 inches (40-110 cm) long, thick, waxy, pointed and sharp. Ligules are 0.4-1.2 inches (1-3 cm) long. The outer surface of the leaves is light green and smooth, the inner side of the leaf has a white coat and ridges. The leaves are rolled at the edges.

This plant tends to spread through its long, thick rhizome root system allowing it to spread laterally by approximately five feet in less than half a year. Root fragments can also wash up on shore and develop a new colony. This plant is vigorous, with rhizomes and new shoots able to withstand submergence in saltwater for long durations (Aptekar 2000). Less often this plant reproduces via seed dispersal (Cal-IPC). *Ammophila* flowers between May and August and the inflorescence grows in dense panicles (spike-like), 6-12 inches long and 0.8 inches wide; spikelets are 0.4-0.5 inches long, are strongly keeled and laterally compressed (Cal-IPC). Sand burial promotes adventitious rhizome development and leaf growth.

Ecological Impact

After *Ammophila* was planted in the late 1800's to reduce the migration of sand along America's western dunes, it was later recognized that this plant altered coastal dune dynamics. Starting in the late 1980's (almost 100 years after it was introduced) due to its invasive nature, eradication and control of *Ammophila* became the focus of northwest coastal dune habitat restoration. As a result of rapid creeping rhizomes, this plant can displace native flora, fauna and native taxa habitat. Examples of this impact include the floristically displaced *Leymus mollis* (American dunegrass), a host of native dune-mat species, and habitat for the western snowy plover (*Charadrius nivosus*) including loss of nesting sites and enhanced predator habitat (Pickart 1997). Additionally, dunes dominated by *Ammophila* tend to have lower density and diversity of arthropods.

This plant grows in substrates with rapid/free drainage, low organic matter, and in semi stable to mobile dunes above the high tide line (ISSG 2010). Once established, sand burial can stimulate the growth of this hardy rhizomatous plant. This growth characteristic allows the plant to form in dense clusters outcompeting native dunegrass and rare plants that don't have the ability to tolerate rapid sand burial (Pickart 1997). This plant is capable of outcompeting native dune plants as it is a strong competitor able to survive in wind-blown foredune areas. *Ammophila* is drought resistant, allowing it to survive burial for longer periods than native plants. As a result of this plants ability to accumulate sand, it establishes higher, steeper, foredunes than the native dunegrass, thus reducing sand to interior dunes, and altering natural plant succession in native dune ecosystems (Pickart 1997). At Pacific Shores it has almost certainly contributed to alteration of ecological processes.

Ammophila Vegetation Removal Location

On site at CEC

Ammophila removal at the CEC is in the area described as the "borrow area." In the areas adjacent to sensitive habitat and species, the *Ammophila* will be removed manually.

PSS

Ammophila is present throughout the dune community at PSS. Those areas where the dunes are proposed to be reconnected will have the adjacent *Ammophila* removed. *Ammophila* removal will include occurrences on purchased parcels or from CDFW parcels adjacent to project actions areas in order to reduce the parent populations and re-occurring seed bank and rhizome growth. For example populations along Marish Street and Martin Street shall be removed from both the road segment slated for mitigation as well as the adjacent parcels depending on ownership. In the areas adjacent to sensitive habitat and species, the *Ammophila* will be removed manually. Once *Ammophila* is removed the area will be revegetated with the native species planting palette appropriate for each removal location including OSB nectar plant species.

Control

Starting in the 1980's and with more success in the 1990's *Ammophila* plant removal began on the north coast. After 25 years of experiments and research in developing methods for effective management and removal, a variety of techniques have been developed to combat *Ammophila*. A main component to *Ammophila* control and removal is to manage the extensive underground rhizomes which have the capacity to survive long periods of tidal inundation and have the ability to

re-sprout from root fragments. These methods include manual, mechanical, and chemical removal methods, with the most successful approaches usually including a combination of methods.

Manual: *Ammophila* can be removed through manual cutting and digging. Examples of this treatment include repeated manual intensive digging weekly in the early spring (March), tapering to monthly in the fall (October) when the plant is less active (Pickart 1997). This treatment method requires gloves which grip well even in wet conditions. Cutting tools includes sharp shooter, shovel, Pulaski, or machete (Moore 2007). This technique includes the following sequence:

1. Remove the biomass and stockpile
2. Use a sharp shooter, shovel to dig and then cut the rhizome at least 12 inches deep.
3. Rake sand to expose and remove any remaining root fragments, to a depth of 20- 40 inches below the tufted clump removed.
4. Material shall be burned or bagged and disposed at a green waste facility.

Follow-up inspections and digging shall occur for at least two seasons in the inland dunes. An example from a regional removal effort reported that crews returned to target areas eight times over the first removal season, and seven times the second season with high success. The manual treatment allows for targeted removal of the unwanted re-sprouts as it begins to intersperse with native grass and dune pants. Within five years the site recovered to ~45% native vegetation cover with passive recruitment revegetating the site (Pickart 1997). This method is recommended for areas in close proximity to environmentally sensitive habitat areas, including areas where nectar or host OSB plant species exist.

Mechanical: *Ammophila* can be removed by using heavy machinery. Examples include Oregon Dunes State Park, where a D-8 Caterpillar was used. The machine removed the plant and up to three feet below the root crown. The depth of the excavation was inconsistent and therefore, some areas treated (to the lower depth) were more successful than other treated areas (Pickart 1997). Similarly, Point Reyes National Seashore utilized heavy machinery to remove *Ammophila* by way of two excavators (21 and 13 metric tons) and bulldozers. This technique includes the following sequence:

1. Removing *Ammophila* and sand with root fragments to one side (designated as either the right or left)
2. Remove the next layer of "clean sand" and stockpile to other side.
3. Fill in the pit excavated to at least nine feet deep (~three meters) with the *Ammophila* and "dirty sand."
4. Cap the pit by pushing the clean sand over and smoothing out the terrain.

Ammophila should be buried on windward slopes, at a depth of at least four feet deep (1.5 meters). Repeated monitoring and removal of re-sprouts is necessary for the first two to five years. This method can be enhanced by clear communication with the machinery operator and inspecting the equipment prior to work to ensure its functioning. Machinery shall always be cleaned prior to ingress and egress in an effort to reduce inadvertent dispersal of reproductive portions of the plant (NPS 2009). This method is not recommended in close proximity to wetlands or native dune mat patches (within 10 feet). Protective fences would be erected as needed to protect adjacent environmentally sensitive habitat or native dune mat patches. This method shall only be utilized if the *Ammophila* comprises 80% or more plant cover at any given proposed mechanical *Ammophila* removal location, if preconstruction surveys have verified that no OSB host or nectar plants are present, and if the area is in the road right-of-way or otherwise easily accessible to heavy equipment without crossing native habitat. Any use of heavy equipment would be subject to prior approval by appropriate resource agencies.

Prescribed Fire/Burning & Flaming: California Department of Parks and Recreation (DPR) and California State Parks (CSP) have both experimented with burning *Ammophila* in the fall. In both efforts, the *Ammophila* was burned to reduce the above ground biomass and thatch (Hyland, T. & Holloran P 2005 & CPS 2006). Once *Ammophila* is burned, it promotes new shoots to emerge, allowing for a more targeted follow-up treatment using herbicide and reducing the amount of herbicide applied. The following shall be considered when applying burning or flaming to *Ammophila* (Hayland 2005):

1. Early fall burn
2. Relative humidity of 20-80%
 - a. Wait for morning dew to dry off
3. Temperature range between 40-70° F
4. Wind speed below 15 mph
5. Burn buffer break can be established by hand digging a 15 foot wide swath (or at PSS, by using roads as firebreaks)
6. After the burn, apply herbicide one year later
 - a. Re-spray *Ammophila* not impacted by the first chemical treatment within one season (6-12 weeks).

Alternatively, prescribed fire/burning or flaming may be used in conjunction with manual pulling of the re-sprouts. Burning/flaming alone will not remove *Ammophila* and re-sprouts in their entirety. And this activity will require permits from the North Coast Unified Air Quality Management District (Hayland 2005).

Chemical: Because of the presence of Oregon silverspot butterflies, northern red-legged frogs, and other sensitive or rare animals at Pacific Shores Subdivision, herbicide use is expected to be restricted and possibly precluded in many areas. Herbicides would be used only with written approval by USFWS, CDFW, and other resource agencies as appropriate. The following information is included to facilitate decision making.

Ammophila can be controlled using the herbicide Glyphosate. Round-up Pro is an herbicide that reduces the need for surfactants which has been identified as a water quality concern. Oregon National Dunes has experimented with herbicide use to control *Ammophila* and has greatly reduced the percent cover when the target plant is sprayed during active periods of growth. Similarly, trials in northern California reduced *Ammophila* by 90% when using a foliar treatment with Roundup.

CSP observed the use of concentrated glyphosate was not as effective as the combined approach of using glyphosate and imazapyr together and reached a 97% kill rate of *Ammophila*. Other applicators using imazapyr have observed natural recruitment of native dune plants including special-status plants. The following sequence is recommended for this technique:

1. Remove the above ground biomass (to where shoots develop) as much as possible to reduce the quantity of herbicide required for thorough application.
 - a. This can be accomplished by cutting the biomass and removing or by burning/flaming and then cutting the dead leaf matter for removal.
2. During active growth periods, using a hand held, backpack sprayer, wicking, or wipe on application for low volume directed spot treatment apply:
 - a. 3.2% solution of Roundup ProDry shall be applied using the "spray to wet" method (Monsanto 1999). **OR**
 - b. Rodeo can be applied using 7-33% solution with 1.0-2.5% surfactant (nonionic) using the "spray to wet" method (Pickart 1997).
 - i. Sprouts not impacted from initial herbicide application can be re-sprayed within 6-12 weeks using 7% Glyphosate for up to three additional treatments to reach high success 90-100%. **OR**

- c. 1.5% imazapyr (formulations: Habitat, Polaris, Polaris AC Complete), 2% glyphosate (Rodeo, Aquamaster, or Aquaneat), 1% methylated seed oil (Competitor or Helena M.O.C.) and marker dye (HI-Light Blue, Colorfast Purple Dye, Spray Indicator XL, or equivalent) (CPS 2007).
 - i. Apply the solution as a "light rain" to the top 12-18" of the plant and root crown.
- 3. All chemical applications must be used in a manner consistent with limitations described on the USEPA label.
- 4. Follow-up monitoring of re-sprouts for two to five years is recommended.
 - a. Herbicide quantity is greatly reduced in subsequent treatments as a result of the reduction of *Ammophila* from the initial treatment(s). Additionally, the time required for subsequent treatments is greatly reduced (Hayland 2005).
 - b. Re-sprouts shall be manually removed and not chemically treated.

Chemical control of *Ammophila* has proven successful and cost effective. While herbicides have potential biological impacts, the application techniques above have been proposed to minimize adverse impacts to adjacent habitat, wildlife, or native plant populations.

Scotch broom (*Cytisus scoparius*)

Species Biology

Scotch Broom is a woody perennial shrub in the pea family with attractive yellow and red flowers showing from March through June (Cal-IPC 2013). Flowers appear before the leaves. This species is native in Europe and North Africa. Scotch broom is an evergreen shrub that can reach up to six to ten feet in height. The plant has sharp, angled branches that contain white hairs, when young, on the five green ridges. Once mature the ridges and hairs are no longer distinct, and the branches turn tan. The seams of the pods also contain hairs. Between the leaf and the stem, a yellow flower emerges with a bit of red color. This species can be distinguished from French broom (*Genista monspessulana*) by the branches which do not contain ridges, pods are covered with hair, and the plant is photosynthetic predominately through its leaf, rather than Scotch broom which equally photosynthesizes through its leaf and twig tissue.

Ecological Impacts

Negative impacts from Scotch broom include toxic seeds and foliage, and the plant is a strong competitor quickly establishing monotypic stands capable of displacing native plants and forage species. Additionally, this plant is capable of increasing fuel for fire and allows fire to connect to the tree canopy layer which can negatively increase the intensity and frequency of fires.

Brooms resprout vigorously, including seedlings, after cutting, and can produce thousands of viable large seeds which persist in the soil for decades. The seedbank can yield up to 2,000 seeds per square foot. The most important principle for controlling brooms is to prevent establishment or expansion of infestations. The persistent seed bank means that infestations must be managed for many years. Seeds are easily transported on equipment, and populations can very rapidly invade disturbed soil. Preventing disturbance where broom is present or removing broom before and after disturbance, can reduce the need for expensive and ongoing treatment. For all the resprouting shrubs, the most important principle is to use techniques which kill the plant and do not allow resprouting plants to recover.

The most effective way to control the brooms are by repeated hand pulling or burning combined with repeated hand pulling; this approach has been documented to yield the highest native cover post

treatment (Alexander, and D'Antonio 2003), or by using the cut-stump and herbicide paint application to reduce re-sprouting.

Scotch Broom Vegetation Removal Locations

Scotch Broom can be found in both scattered and dense patches along many of the roadways proposed for wetland re-establishment including portions of Marish Street, Martin Street, Tell Blvd., Hinckley Dr., and Ocean Dr. This plant is capable of prolifically re-sprouting thus it is unlikely that this plant can be controlled without either long-term repeated management or careful application of herbicide using the cut stump, hand paint technique in areas of large infestations. Small infestations and occurrences close to sensitive habitats or species can be manually removed using a specialized tool that can pull the entire root.

Control

Manual: The weed wrench or extractigator (heavy duty broom and tree puller) is one of the most effective techniques for the complete removal of the broom foliage and tap root. Established infestations are difficult to eliminate because large, long-lived seedbanks typically accumulate. Minimizing soil disturbances, monitoring, and repeated manual pulling of young plants when discovered can help prevent new infestations. Repeated pulling of successive generations is currently thought the most effective method, if that level of management is feasible. A flush of broom seedlings may occur directly beneath the previously canopied area after mechanical removal of the larger broom shrubs, and particularly once the canopy is removed.

Mechanical: Mowing or cutting the shrubs may prevent seed production; however, resprouts will still need to be managed. Machines and tools used to remove stands may inadvertently transport seed to uninfested sites. Cutting plants and girdling (peeling bark down to ground surface) is an additional measure to dissuade resprouting. The combined approach of cutting and treating stumps with an herbicide is an effective measure that reduces soil disturbance.

Blanching/ Flaming: Blanching seedlings using a propane torch is a cost-effective treatment if applied when seedlings are very small, but the treatment must be applied during rainy weather and so is logistically challenging.

Chemical: Because of the presence of Oregon silverspot butterflies, northern red-legged frogs, and other sensitive or rare animals at Pacific Shores Subdivision, herbicide use is expected to be restricted and possibly precluded in many areas. Herbicides would be used only with written approval by USFWS, CDFW, and other resource agencies as appropriate. The following information is included to facilitate decision making.

For brooms, glyphosate applied as a 2-3% v/v foliar spray has been an effective treatment. It is recommended on this site to use Triclopyr applied as a 25% basal bark application in an oil carrier after cutting older plants if they are not fully removed by a weed wrench or Pulaski. Some resprouting may occur with these mechanical treatments and follow-up pulling, or herbicide management may be necessary for future flushes of seedlings (Food and Agriculture, CA Department of, 2009). Cutting and treating stumps with herbicide is an effective measure that reduces soil disturbance.

- Small or sparse infestations. For very small populations of resprouting shrubs, pulling by hand or using a Weed Wrench or other tool can be an effective means of treating plants. However, pulling is very labor intensive and so is not considered effective for large

infestations. Both glyphosate and triclopyr are effective at killing brooms. As an alternative to hand pulling, a cut-and-paint application of either a 10% glyphosate or 10% triclopyr ester 10% in water, or a low volume basal application of 10% triclopyr ester with seed oil is effective at killing individual and sparse infestations of broom. All of these techniques result in successful removal of resprouting shrubs, but the low volume basal application is the most cost-effective and has little effect on other vegetation.

- Large infestations or dense and well-established infestations. Large, dense, and well-established broom populations require a large commitment of resources over an extended period of time; it is important to re-emphasize that actions to prevent establishment and spread are an extremely worthwhile investment. For large populations cutting or mowing may be very effective when followed by careful herbicide application. Glyphosate 2% foliar application is used by many agencies and glyphosate 15% low volume drizzle is recommended by the University of California (UC) (Oneto et al., 2009). UC also recommends the low volume triclopyr basal bark treatment described above, and several of the agencies interviewed consider this the most cost-effective, safest, and appropriate method for treating large infestations.
- Follow-up treatment of seedlings and seed bank. Treatment of large infestations also requires continued and carefully timed management of seedlings and the overall seed bank in the soil. Following removal of adult plants, the treatment sites may be carpeted with broom seedlings, (especially when treatments have disturbed the soil surface or when fire has flushed the dormant seedbank). Hand pulling is impractical for removing dense carpets of broom seedlings from large areas. Cutting with a string trimmer can be effective in sites with few obstructions (woody debris, stumps, etc.), but must be conducted within the first two months after initial treatment to make sure seedlings are small enough to be killed by the mowing.

Foliar application is highly effective and low cost but can have significant negative effects on non-target vegetation so is not appropriate for this location.

Pampas grass (*Cortaderia jubata*)

Species Biology

Pampas grass (*Cortaderia jubata*) or Andean pampas grass is highly invasive throughout coastal California. Andean pampas/jubata grass colonizes bare and disturbed ground. It invades roadsides, cutbanks, dunes, coastal bluffs, rock outcrops, landslides and logged lands.

Control

Manual/Mechanical: Pulling or digging while the plants are small is best. Small plants are easily pulled by hand when the soil is moist. A Pulaski or shovel is useful when a plant is too large to pull safely by hand.

The mature plants are very difficult to remove by hand. It is possible to undercut and remove one using a combination of pulaski and shovel. The easiest way is to place a choker cable around the plant's base and pull it out with a winch. The soil must be moist. Winter and spring are good seasons for removal. For best results, the top section of the roots and the entire crown should be removed. If bagging and disposal is too difficult, designate a stockpile area and cover with a black weed mat to shade out material and allow for compost. Cutting the plumes off and placing them in bags helps to

prevent further seed dispersal. The plumes cannot be cut and left on bare ground. The seeds will sprout. Some resprouting may occur with these treatments and follow-up management will be necessary for future flushes of seedlings (California dept of Food and Agriculture 2009).

Pampas Grass Vegetation Removal Locations

Small to medium sized stands of pampas grass were observed in coastal prairie and dune mat habitats. Considering the size of the populations manual removal is recommended.

Harding grass (*Phalaris aquatica*)

Species Biology

This species grows in large clumps along the coast and can be found invading grasslands, rangelands, roadways and waterways. This plant has a deep tap root allowing it to tolerate drought. This perennial grass spreads by seed (produced May through September) but also by rhizome. Seeds last between 1-3 years. The best time to control this weed is in the dry summer months of June and July. Before this time it is too difficult to distinguish the grass and after this window the grass has already gone to seed making the herbicide ineffective (RNSP 2008).

Control

Manual/Mechanical: Hand pulling small clumps is a feasible application for controlling this plant. For denser infestations, cutting around the base clump with a Pulaski and digging out all roots longer than 2 inches can be effective in controlling this species. Mulching is recommended to discourage re-sprouts. If mowing is implemented, it is recommended to be very close to the ground and to occur at least three times within the growing season to keep the plants from overtaking growth of target native species. Mowing should occur late in the growing season (spring for this species) when soil moisture is low or depleted. Cutting the grass when it is flowering will reduce the vigor of new shoots. Repeated mowing of this species can reduce the seed bank and prevent expansion and new growth, but will not eliminate the species. Disking and reseeding is a mechanical alternative to mowing. However, mowing is only a control, and does not entirely eradicate the grass.

Harding Grass Vegetation Removal Location

The known occurrences at the PSS project site are found in small clusters along the edges of wetlands and coniferous forests; hand pulling is the recommended method for controlling this plant on the site. Additionally, in NRLF or rare plant sensitive species habitat mowing is preferred for control; the blade height on the mower shall be a minimum of eight (8) inches to ensure no adverse impacts to native flora and fauna.

Teasel (*Dipsacus sativus*):

Species Biology

This is a biennial perennial herbaceous plant that blooms between July and October. This plant can be found in mesic to xeric habitat. This plant species produces 2000 seeds, of which 30-80% will germinate with seeds staying viable for up to two years. The seedlings are typically found close to the parent plant, though it can be dispersed by water increasing its range (Wisconsin Department of Natural Resources 2004).

Control

Manual/Mechanical: Weed wrench, cutting and/or digging are thought to be the best solution to remove bolting teasel plants. A simple hand removal weed tool, such as a dandelion digger works well. The entire root should be removed to ensure no respouting will occur from root fragments. If a shaor spade is used, be cautious to not fragment the root. Another option is to cut the stalk before the full bud stage inducing mortality of the specimen, and the plant should not reflower. In both situations the plant parts should be removed from the site. If the plant has been cut and the flowering stalk is left behind it seeds may still be able to mature after cutting.

Teasel Vegetation Removal Location

The known occurrences at PSS are found in small scattered locations within the coastal prairie and edges of coniferous forest, dune and wetland habitat.

Velvet grass (*Holcus lanatus*)

A strategy that employs multiple removal techniques, monitoring and adaptive management will be key in long-term success of the target species. Implementing invasive species control methods in advance of the planting schedule is recommended.

Manual/Mechanical: For small isolated patches it is possible to remove the clump of grass by hand before the seed sets. The plant can also be removed by cutting at the base with a paring knife. This is most successful during the winter rainy season from January through April. Weed whacking then scraping is another method used to control the grass before the seed set. Chopping the root crown using a blade or McLeod is another option.

Cutting patches of the grass in the spring followed by mulching with 4-6 inches of onsite material has been used to suppress resprouts in small areas. Follow up treatments are necessary for all hand methods.

Velvet Grass Vegetation Removal Location

This species can be found in most habitats at PSS including coastal prairie, wetlands, dune mat and edges of coniferous forests.

English ivy (*Hedera helix*)

English ivy belongs to the family Araliaceae (ginseng) and is a native of Europe. Brought to North America by colonial settlers, *H. helix* has become naturalized in the US. English ivy is cultivated in Europe and North America in gardens, landscapes and as house plants. This plant grows easily in many types of soil and in sun or shade. English ivy is fairly drought tolerant once it is established. Leaves are alternate and simple with the juvenile leaves 3-5 lobed and adult leaves ovate to rhombic. Mature plants will bear greenish-white flowers. The fruit is berry-like and black.

Control

Manual/Mechanical: Cutting is successful with persistence but does not always kill the plant. However, the use of cutting and then applying an herbicide may provide better control (see Chemical control section).

Using a shovel to remove plants provided immediate control with little regrowth. Weeding plants by hand or with pliers successfully allowed regeneration of most native species in Australia. Do not leave the pulled plants on the ground; they can continue to grow. If removal of the plants is not possible, place the pulled plants on a wooden platform to dry and decompose.

Manual/Chemical: Immediately control English ivy that is growing up trees by cutting the vine at waist height, loosening the vine around the limbs and removing the roots. If the root cannot be removed by hand, strip the bark and notch the exposed section of the vine. Paint on an undiluted herbicide such as glyphosate. If English ivy is growing on trees, take care that all pieces of the ivy are removed. The growth of *H. helix* can be sustained by the fibrous nature of the trunk. If the vine goes above the height of full removal, the plant should be cut in two places and the middle and bottom section removed so that it cannot utilize the fibrous nature of the trunk.

REFERENCES

- Pickart, A.J.; Sawyer, J.O., 1998. Ecology and restoration of northern California coastal dunes. California Native Plant Society, Sacramento, CA. (not at CalPoly, but State Parks SLO does have this book already)
- Aptekar, R., 1999. The ecology and control of European beachgrass (*Ammophila arenaria*) Ph.D. dissertation, University of California, Davis, CA.
- Calflora, 2013. Calflora: Information on California plants for conservation, education and appreciation. Berkeley, California: The Calflora Database [a non-profit organization]. Available: <http://www.calflora.org/>. Accessed: Feb 05.
- Cal-IPC, 2012. *Don't Plant a Pest, San Francisco Bay Area*. California Invasive Plant Council (Cal-IPCa). Available at: <http://www.cal-ipc.org/landscaping/dpp/pdf/SFDPPPprintable.pdf>
- Cal-IPCa, 2012. *Invasive Plants of California's Wildland: Ammophila arenaria*. California Invasive Plant Council (Cal-IPCa). Available at: <http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=5&surveynumber=182.php>
- DiTomaso, J.M. and E.A. 2003. Healy. Aquatic and Riparian Weeds of the West. University of California, Department of Agricultural Natural Resources. Publication No. 3421.
- Hyland, T., & Holloran, P., 2005. *Controlling European beachgrass (Ammophila arenaria) using prescribed burns and herbicide*. Website: <http://ic.ucsc.edu/~kholl/envs160/holloran&hyland.pdf>
- Nature Conservancy, The, 2001. *Weed Control Methods Handbook: Tools and Techniques for Use in Natural Areas*. Available at: <http://www.invasive.org/gist/handbook.html>.
- Pickart, A. 1998. *The use of heavy equipment to remove European beachgrass at the Lanphere Dunes: I. Preliminary results*. Report for U.S. Fish and Wildlife Service August.
- Unknown, 1997. Element Steward Abstract: *Ammophila arenaria* (European Beachgrass). Compilation of info from various sources.

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Border Coast Regional Airport Authority
Del Norte County Regional Airport
Jack McNamara Field (CEC)
Crescent City, California

Runway Safety Area
Conceptual Mitigation and Monitoring Plan



EXHIBIT NO. 9

APPLICATION NO. 1-13-009
(Border Coast Regional Airport
Authority)

CONCEPTUAL MITIGATION &
MONITORING PLAN (OPTIONS 2 & 3)
(1 of 69)

August 2013

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B Invasive Plant Control Methods

1. Introduction

1.1 Summary

This Mitigation and Monitoring Plan (MMP) has been prepared for the Border Coast Regional Airport Authority (BCRAA) Runway Safety Area (RSA) Improvement Project for submittal to the U.S. Army Corps of Engineers (USACE), the California Coastal Commission (CCC), United States Fish and Wildlife Service (USFWS), Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW). The MMP was prepared as part of USACE File Number 2006-301420N. The MMP is patterned on guidance provided by the USACE (2008), and has been expanded to include information identified in "procedural guidance for evaluating wetland mitigation projects in California's coastal zone" (CCC 2012).

An earlier version of the MMP (May 2013) described a mitigation concept which emphasized acquisition of parcels and removal of roads at Pacific Shores Subdivision (PSS). Due to litigation, this modified August 2013 version of the MMP describes alternative approaches to mitigation to facilitate BCRAA Board decision making. This version of the MMP is based in part on discussions between BCRAA and the CCC that were held in mid-June and mid-July 2013.

The BCRAA has identified the need to enhance safety by improving the runway safety areas (RSA) because they do not meet current Federal Aviation Administration (FAA) airport design standards. Congress passed Public Law 109-115 requiring commercial airports certified under 49 USC 44706 shall improve their RSAs by no later than December 31, 2015, in order to comply with the FAA design standards required by Federal Aviation Regulations Part 139 (14 CFR part 139). The FAA has a high priority RSA program to report the progress to Congress and federal funding support may be provided through the Airport Improvement Program.

RSAs enhance the safety of aviation operations by providing a level surface in the event that an aircraft undershoots, overruns, or veers off the runway, and the area provides accessibility for fire fighting and rescue equipment during such incidents. The BCRAA is required to implement a RSA project at Del Norte County Regional Airport, Jack McNamara Field (CEC) to meet current FAA design standards.

The RSA project at CEC consists of filling, grading, associated drainage, displaced threshold and declared distances to create compliant RSAs. The RSAs for the Runway 11/29 and Runway 17/35 and the sides of 11/29 would be extended, filled and graded to meet FAA design standards. Additionally, the Runway 17 threshold would be displaced 150 feet south and declared distances would be implemented, allowing for a fully compliant RSA that minimizes impacts to wetlands beyond the Runway 17 end.

The RSA project will result in impacts to protected wetlands, special-status plant species, and upland dune mat environmentally sensitive habitat areas (ESHA's). Making the proposed improvements at CEC is necessary to comply with the FAR Part 139 requirements and meet the current FAA design criteria specified in Advisory Circular 150/5300-13, Airport Design.

This MMP will outline a conceptual package of mitigation actions to offset 16.77 acres of impacts (12.97 acres of permanent fill and 3.90 acres of temporary impacts) within

palustrine wetland habitat. In addition, 2.78 acres of upland dune ESHA, 50 square feet of sand dune phacelia (*Phacelia argentea*) and 11,271 square feet of short-leaved evax (*Hesperis matronalis* var. *brevifolia*) will be impacted. All wetlands under the jurisdiction of both the USACE and CCC within the project area that will be impacted through the placement and compaction of fill material shall be mitigated for. This conceptual plan proposes to mitigate for impacts to wetlands and environmentally sensitive habitat areas as described in Table 1.

1.2 Contacts

Questions regarding this BCRAA Mitigation and Monitoring Plan should be directed to:

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2. Mitigation Project Description

2.1 Location

Del Norte County Regional Airport, Jack McNamara Field (CEC) is located in Del Norte County adjacent to the Pacific Ocean and south of Lake Earl, approximately two miles northwest of downtown Crescent City and approximately 20 miles south of the California/Oregon border. From U.S. 101, CEC is accessed via West Washington Boulevard. A vicinity map is provided as Figure 1.

This is the second of two conceptual mitigation and monitoring plans (MMPs). The first describes acquisition of parcels and removal of roads at Pacific Shores Subdivision (PSS), located approximately five miles north of CEC, to re-establish wetland and dune habitat, with contingencies at other sites in the event that additional acreage is needed to meet agency-mandated mitigation ratios. This second modified MMP (the present document) includes additional potential mitigation options in the event that litigation precludes road removal and/or other activities at PSS. As an alternative, this report includes a package of on-site and off-site, in-kind actions across multiple areas in the Lake Earl watershed and the Crescent City Marsh. This report includes an acquisition-only option at PSS [Figure 2] as well as various establishment or enhancement actions at other sites including Point Saint George Management Area (PSG) [Figure 3]; CEC on-site activities (Figure 4); Bay Meadows site (Figure 5); McNamara Subdivision and McNamara Ranch parcels (Figure 6); and Moore Tract (Figure 7). A few additional locations near Lake Earl are currently being investigated and are referred to here as "other" sites. A map of potential mitigation parcels in the Lake Earl watershed, provided by the Coastal Commission staff, is included as Figure 8. Many of the sites on that map have not been evaluated in detail at this time.

The mitigation project is in the Coastal Zone with combined jurisdiction between the County of Del Norte, the CCC and USACE, although the County has relinquished permitting authority to the CCC.

2.2 Responsible Parties

Del Norte County Regional Airport, Jack McNamara Field is owned by the County of Del Norte and is operated and managed by the Border Coast Regional Airport Authority (BCRAA). The project is sponsored by BCRAA, which was formed by a Joint Powers Agreement (JPA) effective October 4, 2007, whose entities include Del Norte County, the City of Crescent City, Elk Valley Rancheria, Smith River Rancheria, the City of Brookings, Oregon, and Curry County, Oregon. CEC is a commercial service airport that provides airfield, terminal, and support facilities for scheduled commercial airline service, air charter/taxi, military, and general aviation (GA) operations. CEC is a critical use public facility which facilitates public access to the coast. CEC participates in the Federal Essential Air Service Program which supports scheduled commercial airline service to remote and rural locations such as the Crescent City area. CEC plays a crucial role in providing access for emergency services and a staging area for disaster relief, fire fighting operations, and search and rescue activities for the region and state.

The BCRAA will be the responsible entity for financing and developing the project, including the implementation of the mitigation and monitoring plan, which includes the

subcomponents described below. BCRAA will seek federal funding support from the Airport Improvement Program, administered by the FAA, for eligible project components.

2.3 Project History

In 2000, the FAA completed an evaluation of the runway safety areas (RSAs) at CEC. The evaluation and later inspection determined that the existing RSAs at CEC did not meet current design standards. Required RSA dimensions are based on the Airport Reference Code (ARC) of each of the runways. The ARC is a coding system developed by the FAA to relate airport design criteria to the operational and physical characteristics of the airplane types that operate at a particular airport. The ARC is part of design standards established in the Advisory Circular (AC) 150/5300-13, Airport Design (FAA 2008). Following this determination, BCRAA and the County completed an RSA analysis in 2005 to evaluate ways to bring the RSAs into compliance. RSA improvements are mandated (Congressional Bill House of Representatives 3058: Transportation, Treasury, Housing and Urban Development, the Judiciary, District Of Columbia, and Independent Agencies Appropriations Act, 2006, PL 109-115, November 30, 2005, 119 Statute 2401) and must be completed by December 31, 2015. Subsequently, the BCRAA proposes to implement a RSA project at CEC, to meet FAA design standards for both Runway 11/29 and Runway 17/35.

RSA project impacts are described in detail in several permit applications and related documents, including:

- Section 404 individual permit application, submitted to the U.S. Army Corps of Engineers on February 22, 2013;
- Biological Assessment (Endangered Species Act, Section 7) submitted to U.S. Fish and Wildlife Service by FAA on February 27, 2013 and Biological Opinion issued by USFWS on June 5, 2013;
- 401 Water Quality certification application, submitted to the North Coast Regional Water Quality Control Board on February 22, 2013;
- Streambed Alteration Agreement application, submitted to California Department of Fish and Wildlife on February 22, 2013 and a draft notification issued by CDFW on June 5, 2013;
- Application for Coastal Development Permit package submitted to the California Coastal Commission on February 22, 2013.

Several potential mitigation areas have been identified to compensate for impacts to wetlands and sensitive species habitat as a result of RSA-related impacts. The proposed mitigation is described below.

2.4 Proposed Mitigation Project

The proposed mitigation project consists of multiple options at this time, each of which contributes to the mitigation requirements of the RSA Improvements for the CEC. Based on discussions with Coastal Commission staff and subject to review and approval by the BCRAA Board, 12.97 acres of permanent fill would be mitigated at an overall 4:1 ratio, with 12.97 acres (1:1) of wetland establishment included in the package for the purposes of no net loss of wetlands. The overall 4:1 ratio could be achieved in a variety of ways including

establishment (creation), re-establishment, enhancement, and preservation. An additional 3.80 acres of temporary impacts (areas graded to lower elevations and then replanted as wetlands) would be mitigated at 2:1. Thus a total of 59 acres of wetlands would be included in the mitigation package to meet CCC requirements. Environmentally Sensitive Habitat Area (ESHA) impacts, mostly dunes, would be mitigated at a 3:1 ratio. Rare plant impacts would be mitigated by enhancement of western lily habitat at Point Saint George as described in a Biological Assessment and subsequent conservation measures included in the USFWS Biological Opinion. These ratios apply only to the CCC, and discussions with USACE are not yet complete.

Mitigation Option 1, road removal at Pacific Shores Subdivision, is described in an earlier and separate MMP. Much of the science and design work for this option is already complete and available to the CCC. Due to the scattered locations of willing sellers, this option probably needs to include an additional mitigation site, Bay Meadows, to meet the required ratios.

Mitigation Option 2, described below, includes wetland establishment (establishment) at the Crescent City Marsh or Bay Meadows or the Moore Tract, and some combination of partial credit at other sites including lot acquisition and preservation at PSS (Figures 1 and 2). Special-status plant mitigation is proposed to occur through habitat enhancement at the Point Saint George site (Figures 1 through 3). Upland dune ESHA and other special-status plant replacement is proposed at Pacific Shores and/or on the CEC airport site away from airport operations areas.

Mitigation Option 3 assumes that no lot acquisition would occur at Pacific Shores. Habitat enhancement would occur at Point Saint George as in Option 1. However, most mitigation activities including acquisition, establishment, re-establishment, and enhancement would occur at the Crescent City Marsh or on the Bay Meadows parcel or the Moore Tract, and on other parcels.

Additional detail on each location evaluated thus far is provided in sections 4 and 6.

The proposed work will be funded by BCRAA. BCRAA will seek federal funding support for the project from the FAA. The FAA will continue to act as the federal lead agency. Under Section 404 of the Clean Water Act, the USACE has regulatory jurisdiction over wetlands and waters of the United States. The project site is within the Coastal Zone jurisdiction regulated by the California Coastal Commission, and will also likely require a Lake and Streambed Alteration Agreement with CDFW.

3. Goals and Objectives

3.1 Mitigation Goals

The purpose of the mitigation project is to compensate for impacts resulting from proposed RSA improvements at CEC. RSA improvements are mandated (Congressional Bill House of Representatives 3058: Transportation, Treasury, Housing and Urban Development, the Judiciary, District Of Columbia, and Independent Agencies Appropriations Act, 2006, PL 109-115, November 30, 2005, 119 Statute 2401) and must be completed by December 31, 2015.

The overall goal of the proposed mitigation package is to re-establish, establish, and preserve self-sustaining natural palustrine emergent wetlands; re-establish, establish, and preserve upland coastal grassland and/or dune mat; rehabilitate disturbed upland dunes that have been invaded by European beachgrass (*Ammophila arenaria*) and other exotic species; enhance special-status California Native Plant Society (CNPS)- listed dune species; enhance USFWS listed endangered western lily habitat; and acquire lands for preservation and conservation.

3.2 Mitigation Objectives

Specific mitigation objectives include:

1. Land acquisition and preservation on multiple sites;
2. Enhance western lily and rare plant habitat in the PSG area;
3. Enhance and establish upland dune mat ESHA on the CEC site;
4. Establish, re-establish, and enhance wetlands on one or more sites; and
5. Remove and manage invasive plant species at some mitigation sites

3.3 Target Habitats and Community Types

Plant community types that are to be established, re-established, rehabilitated, or enhanced include: palustrine persistent emergent freshwater wetlands, dune mat with or without CNPS-listed species, coastal terrace prairie, western lily habitat, and northern red-legged frog foraging, breeding, and dispersal habitat. Potential mitigation acreages, based on information available as of July 18, 2013, are identified in Table 1 for the impacts associated with the CEC RSA project.

Table 1. Proposed BCRAA Mitigation Package Table for RSA Project (potential)

Location	Current Habitat	Proposed Habitat	Proposed Action	Total Wetlands Established / Created (acres)	Total Wetlands Preserved (acres)	Total Uplands Enhancement/ Preservation (acres)
Pacific Shores Subdivision (PSS)	Wetlands / Uplands	Wetlands/ Uplands	Land Acquisition/ Preservation	0	33	32
Point St. George (PSG)	Coast Shrub / Forest	Endangered Lily Habitat	Wildlife Fence/Tree Shrub Management Remove Non-natives	0	7	7
Crescent City Airport	Upland Dunes	Native Dunes	Establishment and Re-establishment	17	0	4.4
Bay Meadows	Wetland / Upland	Wetland/Upland			10.5	40
McNamara Ranch	Wetland / Upland	Wetland/Upland	Establishment and Preservation	2	?	?
Moore Tract	Wetland / Upland	Wetland/Upland	Establishment (creation) and Enhancement	9	4.6	15

Acreages are based on information available as of July 18, 2013 and are likely to change during final design

4. Mitigation Site Selection

4.1 Location Constraints

The FAA does not recommend airport onsite wetland mitigation because wetlands can create wildlife attractants that are hazardous to aviation operations. As provided for in AC 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*, the FAA recommends immediately correcting, in cooperation with local, state, and federal regulatory agencies, any wildlife hazards arising from existing wetlands that are located on or near airports.

Portions of the required mitigation (western lily habitat enhancement, sensitive plant relocation, dune mat ESHA) can be done on-site without creating wildlife attractants. However, wetlands typically would attract wildlife and would create a potential hazard. The FAA recommends that wetland mitigation be sited outside of the 10,000 foot separation from the air operations area cited in Advisory Circular 150/5200-33B "unless they provide unique functions," and requires that mitigation be designed so that it does not create a wildlife hazard.

4.2 Mitigation Site Selection

Limited opportunities are available in Del Norte County for near-coastal mitigation. CEC is at the southern limit of a coastal dune complex extending north from Point Saint George to the mouth of the Smith River (Helley and Averett 1971). Because the impact area is within the coastal dune complex, true in-kind mitigation is limited to this same region. However, much of the available land is already in public ownership (Tolowa Dunes State Park and Lake Earl Wildlife Area), and with limited exceptions, State policy generally does not allow credit for mitigation activities on publicly-owned land.

Mitigation Option 1, parcel acquisition and road removal at PSS, is described in an earlier and separate MMP (May 2013). Because of litigation and other uncertainties, this option includes the additional site Bay Meadows in order to meet required ratios and additional mitigation options have been developed and are briefly described in the following subsections. The individual component sites are summarized below and are described in greater detail in Section 6 of this document.

4.2.1 Option 2

Option 2 would include acquisition of lots at PSS, with no plans for road removal. At this time, it is anticipated that 45 to 65 acres of lots may be available for acquisition from willing sellers. The lots are scattered throughout the subdivision.

Also included in Option 2 would be the proposed western lily enhancement and vegetation management area at Point Saint George (PSG), wetland re-establishment and establishment (creation) at the Crescent City Marsh or at Bay Meadows, or the Moore Tract, proposed ESHA enhancement on the CEC airport site; and preservation and enhancement of other property in the Lake Earl watershed.

4.2.2 Option 3

Option 3 would exclude PSS from mitigation-related activity. It would include western lily enhancement and vegetation management at PSG, CEC on-site activities, and mitigation

at other properties. In addition to the Crescent City Marsh, Bay Meadows Tract, or the Moore Tract and it would include additional property(ies) in the Lake Earl watershed, and would focus more heavily on wetland establishment (creation). The exact combination of sites is unknown at this time.

4.2.3 Potential Mitigation Sites

The largest nearly contiguous area of remaining private land within the Lake Earl dune complex is the PSS area. This area consists of a patchwork of private and State-owned half-acre lots, with about half in each type of holding distributed unevenly across the site.

Some mitigation opportunities are also available at Point Saint George adjacent to CEC, although proximity to the runways would limit its use for vegetation enhancement and would preclude its consideration for wetland establishment. A limited amount of sensitive plant mitigation and upland dune ESHA replacement and enhancement would occur at the airport or at other dune sites.

Mitigation opportunities are also available at the Crescent City Marsh and on the Bay Meadows Tract (located northwest of the intersection of Blackwell Lane and Lake Earl Drive), the Moore Tract (located near Highway 101 on the west, Kings Valley Road along the east and Kings Valley Golf Course along the south boundary). The requisite coastal dune habitat does not occur at these sites, so they would be used to mitigate for airport-related impacts to palustrine emergent wetlands. However some individual sites could prove to be technically impractical after closer analysis, or acquisition may not be feasible in some cases. Thus the list of sites is best viewed as a menu of choices from which the most appropriate mitigation package will be assembled to meet acreage requirements.

5. Site Protection Instrument

After completion of mitigation activities and at the end of the monitoring period or when performance criteria have been met, ownership of the selected mitigation areas would be transferred to a responsible public agency. A memorandum of understanding or other instrument would be prepared in advance of construction activity to formalize land transfer and to specify its timing and guiding mechanism(s).

At the County-owned Point Saint George area, a conservation easement or equivalent instrument would be established for the management area. This would restrict future development and specify that the area is subject to vegetation management to benefit the western lily.

6. Environmental Baseline

6.1 Baseline Conditions

This MMP covers multiple proposed mitigation areas for the Del Norte Regional Airport Runway Safety Area (RSA) Improvement project:

- Pacific Shores Subdivision (PSS) mitigation area
- Point Saint George (PSG) western lily management area
- On-airport replacement of upland dune ESHA
- Bay Meadows mitigation area (establishment/re-establishment)
- McNamara Subdivision mitigation area (preservation)
- McNamara Ranch mitigation area (establishment)
- Moore Tract mitigation area (establishment/re-establishment)
- Crescent City Marsh
- Potentially, other sites in the Lake Earl vicinity which are currently under investigation

Baseline conditions at each of the mitigation areas are described below.

6.1.1 Pacific Shores Subdivision

The Pacific Shores area was subdivided into 1,535 lots of approximately 0.5-acre each in the 1960s, and about 27 miles of roads were constructed. The California Coastal Commission declined to certify the subdivision and it remains a "white area" within the certified Del Norte County Local Coastal Plan (California Coastal Conservancy 2004), which implies that primary permitting authority lies with the Coastal Commission. Although a few trailers are present within this area, it cannot at present be legally occupied. Most of the site retains a semi-natural character fragmented by unmaintained and deteriorating paved roads.

Pacific Shores is part of an 11-mile long dune system extending from Point Saint George north to the Smith River. At the widest point the dune system extends about 1.7 miles inland. Because it is bordered by public lands, including Tolowa Dunes State Park and Lake Earl Wildlife Area, and because of its central locations within these public lands, Pacific Shores Subdivision currently fragments the larger dune system macrosite of which it is a part.

The area is characterized by active dunes partially burying an older stabilized dune system (Cooper 1967); nearshore sand deposited by the Smith River has been blown by prevailing northwest winds into a series of dunes, most conspicuous in the western part of the site (Roberts 2003; Weidemann 1984). Dune communities typically occur close to the coastline, including foredunes that are almost entirely stabilized by European beachgrass, remnant areas of dune mat, and dune hollows with slough sedge or willow communities (Pickart and Sawyer 1998). Pacific Shores Subdivision is unusual because on the relatively level deflation plains in the center of the site, large areas of coastal terrace prairie remain

intact. In the eastern part of the area conifer forests of mixed Sitka spruce (*Picea sitchensis*) and beach pine (*Pinus contorta* ssp. *contorta*) alternate with deciduous woodlands that are dominated by willow and red alder.

Because Pacific Shores includes a range of plant communities, from early seral dunes to grasslands to conifer forest, including a full soil moisture range, all within a relatively small area, it is able to support a very diverse assemblage of plant and animal species. At the same time some ecological processes have been disrupted or fragmented by the road network and the near absence of land management within the patchwork of private and state owned parcels, resulting in a gradual shift toward later successional stages.

Plant communities are characterized in a biological resources report (GHD Inc. 2013b) Major vegetation alliances (Sawyer et al 2009), presented from the shoreline (west) to inland (east), include:

- Beach strand (not affected by the project)
- *Ammophila arenaria* Semi-Natural Herbaceous Stands (non-native)
- *Abronia latifolia* – *Ambrosia chamissonis* Herbaceous Alliance (dune mat)
- *Deschampsia caespitosa* Herbaceous Alliance (coastal terrace prairie)
- *Calamagrostis nutkaensis* Herbaceous Alliance (coastal terrace prairie)
- *Festuca rubra* Herbaceous Alliance (coastal terrace prairie)
- *Holcus lanatus* – *Anthoxanthum odoratum* Semi-Natural Herbaceous Stands (annual grassland)
- *Carex obnupta* Herbaceous Alliance
- *Schoenoplectus americanus* and *Schoenoplectus acutus* Herbaceous Alliances (freshwater to brackish marshes)
- *Typha* Herbaceous Alliance (brackish marsh)
- *Salix hookeriana* Shrubland Alliance
- *Pinus contorta* ssp. *contorta* Forest Alliance
- *Picea sitchensis* Forest Alliance

Invasive species including European beachgrass and Scotch broom have become widely established in parts of the site. A simplified habitat map has been included in a technical memorandum (GHD Inc. 2013c).

6.1.2 Point Saint George

The western lily management area adjacent to CEC has become overgrown with dense shrub and sapling cover, shading out early successional low herbaceous wetlands which formerly provided western lily habitat. Roberts (2003) noted that during the intervening 12 years since the study done by Theiss (1991), the plant community composition had noticeably changed at Point Saint George. Although Theiss (1991) mapped sensitive species and not communities, her mapped western lily localities are shown in the subsequent Roberts (2003) report as “mixed tree-shrub thicket.” In the absence of active

management, this successional trend would be expected to continue, eventually precluding the onsite persistence of western lily as a result of shading and hydrology/soil moisture changes resulting from increased evapotranspiration (USFWS 2009).

Primary habitat types within the proposed management area include:

- *Carex obnupta* Herbaceous Alliance
- *Salix hookeriana* Shrubland Alliance
- *Pinus contorta* ssp. *contorta* Forest Alliance

Small inclusions of other habitat types may be present. In general, much of the site is heavily overgrown with woody vegetation and it is difficult to access.

6.1.3 On-airport Sensitive Plant Mitigation Areas

Some areas to be impacted by RSA improvements currently support sensitive plants or ESHA. Upon completion of grading, RSA runway ends would be replanted with a native seed mix. In addition part of the "borrow area" or other appropriate locations away from airport operation areas may be used for dune mat replacement or enhancement.

6.1.4 Bay Meadows Mitigation Area

The Bay Meadows site is located on the northwest side of Northcrest Drive, north of Blackwell Lane and south of Bay Meadows Drive, approximately 2.5 miles northeast of Crescent City and approximately 14 miles south of the California/Oregon border. The site is accessed off of Bay Meadows Drive. The Pacific Ocean is located approximately 2.5 miles west of the site, Lake Earl is located one mile north of the site, and Highway 101 is located one mile to the southeast. The site has been the subject of previous investigations for potential development. The site incorporates approximately 136 acres of total area. A preliminary boundary adjustment map was developed which separated the property into four proposed parcels of approximately 75.3 acres (Parcel 1), 3.0 acres (Parcel 2), 11.9 acres (Parcel 3) and 45.6 acres (designated for future development as the Harbor Center Tract).

The site consists of level to undulating and gently sloping areas within a marine terrace landscape setting. There are two south-to-north trending drainage ways separated by a low ridge. Both drainage ways have altered hydrology as a result of shallow ditching. Elevations on site range from 44 feet along the small ridge on the east side of the site to 20 feet near the northwest corner of the site. Previous land uses for the site include timber harvesting and cattle grazing. Brush and slash removal efforts and mowing on much of the site have left large areas of low brush vegetation, some open patches of grassland and one significant larger open sloped pasture area in the north central portion of the parcel. The site is a complex patchwork of annual grasslands, shrubs, remnant wetlands, swales, and woodlands. On some areas of the site (particularly in the northwest corner and along the western property line) vegetation forms impenetrable thickets. Several gravel roads with culverts in places wind through the site. Surrounding the site are residences to the south, large open drainages and wetlands to the east and west, and the Department of Fish and Wildlife's (CDFW) Lake Earl Wildlife Refuge to the north.

6.1.5 McNamara Subdivision and McNamara Ranch Mitigation Areas

The McNamara Ranch site is located along Lake Earl Drive, north of the intersection with Standard Veneer Road, and west of the intersection with Genevieve Lane. The site is approximately three miles northeast of Crescent City and 13 miles south of the California/Oregon border. The Pacific Ocean is located approximately 2.5 miles west of the site, Lake Earl is approximately 1/2 mile northwest of the site, and Highway 101 is located one mile southeast of the site.

The site consists of a mixture of pasture land, upland timberland, and low-lying forested and shrub wetlands. The site borders Lake Earl marshland to the northwest and is thus contiguous to relatively natural habitat associated with the Lake Earl fringe. The site incorporates approximately 103 total acres. A residential subdivision is present east of the site, with lower density developed private lands to the west and south.

The smaller McNamara Subdivision site is located to the north of McNamara Ranch, and consists primarily of deciduous woodland with a few scattered Sitka spruce, and a small area of emergent marshland adjacent to the wildlife refuge.

6.1.6 Moore Tract Mitigation Area

The site is bordered by Highway 101 to the west, Kings Valley Road along the east, and Kings Valley Golf Course along the south boundary. The site is approximately 4.5 miles northeast of Crescent City and 13 miles south of the California/Oregon border. The site is accessed off of Kings Valley Road. The Pacific Ocean is located approximately 4.5 miles west of the site, Lake Earl is approximately 2 miles west of the site, and Highway 199 is located 1/2 mile south of the site.

The Moore Tract is located east of Lake Earl and occupies a transition from alluvial deposits at the western margin of the Siskiyou Mountains onto unconsolidated marine terrace deposits. There are buildings located at the southeast and northeast corners of the site. Scattered Douglas fir and some redwoods are present on the western half of the site, although most of the site is open and consists of disturbed annual grassland with small emergent wetland areas.

6.1.7 Other Properties

Additional properties are in the early stages of investigation. These include several parcels along the margins of Crescent City Marsh, at least one of which contains historic wetlands which have been filled. Not enough information is available at this time to present a detailed site or project description.

7. Determination of Credits

Impacts and mitigation credits are measured in acres, and mitigation would be applied at ratios agreed upon by BCRAA and the regulatory agencies (proposed ratios are shown in Table 1). Because many of the wetland and upland plant communities at the mitigation sites are early seral (successional) stage communities the dominant plant species tend to be fast-growing and adapted to rapidly colonize newly available habitat; thus the probability of success is believed to be higher than is typical for some other habitats of comparable complexity.

8. Mitigation Work Plan

8.1 Mitigation Project Area

Several alternatives are currently under consideration, pending agency discussions and a decision by the BCRAA Board of Directors. An alternative focused on road removal at Pacific Shores Subdivision was addressed in detail in an earlier and separate MMP and is not included here.

Two additional alternatives are described below.

The Pacific Shores Subdivision mitigation area would include only land acquisition under Option 2. No road removal or other restoration activity is planned. In Option 3, PSS would be excluded. The PSS site and boundary is shown in Figure 2.

The Point Saint George vegetation management area includes about 14 acres immediately west of CEC and is included in all alternatives. Its boundary is shown in Figure 3.

On-airport (CEC) mitigation would occur within limited areas away from active runways. The CEC airport site is shown on Figure 4. It is included in all alternatives.

Mitigation on the Bay Meadows, McNamara, and Moore tracts would occur within areas tentatively identified in a recent feasibility study (GHD 2013) and subject to refinement in early design stages. The mitigation sites are shown on Figure 5, 6, and 7. Additional properties may be evaluated as necessary to meet mitigation acreage requirements. Some but not all of these properties may be included in the ultimate mitigation package.

8.2 Construction Methods

8.2.1 Pacific Shores Subdivision

Mitigation activities would consist only of land acquisition with no road removal or habitat restoration at Pacific Shores under option 2. Pacific Shores properties would not be included under Option 3. Option 1, focused primarily on road removal at Pacific Shores, is described in detail in a separate MMP.

8.2.2 Point Saint George

Point Saint George is included under all alternatives, and would involve the following activities:

- Management of areas immediately adjacent to the airport, initially through removal or thinning of woody vegetation and later through vegetation management as specified in Biological Opinion conservation measures, to maintain or re-establish potentially suitable conditions for the western lily and to mitigate for rare plants;
- Relocation of the airport fence to protect the management area (Figure 3)

- Clearing of woody debris would be done by hand (chainsaw) and removed from the site by hand or with light mechanized ATV equivalent depending on location, access, and sensitivity. Material may be removed whole, chipped adjacent to the site, or burned adjacent to the site depending on end use and resource agency approval.

8.2.3 CEC

Grading of runway safety areas would be done separately as part of the RSA project. On-airport mitigation activities are included under all alternatives, and are expected to be limited to re-seeding and invasives removal. Most mitigation work would be done by hand, with some light vehicle use to transport tools and materials to small staging areas adjacent to the work sites. No sensitive species would be planted in proximity to airport operation areas.

8.2.4 Bay Meadows Mitigation Area

Mitigation on the Bay Meadows Tract would involve re-establishing, rehabilitating, establishing (creating) and enhancing palustrine emergent wetlands under options 1, 2 and 3.

The western half of Bay Meadows contains approximately 7.1 acres of existing wetlands, subject to refinement by an ongoing wetlands verification effort and, later, an updated wetlands delineation. One conceptual mitigation approach to this site would consist of raising culverts and re-grading or use of low berms to restore water levels in channelized drainages, thus elevating ground water levels slightly in adjacent areas. Additional wetlands would be established on this property by re-grading and planting native wetland species to mimic and expand the existing wetlands. If properly executed, the expansion would connect existing wetlands and habitat areas. This approach would require considerable excavation and the construction of relatively shallow berms (two to four feet), and excavation between the berms to a depth of approximately three feet. The focus would be to limit the excavation depth as much as possible to the upper soil region. To the extent practical grading would avoid existing mature trees. It is anticipated that a minimum of 12-17 acres of new wetlands could be established using this approach, with enhancement of additional areas of existing wetland.

8.2.5 McNamara Mitigation Areas

The mitigation would involve the following activities at the McNamara sites under option 3:

- At McNamara Subdivision, acquisition and preservation, possibly with some enhancement, of existing habitat;
- At McNamara Ranch, establish (create) palustrine emergent wetlands

A preliminary concept was developed for wetland mitigation at the McNamara Ranch. The concept involves expanding existing wetland areas by excavating the land adjacent to those areas. To be effective, this approach would require excavating to elevations at or below the seasonal level of groundwater, which was assumed to be at an elevation of 14-feet for this concept. The excavations would be up to 8-feet in depth. Due to the proximity of the site to the existing natural resource area it is reasonable to assume that creation of new wetland will require incorporating buffers to prevent construction impacts, and

minimize potential disturbance and altering of existing sensitive habitat. Similar to mitigation concepts at the other sites, this concept requires substantial removal of grasslands and shrub lands, with an effort was made to minimize disturbance to large, medium-age conifers. Preliminary discussion with USFWS indicate that federally protected tidewater gobies in adjacent Lake Earl marshlands may be a concern, probably requiring buffer areas and erosion control measures between excavation areas and marshlands, and limiting wetlands establishment or enhancement in this area. Because of limited available wetland establishment opportunities relative to the size of the site, the proximity of sensitive resources, and the current agricultural use of parts of the site the McNamara Ranch site may prove to be infeasible for mitigation.

8.2.6 Moore Tract Mitigation Area

Mitigation option 2 and 3 would involve the following activities at the Moore Tract:

- Re-establish, rehabilitate, establish or enhance palustrine emergent wetlands

At the Moore Tract, water issuing from the base of alluvial deposits on the upper half of the site has been directed through three small ditches to drain the site. Despite this maintained drainage, some wetlands persist on the site. Re-establishment of additional wetlands would be relatively simple by grading these ditches into shallow swales to slow the movement of water through the site. Additional wetlands could be established (created) by minimal excavation of adjacent areas and/or by constructing low berms to encourage local ponding of water.

Although the Moore Tract is outside of the coastal zone, it is in proximity to extensive public lands on uplands to the east, and thus is attractive to some agencies as a corridor contributing to connectivity between mountain and coastal habitats.

8.2.7 Other Properties

Several additional sites along the coast, near Crescent City Marsh, and near Lake Earl are being considered as options to provide additional area if portions of either alternative prove to be infeasible or if additional mitigation acreage is required.

8.3 Access and Staging

Access to and from mitigation areas where habitat establishment, re-establishment, or enhancement would occur would be from existing roads, with staging areas established on disturbed ground or other areas outside of wetlands or sensitive habitats.

Access to Point Saint George could be from within CEC or from within the management area and is likely to be determined on the basis of ease of access and lowest risk of damage to sensitive habitat. Staging would be adjacent to the work area.

Access to the runway safety areas and the "borrow pit" at CEC would be via runways or taxiways, with vehicles or equipment parked off of pavement on mowed/maintained grass areas to avoid disruption to airport operations. Staging would likely be on disturbed ground immediately adjacent to the work areas.

Access to the Bay Meadows, McNamara, and Moore sites would be determined before construction began. Staging areas would be established in previously approved locations away from sensitive habitats.

8.4 Construction Timing and Sequence

The mitigation component of the project is expected to commence in late summer or fall of 2014. The schedule would generally occur in the following phases:

- Land acquisition, September 2014 to August 2015.
- Invasive species removal and seed collection: September 2014 to March 2015.
- Equipment mobilization and site preparation: July 2015 to September 2015.
- Construction: August 2015 to November 2016.
- Clean up and demobilization: November 2016.
- Monitoring of restoration: June 2016 to August 2021.
- Ongoing maintenance: June 2016 to August 2021, or as mandated by permit conditions. BCRAA would be responsible for maintenance through the monitoring period.

Construction activities would be conducted in compliance with applicable federal, State and local regulatory requirements and in a manner that would minimize disturbance to adjacent properties and disruption to traffic. Construction would occur between the hours of 7 AM and 6 PM, Monday through Friday, and 10 AM to 5 PM on Saturdays. No construction would be allowed on Sundays, except in an emergency. The number of construction workers present on the mitigation sites at any given time is anticipated to be up to 20. The number of motor vehicles at any time would be up to 20, along with no more than 15 pieces of heavy machinery. The mitigation project would also require the delivery of equipment, workers and materials via public roads in the area.

8.5 Hydrology

The Bay Meadows tract is located southeast of Lake Earl and contains small remnant wetlands. There are two south-to-north trending drainage ways separated by a low ridge. Both drainage ways have altered hydrology as a result of shallow ditching. Generally, water on the Bay Meadows site drains north to the Wildlife Area and into Lake Earl. The western drainage enters the site from two 48-inch culverts located under Northcrest Road. This drainage includes several intersecting channels, some of which appear to be abandoned access routes. The eastern drainage runs along Northcrest Road and crosses the mid-portion of the site. Water enters a small apparently man-made channel that parallels a main gravel road (Kelley, 2006). Other isolated wetlands are found on the site, the hydrology of which has not been studied in detail but is likely related to a combination of one or more of the following site conditions: high rainfall, soil compaction, impounding from roads and site alterations, and/or endosaturation. In most cases water enters the site as rainfall or through the culverts beneath Northcrest Drive. Initial groundwater monitoring documented groundwater to be on average about 2.9 feet below ground surface (bgs) for

many portions of the site during late winter of 2013, which was drier than normal (GHD 2013).

The McNamara Ranch tract is located just southeast of Lake Earl and abuts a marshland area that is influenced by water level fluctuations in Lake Earl. It contains forested & shrub wetlands. There are also three dominant southeast-to-northwest trending drainage ways separated by ridges. Generally, the water on the site drains northwest to the marsh and into Lake Earl. The surface topography for the site covers a range in elevations from approximately 13 to 32-feet, or an approximate variance in elevation of 19-feet. Although the general sloping trend is from southeast to northwest, there are localized ridges, high points, swales, and drainage channels that break the site into several unique regions. The site ridges are higher on the northeast side and slightly lower on the southeast side.

The Moore tract contains some small emergent wetland areas. It is thought that water moving through the subsurface of the steeper eastern half of the site reaches the surface at the edge of alluvial fan deposits. From this point west, there are three small but distinct ditches draining the site from east to west; one in the center of the site, and one each on the northern and southern boundaries. The total elevation difference between the east and west boundaries is approximately 90 feet, although the western part of the site is relatively level.

8.6 Soils

A summary of soils information for each site follows.

8.6.1 Pacific Shores

The area is characterized by active dunes partially burying an older stabilized dune system (Cooper 1967); nearshore sand has been blown by prevailing northwest winds into a series of dunes, most conspicuous in the western part of the site (Roberts 2003; Weidemann 1984). Dune communities typically occur close to the coastline, including foredunes almost entirely stabilized by European beachgrass (Pickart and Sawyer 1998). The entire site is mapped as sand dunes/wet sand areas (SD-WSA map unit) by the soil survey (McLaughlin and Harradine 1966) although the inland portion of the site is not dominated by sand dune formations. On the relatively level deflation plains in the center of the site, large areas of coastal terrace prairie remain intact with more developed soils that can support this community type. In the eastern part of the area conifer forests of mixed Sitka spruce (*Picea sitchensis*) and beach pine (*Pinus contorta* ssp. *contorta*) alternate with deciduous woodlands that are dominated by willow and red alder.

See the Option 1 Pacific Shores MMP for additional soils information on hydric soils and other soil types observed at the site beyond the designated soil survey map unit.

8.6.2 Bay Meadows

This site is located on an unconsolidated marine terrace southeast of Lake Earl. There is a south-to-north trending low ridge with two parallel drainage pathways on each side (to east and west). Soils at the site are mapped as the Talawa Series (Ta), a predominantly well drained soil with minimal profile development, textures varying from fine sandy loam to loam and exhibiting only slight clay migration. Parent material is dune sand principally of sedimentary origin with fairly high quartz content. These soils form on low marine terraces

that have been slightly uplifted to current elevation between 25 and 50 feet. Native vegetation associated with Talawa soils include spruce, hemlock, cascara, huckleberry, and salal, which are confirmed present on the non-grassland portions of this site. Associated with the Talawa Series is the Hutsinpillar Series, a fine textured and poorly drained soil with strongly developed profile. Also associated with these soils is the Timmons Series, alluvial in origin and also finer textured.

Approximately half of the site is mapped as Talawa fine sandy loam 0-3 percent slopes (Ta2 map unit) which predominantly occur on fairly flat terrace surfaces and side slopes where dissected by drainages. Ta2 occurs on the site on the main central low ridge, as well as along the eastern boundary of the site. Internal drainage is good, permeability is moderately rapid, and runoff is slow. The main productive use of these soils is for forest production with a Storie Index rating of 58% (Grade 3) for agricultural purposes (fairly well suited and productivity is more difficult to improve). Limitations with this soil can be slope, nutrient levels, and low available moisture in the profile according to the soil survey (McLaughlin and Harradine 1966).

The lower lying drainage areas on the site are mapped as Talawa fine sandy loam, poorly drained (Ta3 map unit). Ta3 soils occur in the bottom of dissections of the predominantly flat marine terraces mapped as Ta3 and in broad depression areas on top of terrace surfaces. The soil survey states that Ta2 soils are subject to prolonged periods of near surface water due to poor drainage with subsequent dominant plants often being water loving. These soils need precautions for time of tilling and earthwork activities to avoid further compaction that would occur when soils are wet. These soils are typically not cultivated with a Storie Index rating of 38% (Grade 4) with limitations due to nutrient level and drainage conditions.

8.6.3 McNamara

No information on soils at McNamara has been compiled at this time.

8.6.4 Moore

The Moore Tract is located east of Lake Earl and occupies a transition from alluvial deposits at the western margin of the Siskiyou Mountains onto unconsolidated marine terrace deposits. The site is mapped as the Rowdy Series (Ry) which are well drained young soils on alluvial fans close to the ocean, with nearly flat/smooth surfaces and gentle westward slopes. Parent material is gravelly alluvium from nearby Franciscan greywacke, shale, and sandstone formations. Vegetation is mainly grasslands, historically supporting native grasslands. Associated with the Rowdy soils are well drained Ferndale soils at lower elevations and the Loleta soils which occur in poorly drained portions of alluvial fans.

The upper (eastern) portion of the Moore Tract which is not being considered for use by this project other than for an access route, is mapped as Rowdy loam, 3 to 8 percent slopes, which is characteristic of Rowdy soils except for it occurs on gently sloping alluvial fans, and care should be taken for direction of cutting so as to reduce erosion potential.

The lower half of the site (western) is mapped as Rowdy clay loam, poorly drained, 0-3 percent slopes (Ry6). This soil occurs in some small depressions of alluvial fans where water draining the mountains to the east can remain present near the surface for extended

periods of time. These soils are less fertile and more difficult to manage than the other Rowdy map units such as clay loam 0-3 percent slope. The subsoil structure of Ry6 is massive and colors are mottled. Permeability is moderately slow. Storie Index rating is 61% (Grade 2) with limitations due to nutrient levels and drainage conditions.

8.6.5 Other Properties

The soil conditions at other properties is unknown at this point.

8.7 Grading Plan

A detailed grading plan will be prepared once final sites are selected. A brief summary is included below.

8.7.1 Grading

Only preliminary concepts are available at this time for the sites where grading would occur (Bay Meadows, McNamara Ranch, Moore Tract). In general, at these sites varying degrees of excavation would be necessary to establish new wetlands with excess soils anticipated to be thinly spread over nearby upland areas of the sites and used to construct low berms in some localized areas. Surface undulation would be specified in the design on a site-specific basis, possibly increasing the grade by 12 inches for a distance of 30 feet, and then decreasing the grade by 12 inches for a distance of 30 feet to create micro-relief complexity that is conducive to plant and animal diversity. Within proposed wetland establishment areas, small deeper areas would be excavated and clustered in small groups, to mimic northern red-legged frog breeding habitat.

8.8 Erosion Control

Temporary erosion control measures shall be implemented during construction to avoid adverse impacts to coastal resources, adjacent property, or to sensitive habitat in the mitigation project vicinity. Erosion control measures proposed for implementation prior to and concurrent with construction activities include straw wattles, silt fence, plastic stormwater berms and straw bale barriers and will be shown on the final grading plans and will include details and specifications. Measures to be implemented after construction is completed include revegetation. It is anticipated erosion will not be a significant problem as most mitigation areas are relatively flat; the McNamara Ranch site is a notable exception.

Biodegradable straw matting would be applied on any slopes that exceed 3:1. The matting would have a mesh netting that will biodegrade within several months to minimize long-term impacts to wildlife. Straw wattles may also be used to function as runoff diversions.

8.9 Planting Plan

A detailed planting plan has been developed for two habitat types included in this mitigation plan: palustrine emergent wetland – Bay Meadows, McNamara, and Moore Planting Zone A and CEC dune mat - Planting Zone B. Planting is not anticipated at Point Saint George or Pacific Shores. Additional planting zones may be identified during final design. The tables below are intended to be representative based on information available at this time and species quantities shown below have been developed using acres as the unit of measure. After agency permitting discussions are complete and parcel acquisition

agreements signed, updated tables would be included in specifications. The wetland and dune planting plugs are currently spaced using 12 feet on center because some of the sites retain a strong native seed bank and natural recruitment is expected. Planting plans would be refined in final design to reflect the unique characteristics of each mitigation site.

Table 3 Bay Meadows, McNamara, and Moore Planting Zone A: Palustrine Emergent Wetland

Planting Zone A- Wetland								1.00
Overall Spacing (feet off center)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Individual Spacing (ft.)
12	303			HERBACEOUS				
		20	61	<i>Juncus patens</i>	spreading rush	4" plug	cluster	27
		20	61	<i>Deschampsia cespitosa</i>	tufted hairgrass	4" plug	cluster	27
		15	45	<i>Sidalcea malviflora</i>	dwarf checker-mallow	4" plug	cluster	31
		15	45	<i>Scirpus microcarpus</i>	panicked bulrush	4" plug	cluster	31
		30	91	<i>Viola adunca</i> **	Western dog violet	4" plug	cluster	22
		100	303	= total				
N/A	20			NATIVE SEED				
		20	4	<i>Lupinus polyphyllus</i>	broad-leaf lupine	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Calamagrostis nutkaensis</i>	Pacific reed grass	LB of P.L.S. 76 %	SEED	N/A
		25	5	<i>Carex obnupta</i>	slough sedge	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Juncus patens</i>	spreading rush	LB of P.L.S. 76 %	SEED	N/A
		15	3	<i>Deschampsia cespitosa</i>	tufted hairgrass	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Oenanthe sarmentosa</i> *	Pacific water parsley	LB of P.L.S. 76 %	SEED	N/A
		10	2	<i>Scirpus microcarpus</i>	panicked bulrush	LB of P.L.S. 76 %	SEED	N/A
		100	20	= total				

Note: *Viola adunca* and *Sidalcea malviflora* shall be planted on the wetland edges.

Table 4 Planting Zone B: CEC Dune Mat

Planting Zone D-CEC Dune Mat								1.00
Overall Spacing (feet off center)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Individual Spacing (ft.)
6	1210			HERBACEOUS				
		10	121	<i>Anaphalis margaritacea</i>	pearly everlasting	4" plug	cluster	19
		10	121	<i>Achillea millefolium</i>	yarrow	4" plug	cluster	19
		15	182	<i>Armeria maritima</i>	sea pink	4" plug	cluster	15
		10	121	<i>Artemisia pycnocephala</i>	coastal sagewort	4" plug	cluster	19
		10	121	<i>Eriogonum latifolium</i>	coast buckwheat	4" plug	cluster	19
		10	121	<i>Festuca rubra</i>	red fescue	4" plug	cluster	19
		15	182	<i>Fragaria chiloensis</i>	coastal strawberry	4" plug	cluster	15
		10	121	<i>Juncus lesueurii</i>	salt rush	4" plug	cluster	19
		10	121	<i>Polygonum paronychia</i>	beach knotweed	4" plug	cluster	19
		100	1211	= total				

8.9.1 Source of Propagules

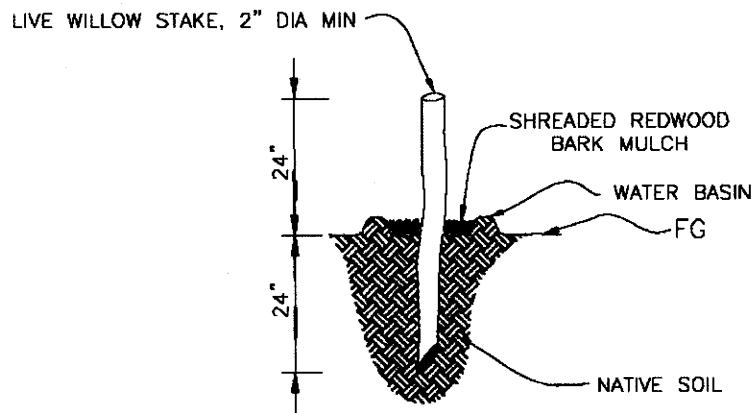
In order to preserve the unique genetic diversity common to seasonal wetland, grassland and dune communities in Del Norte County, plant material will be from local genetic stock. All plant stock will be inspected to ensure it meets the design plan by a Restoration Construction Oversight Manager (RCOM) to be designated by BCRAA. The RCOM shall be informed at least five days prior to plant stock being transported to the site to ensure they are available to conduct inspection upon delivery. The plant nursery(ies) will be selected well in advance (approximately 9-12 months is ideal depending on material being supplied) so that time is allowed to collect seed and to ensure adequate quantities and sizes (for container stock) of species will be available at time of planting. By using plant material from sources in close proximity to the sites, and within the boundaries of the

project watershed, better success is predicted due to the well-adapted ecotypes being utilized.

Seed: The seed mix selected will consist of native hydrophytic plants that are local to the region. Seed shall be delivered to the site tagged and labeled in accordance with the California Agricultural Code and shall be acceptable to the County Agricultural commissioner. Bag tag figures shall be evidence of purity and germination. Time since date of seed test shall not exceed nine months. An agreement with a native plant nursery should be made well in advance of restoration planting to collect seed, and/or propagation and germinating by the subcontractor. In addition, consideration should include supplemental and/or incidental planting in anticipation of long-term maintenance efforts for the following year.

Native Plants: Plants or propagules including seeds will be purchased from nurseries (when practical) and collected as follows:

- Propagules shall consist of locally genetic, native stock from within a 20 miles radius of the Lake Earl watershed, from the project impact site, and/or directly from the mitigation site(s).
 - If native local plant stock is not available during the time of implementation then the plant stock shall come from within the Northern California Eco-region.
- Live willow stakes shall be harvested directly from the mitigation sites in which they are to be planted. If there are no willows on a particular mitigation site, and the planting plan requires live stakes, then the willows shall come from the next closest site and/or the impact site.



8.10 Mitigation Implementation

8.10.1 Seeding

Broadcast Seeding: this method can be used throughout the site, but is intended to cover bare soil areas in-between container plantings and for areas prone to erosion or where the Contractor will access the site for revegetation implementation.

It is recommended that the following seed quantities be used for revegetation seeding:

- Wetland broadcast seeding mixture shall be 30 lbs per acre per application
- Dune Mat broadcast seeding mixture shall be 20 lbs per acre per application
- Following the broadcast seeding application, straw mulch shall be applied at a rate of 1,500 pounds per acre (Pickart and Sawyer 1998). A tackifier is not required, but may be used if desired. The mulch will consist of natural fiber (virgin wood fiber is preferred), be free of synthetic materials (e.g., plastic), and contain no more than seven percent ash or 250 parts per million of boron. The seed and mulch can be applied separately, or mixed dry then spread evenly onsite. After application, the seed/mulch mixture will be lightly raked into the soil surface to help ensure good soil/seed contact. Application shall not occur when heavy rainfall is anticipated within 24 hours. When planting after broadcast seed application has occurred, planting activities will be performed carefully so as to result in minimum damage to the broadcast seeded areas.

Additionally, natural plant recruitment is expected to occur on site.

8.10.2 Plant Installation

The following plant material protocols should be considered prior to all plant installations:

1. Contractor shall be responsible for coordination and timing of plant material delivery to site or pick up. Plant material will be picked up no later than three days prior to installation.
2. Plants shall be graded and tagged in accordance with the American Standard for Nursery Stock as sponsored by American Association of Nurserymen, Incorporate (ANSI 260.1). Tags shall remain on plants until inspected and accepted by BCRAA RCOM. Notify BCRAA RCOM when plants are on-site to allow for an inspection to verify species or variety and acceptability of plants for robustness, and branching structure.
3. Plants shall comply with federal and state laws requiring inspection for plant diseases and infestations. Inspection certificates, as required by law, shall accompany each shipment of plants and shall be submitted to the BCRAA RCOM. Nurseries are to demonstrate protocols and strategies for managing fungal pathogens, non-native plants, and non-native insects through submittals to the BCRAA RCOM prior to placing the nursery order.
4. Plants will be purchased from nurseries and shall be grown from local Watershed genetic stock within a 20 miles radius of the mitigation site or directly from the mitigation site. Plant material will be inspected, any diseased or root bound stock will be rejected.

The following steps are recommended for container stock plant installation:

1. Planting sites shall mimic a natural pattern spacing type and individual spacing as specified in the planting plan and will not be planted in a grid like pattern.
2. Remove grasses, weeds, and other non-native vegetation that adjoins the planting site.

3. Planting depth should be two times deeper and two times wider than the dimensions of the root ball. Depending on the soil, the planting hole can be excavated by hand digging or using an auger, shovel, Pulaski, pick or pry bar. Scarify bottom of planting pit to a depth of two to three inches. Repeat cultivation in areas where equipment used for hauling and spreading topsoil has compacted subsoil to enable root penetration.
4. Nursery stakes in plant containers shall be removed before planting. The container should be moist to reduce friction when removing plant. Roll or squeeze container to break surface tension between the plant and container. Tap the outside of the container, cradle till the plant is removed; do not pull on the stem.
5. Scarify each side of the root ball. Matted roots on the sides shall be sliced longitudinally 1/8-1/4 inch deep at least once per side. Matted roots on the bottom of the root ball shall be sliced a 1/4 inch deep.
6. Do not allow "J" bending to occur to the tap root or root ball during installation. The crown of the plants will be a minimum of 2 inches above finish grade to account for any settling. The crown shall remain above finish grade after any adjustments have been made. Plant should not be deeper than the original soil line; no roots shall be left exposed.
7. Install plant protection measures such as foliage and root protectors made of fine mesh wire fencing material, as appropriate.
8. An initial watering will be conducted to further eliminate air spaces and ensure adequate contact of the root surface with the soil medium after planting, taking care to avoid erosion and ensuring no roots are exposed after watering.
9. Maintain the planting area from weeds by hand scraping with a hoe to bare soil around each planting to reduce competition from weeds and to reduce thatch utilized by small mammals. Install weed-mats or provide continual weed maintenance. If weed mats are used ensure they are biodegradable fabric such as coconut, or core fiber and attached to the surface using ground staples or equivalent. No plastic filament or other non-biodegradable material that could entrap wildlife will be used.

Willow (*Salix* spp.) Planting Instructions:

1. Prior to planting soak cuttings (in a pond, ditch, garbage can or deep enough water) so the cutting is protected from wind and sun exposure during the soak for at least 24 hours to increase root and shoot production.
2. Willow cuttings shall be placed with the basal 2/3 of the slip (painted top) in the ground, with approximately 10-12 inches above the soil surface, spaced 15' apart.
3. If holes are dug or augured for the willows the soil shall be tamped around each willow slip so no air void occurs.

8.11 Invasive Plant Control

Invasive plant species at the mitigation site are identified as plant species listed with a rating of high or moderate by the California Invasive Species Council (Cal-IPC), as well as, the Humboldt/Del Norte Weed Management Area (WMA) Strategic Management Weed

List. Invasive and non-native plants currently present within the mitigation project areas are listed in Table 5 below.

This section summarizes locations and suggested removal or management methods for invasive species at the mitigation sites. In general, manual removal or other minimally intrusive methods will be used in or near sensitive species habitat with other techniques limited to already heavily disturbed areas where pre-construction surveys document the absence of OSB host or nectar plants and subject to resource agency approval. A more detailed discussion of a full range of potential control methods is included in Appendix B.

Table 5 Invasive Plant Species Distribution in Mitigation Area

Scientific Name	Common Name	Cal-IPC Rating	Humboldt/ Del Norte WMA	Habitat
<i>Ammophila arenaria</i>	European beach grass	High	High	Coastal Dunes
<i>Cytisus scoparius</i>	Scotch broom	High	High	Dunes, Roadside, Widespread
<i>Rubus armeniacus</i>	Himalayan blackberry	High	High	Riparian areas, Dunes, Wetlands
<i>Anthoxanthum odoratum</i> ¹	sweet vernal grass	Moderate	NL	Coastal prairie, Coniferous forest
<i>Cirsium vulgare</i>	bull thistle	Moderate	High	Riparian areas, Wetlands, Coastal prairie
<i>Bromus hordeaceus</i> ²	soft chess	Limited	High	Grasslands, sagebrush, serpentine soils, many other habitats
<i>Dactylis glomerata</i> ³	orchard grass	Limited	NL	Grasslands, Broadleaved forest, Woodlands
<i>Hypochaeris glabra</i>	smooth cat's ear	Limited	Moderate	Scrub, Woodlands, Widespread
<i>Plantago lanceolata</i> ²	English plantain	Limited	NL	Many habitats
<i>Cortaderia jubata</i>	pampas grass	High	High	Coastal dunes, coastal scrub, Monterey pine, riparian, grasslands, wetlands
<i>Dipsacus fullonum</i>	Indian teasel	Moderate	Moderate	Grasslands, Riparian, Wetlands, Impacts regionally variable, forms dense stands on occasion

Scientific Name	Common Name	Cal-IPC Rating	Humboldt/ Del Norte WMA	Habitat
<i>Foeniculum vulgare</i>	sweet fennel	High	High	Grasslands, Scrub
<i>Hedera helix</i>	English ivy	High	High	Roadside
<i>Holcus lanatus</i>	Velvet grass	Moderate	Moderate	Coastal grasslands, Wetlands, Widespread, Impacts can be more severe locally, especially in wetland areas
<i>Senecio jacobaea</i> ⁴	tansy ragwort	Limited	High	Wetland, Riparian, Coastal

1. Little information available on impacts and limited ecological range
2. Very widespread, but monotypic stands uncommon. And/or in converted grasslands
3. Widespread. Impacts appear to be minor; some local variability. Low density and impact in wildlands
4. OSB host plant and removal is permitted in this restoration plan; can be locally important in NW CA.

European beachgrass (*Ammophila arenaria*)

On site at CEC

Ammophila removal at CEC is in the area described as the "borrow area." In any areas adjacent to sensitive habitat and species, the *Ammophila* will be removed manually.

9. Maintenance Plan

9.1 Maintenance

The re-established habitats have been designed to be as self-sustaining as possible. However, natural ecosystems are dynamic and subject to change over time. This is especially true in modern, fragmented preserves, where the vast landscapes and ecological processes which once maintained a habitat mosaic may have been partially or entirely disrupted. Among the natural processes that can modify the habitats are flood and drought, fog, fire, wind, disturbance by burrowing animals, and grazing.

As a result of human-induced change, management is usually required to maintain preserves and prevent gradual degradation. In the short term, management will likely be necessary to minimize invasive plant species that could recruit within the re-established wetland, grassland and dune communities. The following discussion identifies maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

The construction contractor will be responsible for habitat planting. The BCRAA will be responsible for implementing and financing the initial plant establishment maintenance period to ensure the site has been prepared properly and does not have deficiencies or damages, that invasive plants comprise no more than 5% of the re-established habitat areas, and that rooted stock is planted correctly and is exhibiting healthy and vigorous growth. After the initial plant establishment maintenance period, the BCRAA will be responsible for implementing and financing maintenance activities for the duration of the five year monitoring period.

The following discussion identifies approaches for maintaining the site at the end of the construction and planting period.

9.2 Inspection Activities and Frequencies

The following inspections will be generally performed on a bi-annual basis throughout the mitigation monitoring timeframe unless a different interval is specified below. Field notes will document if conditions are normal or abnormal, and the annual monitoring report will recommend remedial adaptive management actions to address any significant issues, as deemed necessary. In addition to the annual monitoring criteria listed above, annual monitoring will also note whether the following conditions are observed within each habitat type:

1. Are planting areas exhibiting excessive water or drought stress (too much or too little water as evidenced by leaf wilt, leaf drop, plant die off, etc.)?
2. Is there any presence of new or re-established populations of invasive or undesirable plants?
3. Is there a distinctive pattern of plant die off (i.e., all species of a single plant or a cluster of plants within a small area)?

Inspections shall occur bi-annually and be documented in a maintenance logbook as to the date, time, site conditions, general observations, type of work to be done, and equipment

used or required for follow-up maintenance. Inspection frequency may be altered depending on ambient conditions or the amount of work required at the site. The logbook will be submitted on an annual basis with the annual monitoring report.

9.3 Maintenance Schedule and Activities

Maintenance shall be conducted bi-annually for five years; once in the early spring and again in early fall. Maintenance activities can include revegetation irrigation, maintenance of herbivory root and foliage protectors, supplemental planting, and/or weeding.

The work will be guaranteed against invasive plants (listed above, Table 5) and weed growth during the plant establishment period. Weed management such as with a mower, weed whacker, weed wrench or extractigator, or hand pulling, applications should be done seasonally, throughout the year until plants are established. The NRLF is common on coastal sites and can be active at any time of year. Highest risk of impacts during vegetation maintenance is from middle to late summer when juveniles are dispersing or anytime in the rainy season. No herbicides are allowed during maintenance activities. If timing of maintenance needs to be modified for certain items, the rationale for the decision will be documented in annual monitoring reports and in the maintenance logbook. Inspections and Maintenance shall occur bi-annually using the schedule for maintenance during the monitoring period is shown in Table 6 as a guide for determining when to visit the mitigation site.

Table 6 Schedule for Wetland and Riparian Maintenance during the Monitoring Period

	Jan	Feb	Mar	Apr	Ma y	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Revegetation Inspection and Maintenance	I, M			I, M	M	M	I, M	M	M	I, M		
Unnamed tributary (T1) Inspection and Maintenance*	I			I			I			I		
Invasive Plant Inspection and Maintenance	I, M			I	M	M	I, M	M	M	I, M		

I = Inspection, M = Maintenance Predators (bullfrogs) are not expected to be a significant issue in coastal or seasonal wetlands. (*Maintenance- Management will occur only if inspections identify an issue).

Revegetation Inspection and Maintenance

Revegetation maintenance will be conducted bi-annually to ensure wetland revegetation out-planting is becoming established.

- Supplemental planting for areas that have deficiencies in the seeding or planted material stock (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
- Supplemental replacement plants for when a plant becomes damaged or injured by maintenance activities (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
- Supplemental watering to maintain adequate moisture depth in soil to insure vigorous growth;
- In years one and two of the maintenance period, the Contractor shall establish an agreement with a native plant nursery to collect seed to propagate and germinate for supplemental and/or incidental planting in anticipation of long-term replanting efforts for the following year;
- Watering will be provided through an informal irrigation system and the timing and frequency of irrigation will be reduced after year two of maintenance to allow for the plant to acclimate to the existing moisture conditions.
- The wetland areas will be maintained with minimal weeds; weed mats can be used to help achieve this criterion.

9.4 Success Criteria

Performance standards for the RSA mitigation project are intended to be measurable by systematic monitoring methods.

9.4.1 Hydrology Criteria

H1: Palustrine Wetland: During an average year of rainfall (75 inches), the established or re-established wetland will meet the USACE definition of wetland. Small localized portions within the wetland will be saturated to the surface or have ponding of surface water until at least May 1st in a normal rainfall year.

H2: Palustrine Wetland: At the end of five years, the total area of established and re-established wetlands shall be sufficient to meet agreed upon mitigation ratios as determined by a post project implementation jurisdictional delineation.

9.4.2 Vegetation Criteria

V1: Palustrine wetland post-planting cover shall meet the annual criteria identified in Table 7:

Table 7 Palustrine Emergent Wetland Habitat Success Criteria (Bay Meadows, McNamara, Moore Tracts)

Palustrine Wetland*	<p>Year 1: 40% or greater absolute cover of native wetland species. No more than 25% absolute cover of target invasive plants*. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation.</p> <p>Year 2: 50% or greater absolute cover of native wetland species. No more than 20% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation</p> <p>Year 3: 70% or greater absolute cover of native wetland species. No more than 15% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation.</p> <p>Year 4: 75% or greater absolute cover of native wetland species. No more than 15% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation. <i>Carex obnupta</i> shall have a 50% relative cover in the herbaceous layer.</p> <p>Year 5: 80% or greater absolute cover of native wetland species. No more than 10% absolute cover of target invasive plants. No large unvegetated bare spots (greater than 25%) or erosional areas, no evidence of oversaturation or permanent inundation.</p>
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V2: Rare plant post-planting cover at CEC shall meet the annual criteria identified in Table 8:

Table 8 Plant Success Criteria at CEC (dune mat and rare plants)

Rare Plants (Dunes at CEC)	<p>Year 1 55% success of planted dune species with CNPS rarity ranking. 10% or greater absolute cover of native dune species. No more than 15% absolute cover of target invasive plants.</p> <p>Year 2: 10% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 10% absolute cover of target invasive plants. Year 3: 15% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 10% absolute cover of target invasive plants. Year 4: 20% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 5% absolute cover of target invasive plants. Year 5: 25% or greater absolute cover of planted dune species with CNPS rarity ranking. No more than 5% absolute cover of target invasive plants</p>
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Western Lily Success Criteria at Point Saint George:

V3: In each monitoring year, the vegetative cover at Point Saint George in areas cleared for the western lily shall be no greater than 42 inches high and shall contain no more than 15% total cover of invasive plants, woody species over 12 inches tall, or *Spiraea douglasii* (a native wetland plant, which can form monocultures).

10. Monitoring

10.1 Hydrology Monitoring

Monitoring of hydrology will be completed through physical survey measurement for seasonal wetland hydrology. If there are changes in ground elevations at these locations as a result of storm damage, excessive inundation, excessive drought, or excessive accumulation of vegetation corrective actions will be evaluated. If determined appropriate, a solution to remediate impacts will be proposed to the regulatory agencies. Monitoring will occur for five years and reports are due annually by December 31st and will be submitted to the USACE, CCC, CDFW, and USFWS.

Hydrology monitoring will document precipitation and weather conditions. In the event of prolonged (more than one year) drought, extension of the monitoring period or other appropriate adaptive management action will be proposed. Methods for quantifying the hydrologic function of the wetlands are described below.

Palustrine Emergent Wetland: Methods for quantifying the geomorphic and hydrologic function of the wetlands will include:

- Install a staff gage within excavated frog ponds for the purpose of measuring depth and duration of water inundation.
- During the rainy season, the staff gages shall be monitored a minimum of one time per month (November through May).
- The Technical Standard for Wetland Hydrology will be met if wetland hydrology occurred in at least 50 percent of years (EPA 2005).
- Install monitoring wells and monitor weekly, five consecutive times, for one month, during the winter season (November through April).

The re-established wetland area in the Bay Meadows, McNamara, and/or Moore mitigation areas will be determined by a jurisdictional delineation.

10.2 Vegetation Monitoring

Vegetation sampling will occur every year for the duration of the five year monitoring period. The goal is to estimate the percent surface area cover and document the species composition once revegetation activities are complete. Monitoring would be conducted between June 1 and July 31st and be scheduled within the same month each monitoring year for best comparison of results.

Either the quadrat or point-line intercept methods may be used to estimate absolute vegetative cover, native cover, species cover, and invasive plant cover. The method to be used will be selected by the biological monitors after discussion with resource agencies. The selected method will be used in each re-establishment and enhancement habitat type areas (wetland and dune mat) and will be used to determine whether mitigation areas are meeting set success criteria for vegetative cover. Within any site methods shall be consistent through the monitoring period.

Determining Sample Size

Power analysis. An *a priori* power analysis will be used to determine the monitoring effort required. We define the specific question to be addressed as follows:

Is the true value of the percent cover less than or equal to the percent cover requirement?

The allowable certainty for percent cover will be a margin of error of +/- 10% at the 95% confidence interval. The confidence interval is the probability that the true value would be encapsulated in the margin of error around the reported percentage; the lower the confidence interval, the smaller the margin of error. Margin of error (ME), confidence interval and required number of sampling points (n) are related by the following equation for the 95 % confidence interval:

$$ME = 0.98/\sqrt{n}$$

The number of sampling points required to evaluate percent cover will be calculated using this equation.

Monitoring Protocol and Analysis for Estimating Vegetative Cover

Non-native Invasive Plant Monitoring

During spring or early summer of Years one to five, non-native invasive plant cover will be calculated from the data collected, as described above. In addition to this monitoring, areas with greater than five percent cover of target non-native species will be mapped using GPS as long as areas are safely accessible. Maintenance activities to control non-native invasive species will be targeted in these areas. Each year the acreage of mapped highly invasive species will be compared.

A spring inspection in subsequent years comparing mapped non-native invasive cover from the prior year will be conducted to determine if a non-native invasive species population has spread or a new species has invaded. In either scenario, maintenance activities may be required.

Additional Data Collection

In addition to point data collected along random transects, quantitative and qualitative data will be collected each year of monitoring. These general site assessments are intended to help determine if data from sampling transects is an accurate representation of site conditions, to help assess the overall functioning of the site as a whole, and also to help identify localized or low-level trends such as new invasive species formations, localized changes in species abundance, and other changes that might be overlooked if only transect data are analysed.

The following data will be collected during the site assessment:

- Species richness: this general site data will be used for calibrating similar data taken at transects, and is not intended for comparison with success criteria. Data will also help to evaluate whether invasive or non-native species are outcompeting native plants, and whether more active management might be required.
- Assessment of the health and vigor of the planted stock will be documented using the attributes in Table 9.
- Other site characteristics, including patterns of plant die-offs, erosion, hydrological issues, trespass, herbivory or grazing pressure, or other land use issues. This information is intended for use in recommending management actions as necessary

Table 9 Qualitative Score for Assessing the Health and Vigor of Planted Stock

Score	Description of Score
Excellent	No evidence of stress; minor pest or pathogen damage may be present. No chlorotic leaves, no or very minor herbivory (browse). Evidence of new growth, flowering, seed set on majority (greater than 75 %) of plants observed.
Good	Some evidence of stress. Pest or pathogen damage present, few chlorotic leaves (> 5%), minor evidence of herbivory (browse). Evidence of new growth, flowering, seed set on most (greater than 50%) of plants observed.
Fair	Moderate level of stress; high levels of pest or pathogen damage, some chlorotic leaves (> 10%), some herbivory damage (few snapped leaves, stems, wear marks etc.). Evidence of new growth, flowering, seed set on some (less than 50%) of plants observed.
Poor	High level of stress; high levels of pest or pathogen damage, many chlorotic leaves (> 30%), severe herbivory damage (massive forage damage, main stems/leaves stripped etc.). No evidence of new growth, flowering, or seed set, or only a few plants (less than 25%) with these characteristics.

10.3 Western Lily Habitat Monitoring

The cleared areas at Point Saint George shall be monitored annually documenting success of removed vegetative cover to determine whether the PSG mitigation area is meeting set success criteria. In years one and five, the site shall be intuitively walked to discern the effect of targeted removed vegetation. Each monitoring effort should document observations such as approximate percent cover of the overall canopy, mean height, and cover for all species. Areas where vegetative growth regenerates past 42" in height during the growing season, and for areas where *Spiraea* occurs in dense stands, shall be documented on a map, for follow up maintenance (USFWS 1998). Additionally, the site shall be surveyed to understand the trends of species which are re-colonizing the vegetation removal areas. Invasive plants such as velvet grass, gorse, Himalayan blackberry, among others shall be monitored for and immediately removed if they are regenerating on-site (USWS 1998).

The western lily survey protocol from the Arcata and Oregon Fish and Wildlife Office dated September 10, 2008 shall be reviewed prior to qualitative observations at PSG so that no direct adverse impacts occur to the lily as a result of monitoring vegetation removal areas. Survey for western lily habitat shall ideally take place between June 15 -July 15 as this is the optimal flowering period for the lily and surveys shall not take place before May 1 and after August 15 since the species emerges in late April and dies back by mid August (USFWS 2009). If the western lily population is regenerating, then a more focused protocol level survey may be done by the USFWS. However, the success of the PSG mitigation area is not dependent on the maintenance or enhancement of western lily populations, but rather is geared to the success of clearing woody vegetation in western lily suitable habitat. There will be no required western lily surveys as part of this MMP, however any observations of western lily while monitoring habitat shall be noted and reported to USFWS.

At a minimum, surveyors shall be able to recognize *Blechnum spicant* (deer fern), *Lotus formosissimus* (seaside birdsfoot trefoil), *Hypericum formosum* ssp. *scouleri* (western St. John's wort), *Maianthemum dilatatum* (false lily-of-the-valley), *Sanguisorba officinalis* (great burnet), *Carex obnupta* (slough sedge), *Calamagrostis nutkaensis* (Pacific reedgrass), tufted hairgrass (*Deschampsia cespitosa*), and *Holcus lanatus* (velvet grass). As these plants may occur within suitable habitat (USFWS 2008).

When rare plant occurrences are observed they shall be reported to the California Natural Diversity Database.

10.4 Dune Monitoring

A floristic survey of the dune mat and rare plant revegetation areas at CEC and other dune sites shall be conducted annually during the five year mitigation period.

10.5 Photo Monitoring Stations

Permanent photo-documentation points will be established within the mitigation sites. One photopoint is required for each monitored re-established or enhanced habitat unit at Point Saint George, CEC, Bay Meadows, McNamara, and/or Moore Tract. GPS coordinates will be obtained for each photopoint and the photo locations included on a map of the sites.

Photographs will be taken during each monitoring event. Four photographs will be taken from the monitoring point (north, south, east, and west). Photos will be taken with a digital camera with a moderate wide angle lens (approximately 35mm focal length if a full-frame sensor, approximately 24 mm focal length if a DX sensor, at the widest setting if a consumer-level digital camera with a built in zoom). The make and model of camera and type and focal length of lens will be noted in monitoring documentation. Photographs will be taken from approximately five feet in height above ground surface, or as determined appropriate to accurately depict the habitat and existing conditions.

10.6 Monitoring Schedule

Monitoring will be implemented annually for five years. The wetland community will be monitored between June 1 and July 30. The Western lily habitat survey shall take place between June 15 and July 15, as this is the optimal flowering period. Implementation

flexibility to accommodate variability in weather conditions is acceptable. The site will be inspected for general parameters including observations of invasive and non-native plants, signs of erosion, illegal dumping, ATV use, and vitality of plant survivorship.

11. Long-term Management Plan

11.1 Long Term Management

Long-term management is a strategy for managing the site once the performance standards are achieved to ensure the long-term viability of the resource. While mitigation program for the CEC has been designed to restore self-sustaining ecological processes and functions and to perform in perpetuity, there will still be a need to make occasional inspections and if necessary, perform remedial actions. Once the five-year monitoring time period is over and BCRAA satisfies the permit requirements outlined in this mitigation plan, the ownership of the mitigation sites would be transferred to the appropriate resource agency or responsible entity. At this point in time, the new owner will be responsible for the long-term management of the mitigation site and shall inspect and finance all activities moving forward.

The western lily habitat enhancement area at Point Saint George will be preserved and maintained at a height not less than eight inches and not greater than 48-inches by appropriate management methods identified in Biological Opinion conservation measures and conducted every two to three years as part of the airport routine vegetation maintenance. BCRAA will be the responsible entity for pursuing on-going long-term vegetation maintenance for the area on the airport side of the fence. This agreement will be formalized in a way agreeable to BCRAA, FAA, USFWS, and CDFW.

12. Adaptive Management Plan

12.1 Adaptive Management

Adaptive management is a tool used to cope with the inherent changes and instability fundamental to habitats and the ecological processes that define them. Adaptive management offers a feedback system and a suite of practical methods based on research and monitoring. As a management framework, it holds that conservation and restoration programs should be designed in ways to accumulate knowledge as quickly and accurately as possible so that the management plan can be responsively adapted to improve management activities. This approach allows managers to learn by experience within site specific environments and apply lessons learned to remedy deficiencies using a controlled and scientific approach.

Adaptive management procedures will be recommended on a case-by-case basis, to address any issues identified at the site during monitoring or maintenance activities. Adaptive management actions could include one or more of the following activities (not exclusive) if success criteria are not met:

1. Adjusted weeding method to reduce weeds around the planted wetland or upland to decrease competition from non-native grasses and forbs;
2. Supplemental planting for areas that have deficiencies in the seeding or planted material stock (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
3. Supplemental replacement (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
4. Supplemental watering (for non-performing plants that required supplemental planting);
5. Additional erosion control;
6. Hydrologic modification or minor regrading

Unpredictable natural changes could alter the mitigation areas and consequently necessitate changing the goals, objectives, strategies, and actions set forth in this plan. These changed conditions include, but are not limited to:

- Unusual weather patterns, such as extended drought or excessive rainfall;
- Change in species composition, such as through invasion of a new non-native invasive plant or wildlife species to the site, or increase in spread of existing non-native plants listed as limited in Table 7, yet exhibits similar adverse characteristic of a plant ranked moderate or high and wildlife species in this particular habitat setting, or a change in the ranking of invasive plants;
- Change in the listing of species status that could occur or have potential to occur in the habitat mitigation area;
- Erosion or deposition of sediments;
- Successful colonization of re-establishment sites by Oregon silverspot butterfly host or nectar plant species, necessitating avoidance or surveys prior to management or maintenance.

12.2 Initiating Procedures

Standards for when to implement adaptive management will be if the percent cover in any monitoring year (averaged over sample plots) is 15 percent below the target level described under "Annual Success Criteria," or if absolute cover of target invasive species is over five percent in monitoring years three, four or five; or if additional final criteria are not met.

The hydrologic triggers that will dictate remedial actions are erosion and sedimentation. If an annual performance criterion is not met, a report shall be prepared analyzing the cause of failure and, if necessary, proposing remedial action.

12.2.1 Revegetation

Replanting would be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria if there is a lack of survival from targeted planting efforts. Vegetation monitoring surveys may reveal the presence of poor survival rates of planted stock or natural recruitments. Replanting would be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria if targeted planting is 15 percent below the target level of cover or 15 percent below success criteria on years three, four, or five.

Replanting may be deemed appropriate to replace dead plants. Plants should be replaced during the next rainy season. This should be considered throughout the monitoring period, considering the six month window may not include potential casualties during the dry season.

- Replanting will also be incorporated if success criteria are not being met to remedy the lack of live plant stems. There is potential to change the plant palette if a lack of diversity has occurred and is coordinated with the BCRAA Project RCOM.
- If a particular species has poor success throughout the site it may be replaced with a new species of botanical equivalence to the restoration habitats.
- If selected areas are receiving too much or too little water, the system may be modified accordingly.
- Use of weed mats or mulch as remedial action to reduce invasive plant recruitment.
- Potential application of fertilizer for plants that are nutrient deprived.

12.2.2 Hydrologic Modification

Hydrologic modification by regrading or re-contouring could be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria.

- Re-grade if sediment accumulation augments the seasonal water regime of the targeted palustrine emergent habitat type.
- Re-grade if hydrologic regime is not met in year three, assuming normal precipitation (within NRCS WET tables).

12.2.3 Invasive Species Control

An early detection rapid response mechanism should be in place for weed management throughout the year. Reducing non-native invasive plants should occur throughout the year if needed. No more than five percent cover of target invasive plants should occur during monitoring years one through five.

Machinery should not be used at the site during wet conditions. Invasive species control will likely require repeated effort for at least several years and possibly throughout the monitoring period. Specific needs will be identified based on each year of monitoring, and documented in annual reports. Appropriate control methods will be utilized depending on the species, the abundance and distribution of the species, and the location within the site and relative to wetlands or other sensitive resources.

- Mowers can be used to weed around the western lily mitigation site, as needed and with procedures in place to prevent harm to sensitive animal species, to butterfly hosts, or nectar plants.
- If using weed whackers or mowers are used, their operation should be timed for early or mid-summer, after annuals have desiccated and turned brown. Hand removal of weeds using a hoe to scrape the surface is adequate if this is done in the spring, there will be a reduction of annual grass seeds in the soil (McCreary 2009).
- Reducing non-native annuals and invasive plants should occur throughout the year if needed.
- Periodic grazing in the spring and late summer can be implemented as an adaptive management activity.
- When any new plant is listed or if a ranking status has been revised by the California Invasive Plant Council (CAL IPC) as medium or high priority, and it has been identified during monitoring it should be removed according to the most recent up to date methods.
- When new control methods are released that are more effective than a previously employed method for control and removal the plan should accommodate the new techniques for the remainder of the monitoring period.
- Invasive plants will be removed extending three to five feet into areas surrounding the re-established habitat.
- Routine weeding will be implemented as part of the maintenance.

12.2.4 Browsers and Predators

Deer and rodents are the main concern for browsing on the plantings. The BCRAA Project Representative and the monitoring staff may meet and confer from time to time to revise the adaptive management plan to better meet management objectives and preserve the restored and enhanced habitat and conservation values of the property. Any proposed changes to the plan shall be discussed with the necessary agencies. Any proposed changes will be designed with input from all parties. Amendments to the plan shall be approved in writing, shall include required management components, shall be implemented by the land manager and have the coastal permit amended if legally appropriate.

13. Financial Assurances

BCRAA will establish a performance bond or other suitable instrument agreeable to BCRAA, FAA, and the resource agencies to assure adequate funding to complete required mitigation activities. The intent is to ensure that mitigation is completed even in the event of unforeseeable future circumstances.

14. Literature Cited

- California Coastal Conservancy. 2004. Staff recommendation: Pacific Shores phase 2 feasibility study. File No. 04-031.
- Cooper, W. S. 1967. Coastal dunes of California. Geological Society of America Mem. 104, 117p.
- GHD Inc. 2013a. Roadway segment selection methodology for wetland and habitat mitigation at Pacific Shores subdivision (optimization report). 18p.
- GHD Inc. 2013b. Draft biological resources report, Pacific Shores Subdivision.
- GHD Inc. 2013c. Habitat map, Pacific Shores Subdivision.
- GHD Inc. 2013d. Draft basis of design report, CEC terminal and runway safety area mitigation sites.
- Helley, E. J. and R. C. Averett. 1971. A preurbanization reconnaissance study of Lake Earl, Del Norte County, California. U.S. Geological Survey Water resources Division, Open File report. Menlo Park CA. 17p.
- Lauck, D. R. 1997. 1997 studies of the Oregon silverspot butterfly (*Speyeria zerene hippolyta*) and the host violets (*Viola adunca* and *Viola langsdorffii*) near Lake Earl in Del Norte County, California. Report to the Pacific Shores Water District.
- Pickart, A. J., and J. O. Sawyer. 1998. Ecology and Restoration of Northern California Coastal Dunes. California Native Plant Society, Sacramento. xi + 152p.
- Roberts, C. 2003. Summary of information about wetlands at Point Saint George. Report to the County of Del Norte Community Development Department and the California Coastal Conservancy. 13p. + appendices.
- Sawyer, J. O., T. Keeler-Wolf, and J. Evans. 2009. A manual of California Vegetation. Second Edition. California Native Plant Society, Sacramento.
- U.S. Fish and Wildlife Service. 1998. Recovery Plan for the Endangered Western lily (*Lilium occidentale*). Portland, Oregon. 82 pp.
- U.S. Fish and Wildlife Service. Arcata Fish and Wildlife Office. February 17, 2009. Western Lily Species Profile. Arcata. <http://www.fws.gov/arcata/es/plants/westernlily/lilly.html>
- U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office. January 2009. *Lilium occidentale* (Western lily) 5-Year Review: Summary and Evaluation. https://ecos.fws.gov/docs/five_year_review/doc2408.pdf
- Weidemann, A. M. 1984. The Ecology of Pacific Northwest Coastal Sand Dunes: A Community Profile. FWS/OBS-84/04.
- Winzler & Kelly. 1995. Administrative draft environmental impact report: Pacific Shores Subdivision local coastal program land use plan adoption and certification. Prepared for Del Norte County Planning Department.

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Appendix A

Figures



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- | | | |
|----------------------------|----------------------------|-------------|
| RSA Project Location | Potential Mitigation Sites | U.S Highway |
| Pacific Shores Subdivision | | Major Roads |
| | | Local Roads |

Paper Size ANSI A
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 Miles
 Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet



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Vicinity Map

Figure 1

718 Third Street Eureka, CA 95501 T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

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 Data source: Del Norte County GIS parcel data; ESRI; TIGER data. Created by gldavidson



 Study Area Boundary  Pacific Shores Parcels

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Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

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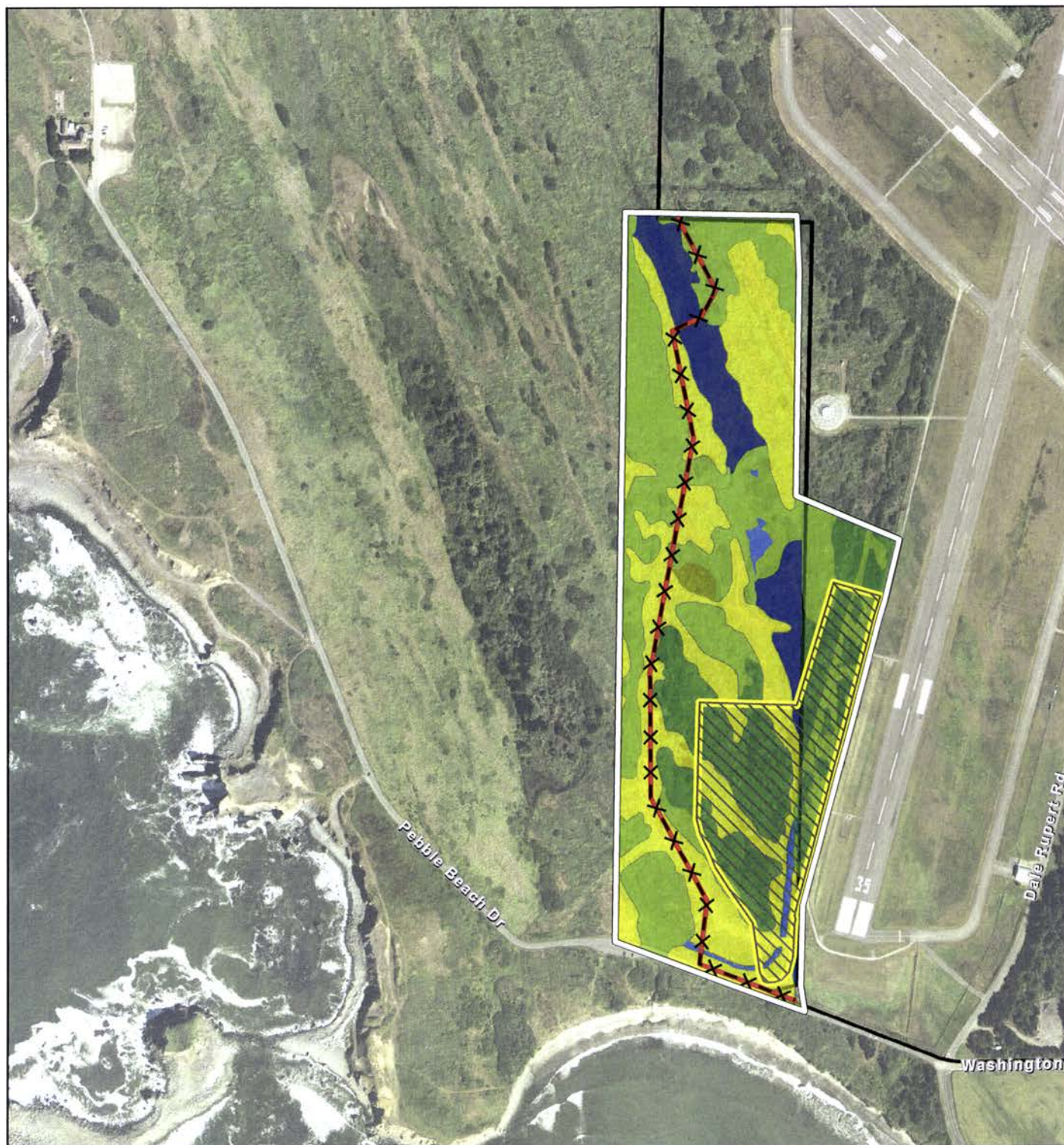
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Date 25 Jun 2013

Pacific Shores Subdivision

Figure 2

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Data source: Del Norte County GIS: parcel data, TIGER: roads, NAIP: aerial, 1m resolution. Created by kross



Point St. George

Point St. George
Mitigation Study Area

Airport Boundary

X-X Proposed Mitigation Fence

Vegetation Management Area
(13.96 acres)

Fence Construction Buffer
(1.42 acres)

Plant Communities Associated with Security Fence

Coastal prairie upland (1.12 acres)

Mixed tree-shrub thicket - upland (0.001acre)

Palustrine Scrub shrub wetland (0.001acre)

Slough-sedge marsh (0.26 acres)

Willow shrub wetland (0.04 acre)

Water body

Paper Size 8.5" x 11" (ANSI A)

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Feet

Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

Grid: NAD 1983 StatePlane California 1 FIPS 0401 Feet



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Point St. George Western Lily
Management Area

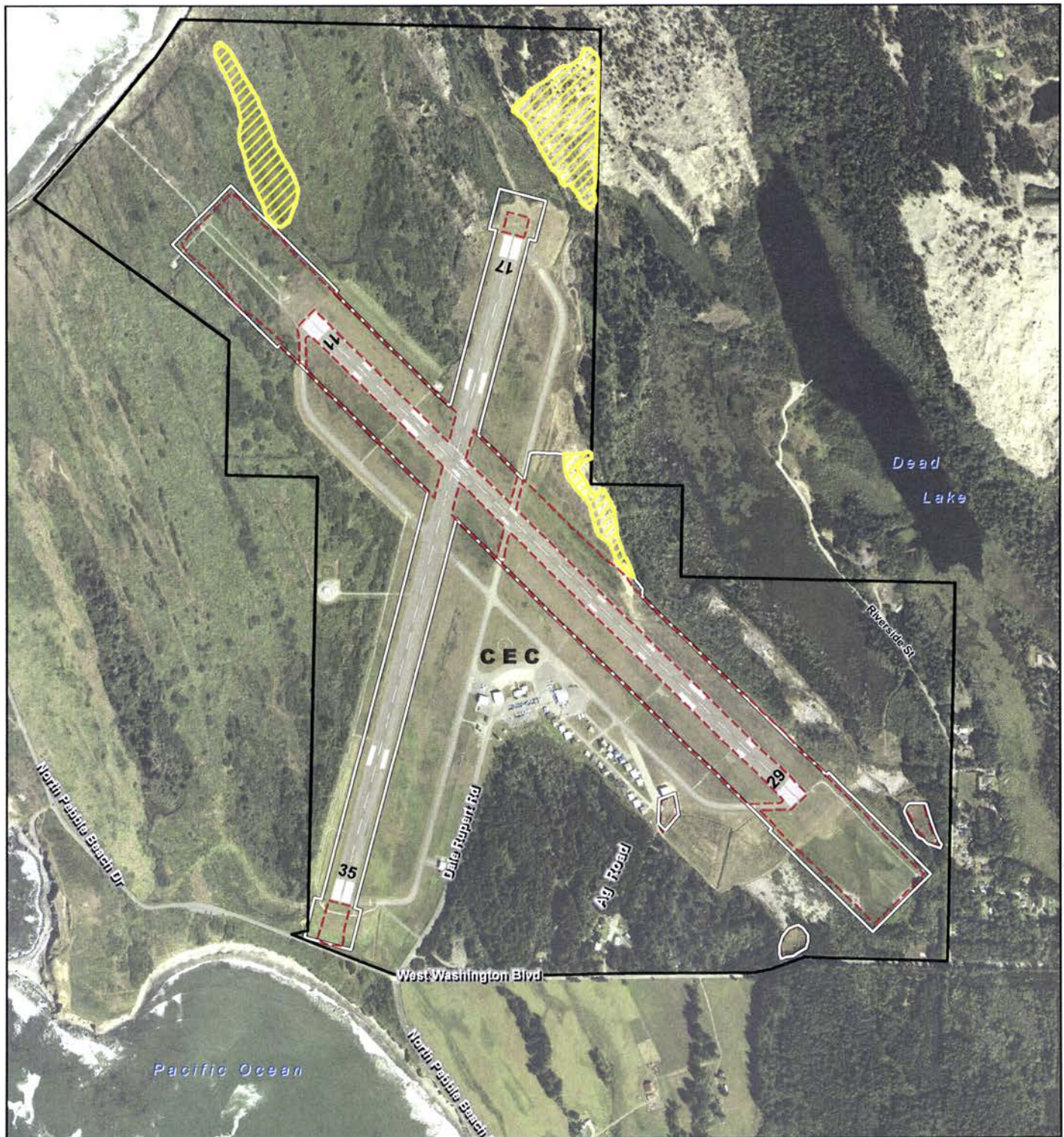
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Date 25 Jun 2013




Figure 3

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Data source: NOAA - aerial, 1ft res, 2011; GHD, URS, Winzler & Kelly. Created by: kross



-  Project Study Area
-  Airport Boundary
-  Project Impacts Footprint

 Potential Rare Plant Relocation/Establishment and Dune Restoration/Stabilization Areas (5.34 ac)

Paper Size 8.5" x 11" (ANSI A)
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 Map Projection: Lambert Conformal Conic
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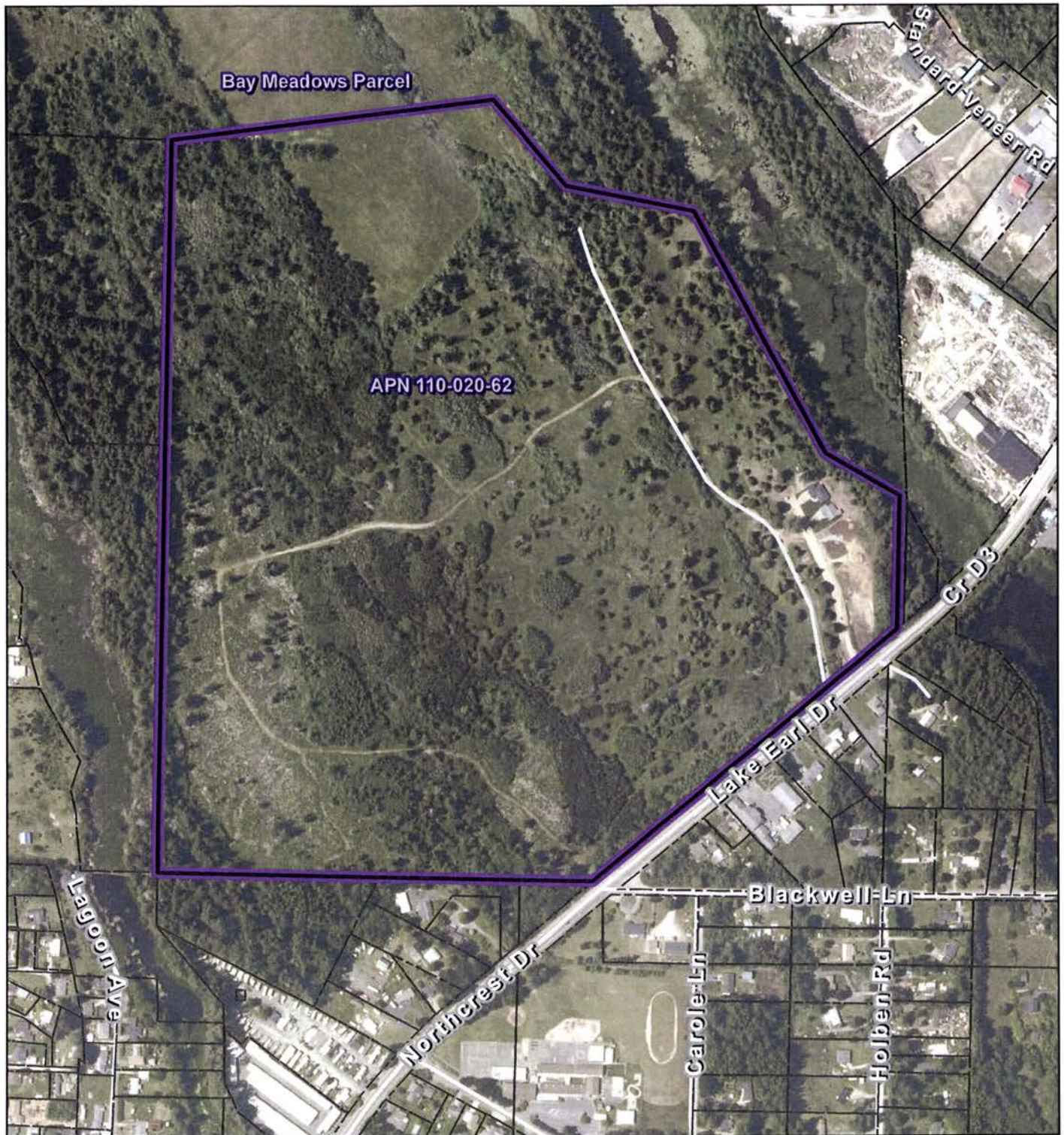




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Dune Restoration/Stabilization and Special-Status Plants Replacement Areas Figure 4

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 Data source: NOAA Aerial, 2011, 1 foot resolution; URS GIS RSA data, special status plants, edited by GHD. Created by glavidson



-  Bay Meadows Parcel
-  Potential Mitigation Site
-  Parcels

Paper Size 8.5" x 11" (ANSI A)

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Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

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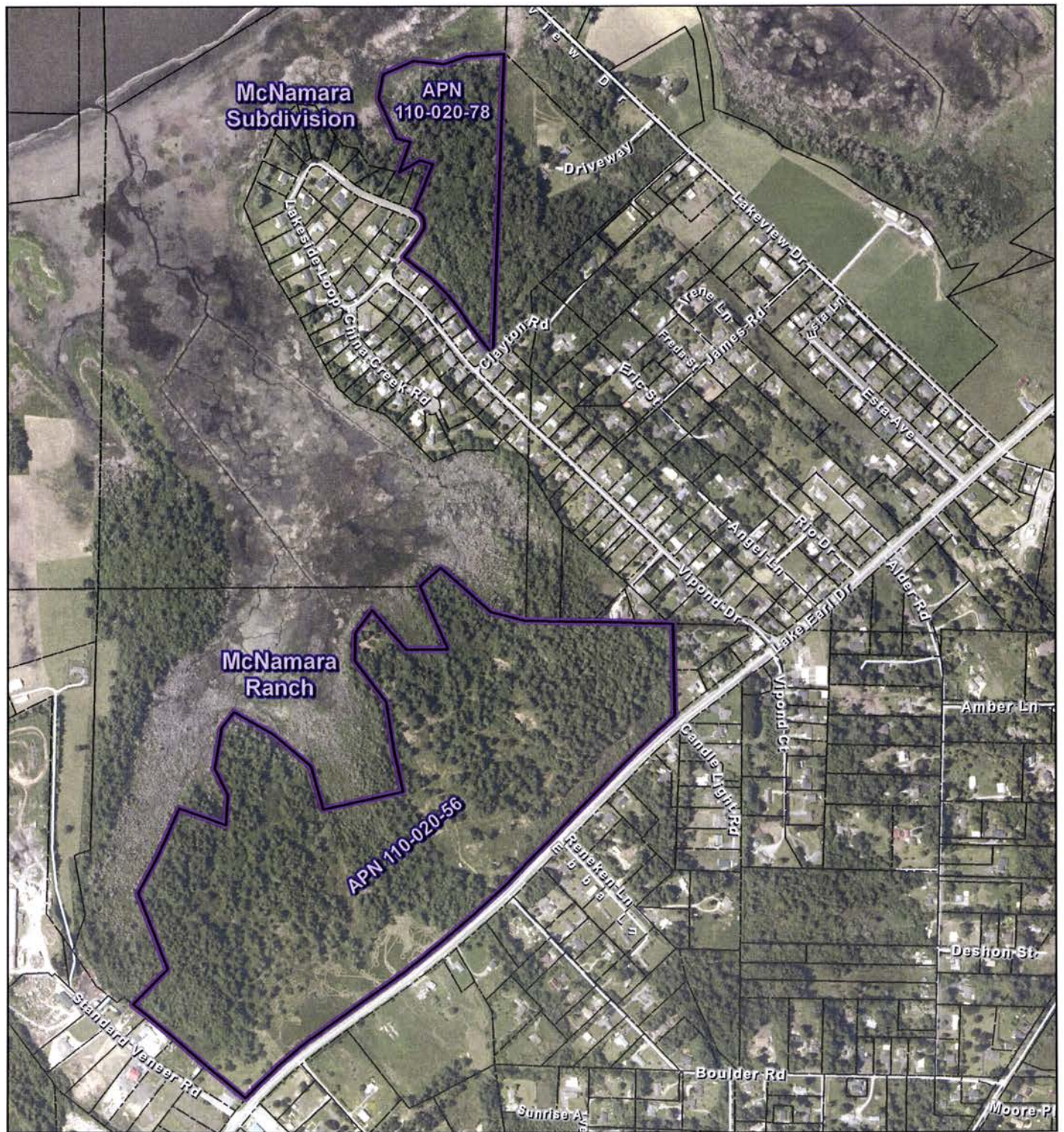


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Bay Meadows Parcel
Potential Mitigation Site

Figure 5



- McNamara Ranch & McNamara Subdivision - Potential Mitigation Sites
- Parcels

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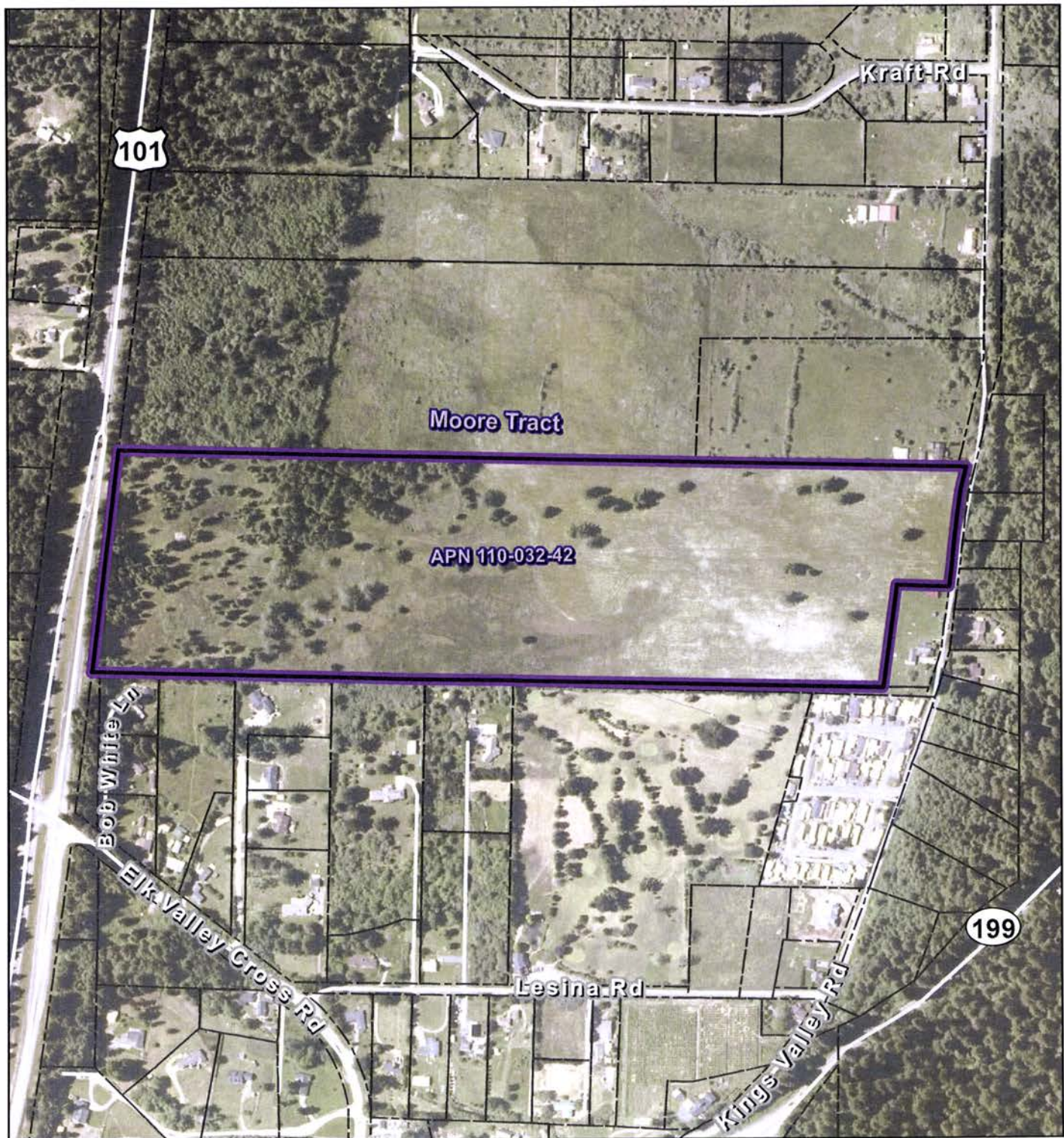


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McNamara Ranch/Subdivision
 Potential Mitigation Sites

Figure 6



- Moore Tract
Potential Mitigation Site
- Parcels

Paper Size 8.5" x 11" (ANSI A)
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 Map Projection: Lambert Conformal Conic
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


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Moore Tract
 Potential Mitigation Site

Figure 7

DFC Parcel Acquisitions in the Lake Earl Area

-  Acquisition parcels
-  Other parcels
-  State park lands



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Appendix B

Invasive Plant Control Methods

INVASIVE PLANT CONTROL METHODS

Invasive plant species at the mitigation site are identified as plant species listed with a rating of high or moderate by the California Invasive Species Council (Cal-IPC), as well as, the Humboldt/Del Norte Weed Management Area (WMA) Strategic Management Weed List. Invasive and non-native plants currently present on the site are listed in Table B1.

Table B1 Invasive Plant Species Distribution in Mitigation Area

<i>Scientific Name</i>	<i>Common Name</i>	<i>Cal-IPC Rating</i>	<i>Humboldt/Del Norte WMA</i>	<i>Habitat</i>
<i>Ammophila arenaria</i>	European beach grass	High	High	Coastal Dunes
<i>Cytisus scoparius</i>	Scotch broom	High	High	Dunes, Roadside, Widespread
<i>Rubus armeniacus</i>	Himalayan blackberry	High	High	Riparian areas, Dunes, Wetlands
<i>Anthoxanthum odoratum</i> ¹	sweet vernal grass	Moderate	NL	Coastal prairie, Coniferous forest
<i>Cirsium vulgare</i>	bull thistle	Moderate	High	Riparian areas, Wetlands, Coastal prairie
<i>Bromus hordeaceus</i> ²	soft chess	Limited	High	Grasslands, sagebrush, serpentine soils, many other habitats
<i>Dactylis glomerata</i> ³	orchard grass	Limited	NL	Grasslands, Broadleaved forest, Woodlands
<i>Hypochaeris glabra</i>	smooth cat's ear	Limited	Moderate	Scrub, Woodlands, Widespread
<i>Plantago lanceolata</i> ²	English plantain	Limited	NL	Many habitats
<i>Cortaderia jubata</i>	pampas grass	High	High	Coastal dunes, coastal scrub, Monterey pine, riparian, grasslands, wetlands
<i>Dipsacus fullonum</i>	Indian teasel	Moderate	Moderate	Grasslands, Riparian, Wetlands, Impacts regionally variable, forms dense stands on occasion
<i>Foeniculum vulgare</i>	sweet fennel	High	High	Grasslands, Scrub
<i>Hedera helix</i>	English ivy	High	High	Roadside
<i>Holcus lanatus</i>	Velvet grass	Moderate	Moderate	Coastal grasslands, Wetlands, Widespread, Impacts can be more severe locally, especially in wetland

Scientific Name	Common Name	Cal-IPC Rating	Humboldt/DeI Norte WMA	Habitat
				areas
Senecio jacobaea ⁴	tansy ragwort	Limited	High	Wetland, Riparian, Coastal

1. Little information available on impacts and limited ecological range
2. Very widespread, but monotypic stands uncommon. And/or in converted grasslands
3. Widespread. Impacts appear to be minor; some local variability. Low density and impact in wildlands
4. OSB host plant and removal is permitted in this restoration plan; can be locally important in NW CA.

Ammophila arenaria (European beachgrass)

European beachgrass (*Ammophila arenaria*) referred to herein as *Ammophila*, is a semi-naturalized, high rated invasive plant from Europe, found in coastal dunes along the entire northwest coastline from Southern California to Washington. *Ammophila* tends to be an aggressive dune stabilizer negatively affecting the dynamics of natural dune systems. Invasion and expansion of this plant typically occurs in the foredune and inland dunes. *Ammophila* was originally introduced to the Pacific Northwest, in 1869 at Golden Gate State Park, with the intention of serving as a sand dune stabilizer and protection of valuable infrastructure abutting coastal land. *Ammophila* was thus planted along naturally complex and dynamic coastlines, without anticipating that this plant has the ability to adversely affect natural dune systems.

As a result of the invasive nature of *Ammophila* and its direct impacts on native dune processes and habitat structure, this BCRAA mitigation package includes the removal of this unwanted plant species on-site at CEC. *Ammophila* occurs throughout PSS, but is most widespread on dunes in the western and southern parts of the site.

Species Biology

Ammophila arenaria is a hardy, perennial herbaceous grass, growing in stiff, erect clumps reaching up to four feet tall. The leaf blade is between 0.1-0.25 inches (2-5 mm) wide and 12-44 inches (40-110 cm) long, thick, waxy, pointed and sharp. Ligules are 0.4-1.2 inches (1-3 cm) long. The outer surface of the leaves is light green and smooth, the inner side of the leaf has a white coat and ridges. The leaves are rolled at the edges.

This plant tends to spread through its long, thick rhizome root system allowing it to spread laterally by approximately five feet in less than half a year. Root fragments can also wash up on shore and develop a new colony. This plant is vigorous, with rhizomes and new shoots able to withstand submergence in saltwater for long durations (Aptekar 2000). Less often this plant reproduces via seed dispersal (Cal-IPC). *Ammophila* flowers between May and August and the inflorescence grows in dense panicles (spike-like), 6-12 inches long and 0.8 inches wide; spikelets are 0.4-0.5 inches long, are strongly keeled and laterally compressed (Cal-IPC). Sand burial promotes adventitious rhizome development and leaf growth.

Ecological Impact

After *Ammophila* was planted in the late 1800's to reduce the migration of sand along America's western dunes, it was later recognized that this plant altered coastal dune dynamics. Starting in the late 1980's

(almost 100 years after it was introduced) due to its invasive nature, eradication and control of *Ammophila* became the focus of northwest coastal dune habitat restoration. As a result of rapid creeping rhizomes, this plant can displace native flora, fauna and native taxa habitat. Examples of this impact include the floristically displaced *Leymus mollis* (American dunegrass), a host of native dune-mat species, and habitat for the western snowy plover (*Charadrius nivosus*) including loss of nesting sites and enhanced predator habitat (Pickart 1997). Additionally, dunes dominated by *Ammophila* tend to have lower density and diversity of arthropods.

This plant grows in substrates with rapid/free drainage, low organic matter, and in semi stable to mobile dunes above the high tide line (ISSG 2010). Once established, sand burial can stimulate the growth of this hardy rhizomatous plant. This growth characteristic allows the plant to form in dense clusters outcompeting native dunegrass and rare plants that don't have the ability to tolerate rapid sand burial (Pickart 1997). This plant is capable of outcompeting native dune plants as it is a strong competitor able to survive in wind-blown foredune areas. *Ammophila* is drought resistant, allowing it to survive burial for longer periods than native plants. As a result of this plants ability to accumulate sand, it establishes higher, steeper, foredunes than the native dunegrass, thus reducing sand to interior dunes, and altering natural plant succession in native dune ecosystems (Pickart 1997). The PSS site has almost certainly contributed to alteration of ecological processes.

***Ammophila* Vegetation Removal Location**

On site at CEC

Ammophila removal at the CEC is in the area described as the "borrow area." In the areas adjacent to sensitive habitat and species, the *Ammophila* will be removed manually.

Control

Starting in the 1980's and with more success in the 1990's *Ammophila* plant removal began on the north coast. After 25 years of experiments and research in developing methods for effective management and removal, a variety of techniques have been developed to combat *Ammophila*. A main component to *Ammophila* control and removal is to manage the extensive underground rhizomes which have the capacity to survive long periods of tidal inundation and have the ability to re-sprout from root fragments. These methods include manual, mechanical, and chemical removal methods, with the most successful approaches usually including a combination of methods.

Manual: *Ammophila* can be removed through manual cutting and digging. Examples of this treatment include repeated manual intensive digging weekly in the early spring (March), tapering to monthly in the fall (October) when the plant is less active (Pickart 1997). This treatment method requires gloves which grip well even in wet conditions. Cutting tools includes sharp shooter, shovel, Pulaski, or machete (Moore 2007). This technique includes the following sequence:

1. Remove the biomass and stockpile
2. Use a sharp shooter, shovel to dig and then cut the rhizome at least 12 inches deep.
3. Rake sand to expose and remove any remaining root fragments, to a depth of 20- 40 inches below the tufted clump removed.
4. Material shall be burned or bagged and disposed at a green waste facility.

Follow-up inspections and digging shall occur for at least two seasons in the inland dunes. An example from a regional removal effort reported that crews returned to target areas eight times over the first removal season, and seven times the second season with high success. The manual treatment allows for targeted removal of the unwanted re-sprouts as it begins to intersperse with native grass and dune pants. Within five

years the site recovered to ~45% native vegetation cover with passive recruitment revegetating the site (Pickart 1997). This method is recommended for areas in close proximity to environmentally sensitive habitat areas, including areas where nectar or host OSB plant species exist.

Mechanical: *Ammophila* can be removed by using heavy machinery. Examples include Oregon Dunes State Park, where a D-8 Caterpillar was used. The machine removed the plant and up to three feet below the root crown. The depth of the excavation was inconsistent and therefore, some areas treated (to the lower depth) were more successful than other treated areas (Pickart 1997). Similarly, Point Reyes National Seashore utilized heavy machinery to remove *Ammophila* by way of two excavators (21 and 13 metric tons) and bulldozers. This technique includes the following sequence:

1. Removing *Ammophila* and sand with root fragments to one side (designated as either the right or left)
2. Remove the next layer of "clean sand" and stockpile to other side.
3. Fill in the pit excavated to at least nine feet deep (~three meters) with the *Ammophila* and "dirty sand."
4. Cap the pit by pushing the clean sand over and smoothing out the terrain.

Ammophila should be buried on windward slopes, at a depth of at least four feet deep (1.5 meters). Repeated monitoring and removal of re-sprouts is necessary for the first two to five years. This method can be enhanced by clear communication with the machinery operator and inspecting the equipment prior to work to ensure its functioning. Machinery shall always be cleaned prior to ingress and egress in an effort to reduce inadvertent dispersal of reproductive portions of the plant (NPS 2009). This method is not recommended in close proximity to wetlands or native dune mat patches (within 10 feet). Protective fences would be erected as needed to protect adjacent environmentally sensitive habitat or native dune mat patches. This method shall only be utilized if the *Ammophila* comprises 80% or more plant cover at any given proposed mechanical *Ammophila* removal location, if preconstruction surveys have verified that no OSB host or nectar plants are present, and if the area is in the road right-of-way or otherwise easily accessible to heavy equipment without crossing native habitat. Any use of heavy equipment would be subject to prior approval by appropriate resource agencies.

Prescribed Fire/Burning & Flaming: California Department of Parks and Recreation (DPR) and California State Parks (CSP) have both experimented with burning *Ammophila* in the fall. In both efforts, the *Ammophila* was burned to reduce the above ground biomass and thatch (Hyland, T. & Holloran P 2005 & CPS 2006). Once *Ammophila* is burned, it promotes new shoots to emerge, allowing for a more targeted follow-up treatment using herbicide and reducing the amount of herbicide applied. The following shall be considered when applying burning or flaming to *Ammophila* (Hayland 2005):

1. Early fall burn
2. Relative humidity of 20-80%
 - a. Wait for morning dew to dry off
3. Temperature range between 40-70° F
4. Wind speed below 15 mph
5. Burn buffer break can be established by hand digging a 15 foot wide swath
6. After the burn, apply herbicide one year later
 - a. Re-spray *Ammophila* not impacted by the first chemical treatment within one season (6-12 weeks).

Alternatively, prescribed fire/burning or flaming may be used in conjunction with manual pulling of the re-sprouts. Burning/flaming alone will not remove *Ammophila* and re-sprouts in their entirety. And this activity will require permits from the North Coast Unified Air Quality Management District (Hayland 2005).

Chemical: Because of the presence of Oregon silverspot butterflies, northern red-legged frogs, and other sensitive or rare animals at PSS, herbicide use is expected to be restricted and possibly precluded in many areas. Herbicides would be used only with written approval by USFWS, CDFW, and other resource agencies as appropriate. The following information is included to facilitate decision making.

Ammophila can be controlled using the herbicide Glyphosate. Round-up Pro is an herbicide that reduces the need for surfactants which has been identified as a water quality concern. Oregon National Dunes has experimented with herbicide use to control *Ammophila* and has greatly reduced the percent cover when the target plant is sprayed during active periods of growth. Similarly, trials in northern California reduced *Ammophila* by 90% when using a foliar treatment with Roundup.

CSP observed the use of concentrated glyphosate was not as effective as the combined approach of using glyphosate and imazapyr together and reached a 97% kill rate of *Ammophila*. Other applicators using imazapyr have observed natural recruitment of native dune plants including special-status plants. The following sequence is recommended for this technique:

1. Remove the above ground biomass (to where shoots develop) as much as possible to reduce the quantity of herbicide required for thorough application.
 - a. This can be accomplished by cutting the biomass and removing or by burning/flaming and then cutting the dead leaf matter for removal.
2. During active growth periods, using a hand held, backpack sprayer, wicking, or wipe on application for low volume directed spot treatment apply:
 - a. 3.2% solution of Roundup ProDry shall be applied using the "spray to wet" method (Monsanto 1999). **OR**
 - b. Rodeo can be applied using 7-33% solution with 1.0-2.5% surfactant (nonionic) using the "spray to wet" method (Pickart 1997).
 - i. Sprouts not impacted from initial herbicide application can be re-sprayed within 6-12 weeks using 7% Glyphosate for up to three additional treatments to reach high success 90-100%. **OR**
 - c. 1.5% imazapyr (formulations: Habitat, Polaris, Polaris AC Complete), 2% glyphosate (Rodeo, Aquamaster, or Aquaneat), 1% methylated seed oil (Competitor or Helena M.O.C.) and marker dye (HI-Light Blue, Colorfast Purple Dye, Spray Indicator XL, or equivalent) (CPS 2007).
 - i. Apply the solution as a "light rain" to the top 12-18" of the plant and root crown.
3. All chemical applications must be used in a manner consistent with limitations described on the USEPA label.
4. Follow-up monitoring of re-sprouts for two to five years is recommended.
 - a. Herbicide quantity is greatly reduced in subsequent treatments as a result of the reduction of *Ammophila* from the initial treatment(s). Additionally, the time required for subsequent treatments is greatly reduced (Hayland 2005).
 - b. Re-sprouts shall be manually removed and not chemically treated.

Chemical control of *Ammophila* has proven successful and cost effective. While herbicides have potential biological impacts, the application techniques above have been proposed to minimize adverse impacts to adjacent habitat, wildlife, or native plant populations.

Scotch broom (*Cytisus scoparius*)

Species Biology

Scotch Broom is a woody perennial shrub in the pea family with attractive yellow and red flowers showing from March through June (Cal-IPC 2013). Flowers appear before the leaves. This species is native in Europe and North Africa. Scotch broom is an evergreen shrub that can reach up to six to ten feet in height. The plant has sharp, angled branches that contain white hairs, when young, on the five green ridges. Once mature the ridges and hairs are no longer distinct, and the branches turn tan. The seams of the pods also contain hairs. Between the leaf and the stem, a yellow flower emerges with a bit of red color. This species can be distinguished from French broom (*Genista monspessulana*) by the branches which do not contain ridges, pods are covered with hair, and the plant is photosynthetic predominately through its leaf, rather than Scotch broom which equally photosynthesizes through its leaf and twig tissue.

Ecological Impacts

Negative impacts from Scotch broom include toxic seeds and foliage, and the plant is a strong competitor quickly establishing monotypic stands capable of displacing native plants and forage species. Additionally, this plant is capable of increasing fuel for fire and allows fire to connect to the tree canopy layer which can negatively increase the intensity and frequency of fires.

Brooms resprout vigorously, including seedlings, after cutting, and can produce thousands of viable large seeds which persist in the soil for decades. The seedbank can yield up to 2,000 seeds per square foot. The most important principle for controlling brooms is to prevent establishment or expansion of infestations. The persistent seed bank means that infestations must be managed for many years. Seeds are easily transported on equipment, and populations can very rapidly invade disturbed soil. Preventing disturbance where broom is present or removing broom before and after disturbance, can reduce the need for expensive and ongoing treatment. For all the resprouting shrubs, the most important principle is to use techniques which kill the plant and do not allow resprouting plants to recover.

The most effective way to control the brooms are by repeated hand pulling or burning combined with repeated hand pulling; this approach has been documented to yield the highest native cover post treatment (Alexander, and D'Antonio 2003), or by using the cut-stump and herbicide paint application to reduce re-sprouting.

Scotch Broom Vegetation Removal Locations

Scotch Broom can be found in both scattered and dense patches along many of the roadways proposed for wetland re-establishment including portions of Marish Street, Martin Street, Tell Blvd., Hinckley Dr., and Ocean Dr. This plant is capable of prolifically re-sprouting thus it is unlikely that this plant can be controlled without either long-term repeated management or careful application of herbicide using the cut stump, hand paint technique in areas of large infestations. Small infestations and occurrences close to sensitive habitats or species can be manually removed using a specialized tool that can pull the entire root.

Control

Manual: The weed wrench or extractigator (heavy duty broom and tree puller) is one of the most effective techniques for the complete removal of the broom foliage and tap root. Established infestations are difficult to eliminate because large, long-lived seedbanks typically accumulate. Minimizing soil disturbances, monitoring, and repeated manual pulling of young plants when discovered can help prevent new infestations. Repeated pulling of successive generations is currently thought the most effective method, if that level of

management is feasible. A flush of broom seedlings may occur directly beneath the previously canopied area after mechanical removal of the larger broom shrubs, and particularly once the canopy is removed.

Mechanical: Mowing or cutting the shrubs may prevent seed production; however, resprouts will still need to be managed. Machines and tools used to remove stands may inadvertently transport seed to uninfested sites. Cutting plants and girdling (peeling bark down to ground surface) is an additional measure to dissuade resprouting. The combined approach of cutting and treating stumps with an herbicide is an effective measure that reduces soil disturbance.

Blanching/ Flaming: Blanching seedlings using a propane torch is a cost-effective treatment if applied when seedlings are very small, but the treatment must be applied during rainy weather and so is logistically challenging.

Chemical: Because of the presence of Oregon silverspot butterflies, northern red-legged frogs, and other sensitive or rare animals at PSS, herbicide use is expected to be restricted and possibly precluded in many areas. Herbicides would be used only with written approval by USFWS, CDFW, and other resource agencies as appropriate. The following information is included to facilitate decision making.

For brooms, glyphosate applied as a 2-3% v/v foliar spray has been an effective treatment. It is recommended on this site to use Triclopyr applied as a 25% basal bark application in an oil carrier after cutting older plants if they are not fully removed by a weed wrench or Pulaski. Some resprouting may occur with these mechanical treatments and follow-up pulling, or herbicide management may be necessary for future flushes of seedlings (Food and Agriculture, CA Department of, 2009). Cutting and treating stumps with herbicide is an effective measure that reduces soil disturbance.

- Small or sparse infestations. For very small populations of resprouting shrubs, pulling by hand or using a Weed Wrench or other tool can be an effective means of treating plants. However, pulling is very labor intensive and so is not considered effective for large infestations. Both glyphosate and triclopyr are effective at killing brooms. As an alternative to hand pulling, a cut-and-paint application of either a 10% glyphosate or 10% triclopyr ester 10% in water, or a low volume basal application of 10% triclopyr ester with seed oil is effective at killing individual and sparse infestations of broom. All of these techniques result in successful removal of resprouting shrubs, but the low volume basal application is the most cost-effective and has little effect on other vegetation.
- Large infestations or dense and well-established infestations. Large, dense, and well-established broom populations require a large commitment of resources over an extended period of time; it is important to re-emphasize that actions to prevent establishment and spread are an extremely worthwhile investment. For large populations cutting or mowing may be very effective when followed by careful herbicide application. Glyphosate 2% foliar application is used by many agencies and glyphosate 15% low volume drizzle is recommended by the University of California (UC) (Oneto et al., 2009). UC also recommends the low volume triclopyr basal bark treatment described above, and several of the agencies interviewed consider this the most cost-effective, safest, and appropriate method for treating large infestations.
- Follow-up treatment of seedlings and seed bank. Treatment of large infestations also requires continued and carefully timed management of seedlings and the overall seed bank in the soil. Following removal of adult plants, the treatment sites may be carpeted with broom seedlings, (especially when treatments have disturbed the soil surface or when fire has flushed the dormant seedbank). Hand pulling is impractical for removing dense carpets of broom seedlings from large areas. Cutting with a string trimmer can be effective in sites with few obstructions (woody debris,

stumps, etc.), but must be conducted within the first two months after initial treatment to make sure seedlings are small enough to be killed by the mowing.

Foliar application is highly effective and low cost but can have significant negative effects on non-target vegetation so is not appropriate for this location.

Pampas grass (*Cortaderia jubata*)

Species Biology

Pampas grass (*Cortaderia jubata*) or Andean pampas grass is highly invasive throughout coastal California. Andean pampas/jubata grass colonizes bare and disturbed ground. It invades roadsides, cutbanks, dunes, coastal bluffs, rock outcrops, landslides and logged lands.

Control

Manual/Mechanical: Pulling or digging while the plants are small is best. Small plants are easily pulled by hand when the soil is moist. A Pulaski or shovel is useful when a plant is too large to pull safely by hand.

The mature plants are very difficult to remove by hand. It is possible to undercut and remove one using a combination of pulaski and shovel. The easiest way is to place a choker cable around the plant's base and pull it out with a winch. The soil must be moist. Winter and spring are good seasons for removal. For best results, the top section of the roots and the entire crown should be removed. If bagging and disposal is too difficult, designate a stockpile area and cover with a black weed mat to shade out material and allow for compost. Cutting the plumes off and placing them in bags helps to prevent further seed dispersal. The plumes cannot be cut and left on bare ground. The seeds will sprout. Some resprouting may occur with these treatments and follow-up management will be necessary for future flushes of seedlings (California Department of Food and Agriculture 2009).

Pampas Grass Vegetation Removal Locations

Small to medium sized stands of pampas grass were observed in coastal prairie and dune mat habitats. Considering the size of the populations manual removal is recommended.

Harding grass (*Phalaris aquatica*)

Species Biology

This species grows in large clumps along the coast and can be found invading grasslands, rangelands, roadways and waterways. This plant has a deep tap root allowing it to tolerate drought. This perennial grass spreads by seed (produced May through September) but also by rhizome. Seeds last between 1-3 years. The best time to control this weed is in the dry summer months of June and July. Before this time it is too difficult to distinguish the grass and after this window the grass has already gone to seed making the herbicide ineffective (RNSP 2008).

Control

Manual/Mechanical: Hand pulling small clumps is a feasible application for controlling this plant. For denser infestations, cutting around the base clump with a Pulaski and digging out all roots longer than 2 inches can be effective in controlling this species. Mulching is recommended to discourage re-sprouts. If mowing is implemented, it is recommended to be very close to the ground and to occur at least three times within the growing season to keep the plants from overtaking growth of target native species. Mowing should occur late in the growing season (spring for this species) when soil moisture is low or depleted. Cutting the grass when

it is flowering will reduce the vigor of new shoots. Repeated mowing of this species can reduce the seed bank and prevent expansion and new growth, but will not eliminate the species. Disking and reseedling is a mechanical alternative to mowing. However, mowing is only a control, and does not entirely eradicate the grass.

Teasel (*Dipsacus sativus*):

Species Biology

This is a biennial perennial herbaceous plant that blooms between July and October. This plant can be found in mesic to xeric habitats, (where mesic refers to habitats requiring moderate moisture, and xeric habitats are equivalent to drylands or deserts). This plant species produces 2000 seeds, of which 30-80% will germinate with seeds staying viable for up to two years. The seedlings are typically found close to the parent plant, though it can be dispersed by water increasing its range (Wisconsin Department of Natural Resources 2004).

Control

Manual/Mechanical: Weed wrench, cutting and/or digging are thought to be the best solution to remove bolting teasel plants. A simple hand removal weed tool, such as a dandelion digger works well. The entire root should be removed to ensure no resprouting will occur from root fragments. If a shaft spade is used, be cautious to not fragment the root. Another option is to cut the stalk before the full bud stage inducing mortality of the specimen, and the plant should not re-flower. In both situations the plant parts should be removed from the site. If the plant has been cut and the flowering stalk is left behind it seeds may still be able to mature after cutting.

Velvet grass (*Holcus lanatus*)

A strategy that employs multiple removal techniques, monitoring and adaptive management will be key in long-term success of the target species. Implementing invasive species control methods in advance of the planting schedule is recommended.

Manual/Mechanical: For small isolated patches it is possible to remove the clump of grass by hand before the seed sets. The plant can also be removed by cutting at the base with a paring knife. This is most successful during the winter rainy season from January through April. Weed whacking then scraping is another method used to control the grass before the seed set. Chopping the root crown using a blade or McLeod is another option.

Cutting patches of the grass in the spring followed by mulching with 4-6 inches of onsite material has been used to suppress sprouts in small areas. Follow up treatments are necessary for all hand methods.

English ivy (*Hedera helix*)

English ivy belongs to the family Araliaceae (ginseng) and is a native of Europe. Brought to North America by colonial settlers, *H. helix* has become naturalized in the US. English ivy is cultivated in Europe and North America in gardens, landscapes and as house plants. This plant grows easily in many types of soil and in sun or shade. English ivy is fairly drought tolerant once it is established. Leaves are alternate and simple with the juvenile leaves 3-5 lobed and adult leaves ovate to rhombic. Mature plants will bear greenish-white flowers. The fruit is berry-like and black.

Control

Manual/Mechanical: Cutting is successful with persistence but does not always kill the plant. However, the use of cutting and then applying an herbicide may provide better control (see Chemical control section).

Using a shovel to remove plants provided immediate control with little regrowth. Weeding plants by hand or with pliers successfully allowed regeneration of most native species in Australia. Do not leave the pulled plants on the ground; they can continue to grow. If removal of the plants is not possible, place the pulled plants on a wooden platform to dry and decompose.

Manual/Chemical: Immediately control English ivy that is growing up trees by cutting the vine at waist height, loosening the vine around the limbs and removing the roots. If the root cannot be removed by hand, strip the bark and notch the exposed section of the vine. Paint on an undiluted herbicide such as glyphosate. If English ivy is growing on trees, take care that all pieces of the ivy are removed. The growth of *H. helix* can be sustained by the fibrous nature of the trunk. If the vine goes above the height of full removal, the plant should be cut in two places and the middle and bottom section removed so that it cannot utilize the fibrous nature of the trunk.

REFERENCES

- Pickart, A.J.; Sawyer, J.O., 1998. Ecology and restoration of northern California coastal dunes. California Native Plant Society, Sacramento, CA. (not at CalPoly, but State Parks SLO does have this book already)
- Aptekar, R., 1999. The ecology and control of European beachgrass (*Ammophila arenaria*) Ph.D. dissertation, University of California, Davis, CA.
- Calflora, 2013. Calflora: Information on California plants for conservation, education and appreciation. Berkeley, California: The Calflora Database [a non-profit organization]. Available: <http://www.calflora.org/>. Accessed: Feb 05.
- Cal-IPC, 2012. *Don't Plant a Pest, San Francisco Bay Area*. California Invasive Plant Council (Cal-IPCa). Available at: <http://www.cal-ipc.org/landscaping/dpp/pdf/SFDPPPprintable.pdf>
- Cal-IPCa, 2012. *Invasive Plants of California's Wildland: Ammophila arenaria*. California Invasive Plant Council (Cal-IPCa). Available at: http://www.cal_ipc.org/ip/management/ipcw/pages/detailreport.cfm?usernumber=5&surveynumber=182.php
- DiTomaso, J.M. and E.A. 2003. Healy. Aquatic and Riparian Weeds of the West. University of California, Department of Agricultural Natural Resources. Publication No. 3421.
- Hyland, T., & Holloran, P., 2005. *Controlling European beachgrass (Ammophila arenaria) using prescribed burns and herbicide*. Website: <http://ic.ucsc.edu/~kholl/envs160/holloran&hyland.pdf>
- Nature Conservancy, The, 2001. *Weed Control Methods Handbook: Tools and Techniques for Use in Natural Areas*. Available at: <http://www.invasive.org/gist/handbook.html>.
- Pickart, A. 1998. *The use of heavy equipment to remove European beachgrass at the Lanphere Dunes: I. Preliminary results*. Report for U.S. Fish and Wildlife Service August.
- Unknown, 1997. Element Steward Abstract: *Ammophila arenaria* (European Beachgrass). Compilation of info from various sources.

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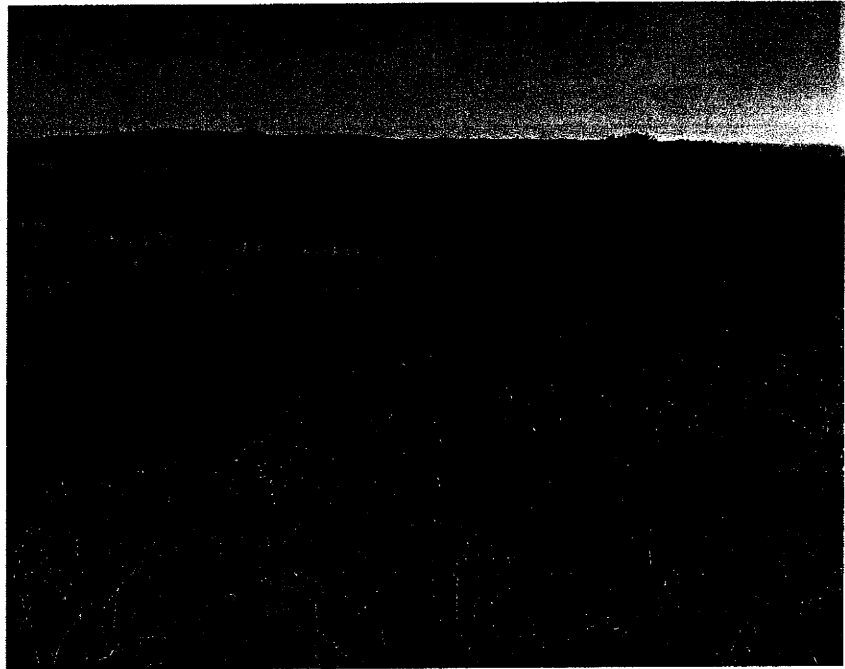


EXHIBIT NO. 10

APPLICATION NO. 1-13-009
(Border Coast Regional Airport
Authority)
PACIFIC SHORES & POINT
ST. GEORGE BASIS OF DESIGN
REPORT (1 of 25)

DRAFT

**Border Coast Regional Airport Authority
BCRAA**

Del Norte County Airport RSA Improvement
and Terminal Projects

Pacific Shores Mitigation Project &
Point St. George Western Lily Management Project

Basis of Design Report

April 2013

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1. Introduction

1.1 Project Description and Scope

The Del Norte County Regional Airport, Jack McNamara Field (CEC), is owned by the County of Del Norte and is operated and managed by the Border Coast Regional Airport Authority (BCRAA). BCRAA is sponsoring a Runway Safety Area Improvement Project (RSA) to bring the existing facility up to compliance with current FAA standards. BCRAA is also proposing a new terminal, parking lot, apron and road improvements. Construction of the RSA's and terminal project will result in unavoidable direct impacts to wetlands. Approximately 16.77 acres of wetlands will be impacted by the RSA project and approximately 0.31 acres of wetlands will be impacted by the terminal project. To offset these impacts, a habitat mitigation and monitoring plan is being developed and will be implemented in accordance with this project in order to maintain no net loss of wetlands habitat, sensitive vegetation, and protected wildlife species habitats. The intention of the mitigation plan is to focus on both in-kind and out-of-kind mitigation at the Pacific Shores Subdivision (PSS) site to satisfy the mitigation ratio requirements for both projects.

The BCRAA is proposing to replace its remaining temporary and non-compliant perimeter security/deer fencing at the airport as part of the Point Saint George mitigation package for the RSA project. The last section of temporary and non-compliant airport perimeter fencing exists on the border between Point Saint George and the airport's western property boundary. Approximately 3,874 linear feet of 10 foot high chain link fencing will be placed across Point Saint George property to Pebble Beach Drive and then southeast to connect with existing airport fencing. Prior to fence installation vegetation will be removed to clear obstructions and enhance survivability of remaining western lily sub-populations.

The scope of vegetation removal at Point Saint George is to clear encroaching scrub/shrub along the west side of the CEC to enhance survivability of remaining western lily sub-populations.

The scope of mitigation at the Pacific Shores Subdivision site is to re-establish wetlands by removing roads, enhance butterfly habitat by removing invasive species and seeding host and nectar plants utilized by the butterfly, re-establish and enhance upland dune habitat and enhance existing wetlands habitats.

The project is separated into two different tasks, which are primarily separated by location and activities (Task 1: Pacific Shores Mitigation Area, Task 2: Point Saint George Vegetation Removal).

2. Task 1: Pacific Shores Mitigation Project

2.1 Project Goals and Objectives

The goal of the Pacific Shores Mitigation Project is to re-establish and increase the area of wetlands by removing roads, enhance butterfly habitat by removing invasive species and seeding host and nectar plants utilized by the federally listed Oregon silverspot butterfly (OSB), re-establish and

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enhance upland dune habitat and enhance existing wetlands habitats, re-establish and enhance northern red-legged frog habitat, and clean up areas of trash and debris.

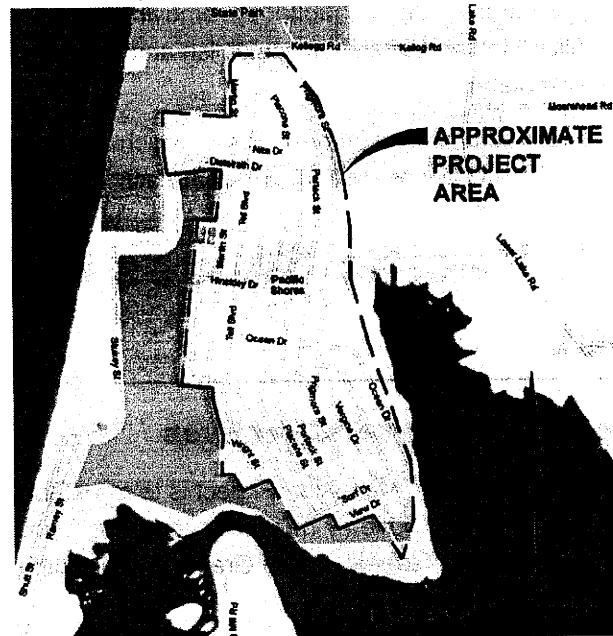
2.2 Project Considerations

- Funding
- Permit Requirements
 - USACE, USFWS, NMFS, SHPO, BO, SWRCB, CDFW, CCC, Del Norte Co.
- Cultural Resources – Contractor may encounter archeological evidence that will halt construction.
- Physical – Site is bounded by wetlands and sensitive wildlife.
- Hydrology – Lake Earl immediately adjacent to site that breaches annually.
- Biological – Several sensitive animal and plant species located at the site. Planting restriction based on time of year.
- Construction Season – Can only remove roads during dry late summer and early fall months to reduce likelihood of encountering groundwater and breeding birds.

2.3 Project Location and History

Pacific Shores Subdivision (PSS) is situated directly northwest of Lake Earl and Lake Tolowa and is bordered on the north and on the southwest by the 5,000-acre Tolowa Dunes State Park. The site is located in the Crescent City coastal plain and is part of the Pacific Northwest Coastal Region dune habitat (USFWS 1984) which contains a complex landscape mosaic of coastal habitats with a variety of flora and fauna including sensitive plant and animal species. The CDFW holds 6,144 acres of land that makes up the Lake Earl Wildlife Area (CDFG 2003). See Figure 1 below for the site location.

Figure 1 Pacific Shores Site Location Map



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This once contiguous dune complex is now fragmented and disconnected from adjacent hydrologic features altering sensitive species habitats, which have been diminished, and/or converted to upland. In 1963, approximately 1,140 acres of land in this area was subdivided into mostly half-acre lots, and approximately 27 miles of roads were installed to support the planned development of the PSS. In order to develop the road system for the subdivision, wetlands were filled, upland dune habitat was graded and compacted, road system was laid, and impervious surface was installed, impacting rare plants, rare fauna, and fragmenting habitat and hydrology.

In 1971 the California Regional Water Quality Control Board adopted requirements for septic system separation from groundwater. Because of sandy soils and a seasonally high water table, the Pacific Shores area did not comply with these requirements and the area was not developed. Subsequently in 1981 the California Coastal Commission certified Del Norte County's Local Coastal Plan but denied certification of the Pacific Shores area, amongst other regulations, further constraining potential development.

As of July 2008, approximately 767 lots had been acquired by the CDFW Wildlife Conservation Board for inclusion in the CDFW Lake Earl Wildlife Area (URS 2009). The PSS California Water District owned less than a dozen parcels, now a dissolved entity as of 2006 with these parcels now owned by Del Norte County.

2.4 Description of Existing Conditions and Land Use

2.4.1 Roads

Existing roads are comprised primarily of a thin layer of asphalt, generally ranging from approximately 0.25 to 1.00 inch, over a section of aggregate base, generally ranging from approximately 5.0 to 10.5 inches. Many of the roads are overgrown with trees and vegetation to varying degrees, from fully overgrown with plants growing through the degraded asphalt, to soil on the shoulders that is providing material for vegetation to root in. In some instances, at intersections, valley gutters comprised of thickened sections of pavement allow cross drainage for roadside ditches. Cul-de-sacs are present at the end of some roads.

2.4.2 Utilities

Pacific Power has overhead transmission power lines in the project area along Tell Blvd. Frontier Telephone has underground and overhead routing also along Tell Blvd. These overhead structures will not be impacted by construction. Underground lines may be encountered at cross-streets that will be removed that intersect Tell Blvd., such as Corsaro Dr., Fisher Dr., etc.

2.4.3 Hydrology

The PSS primarily drains to Lake Earl via overland flow and a series of roadside ditches. Lake Earl is a lagoon adjacent to PSS, is comprised of brackish water. The lake is manually breached approximately once a year when the lake level reaches 8-10 feet mean sea level (msl) (11.25-13.25 ft NAVD 88). The lake naturally breaches around 10 feet msl (13.25 feet NAVD 88).

Groundwater depth varies at the PSS, but most of the groundwater is within a foot of the existing road grades to be removed, during wet winter months.

2.4.4 Vegetation

PSS generally is characterized by a continuum from open foredune and dune mat habitats on the west and to a lesser extent on the south, through grassland, and shrubland communities to a dense pine-spruce forest in the eastern and northeastern parts of the site. Wetlands dominated by slough sedge occur throughout the site.

2.4.5 Wildlife

PSS supports a wide range of animal species, and is especially known for diverse and conspicuous bird life including several types of raptors. The federally listed Oregon silverspot butterfly and several other rare but unlisted invertebrates are known from the area. The state species of special concern northern red-legged frog is moderately common in parts of the site.

2.4.6 Cultural

A Cultural Resources Investigation of the Pacific Shores Subdivision (PSS) Mitigation Area for the Del Norte County Regional Airport Runway Safety Area (RSA) Improvement Project was prepared by Roscoe and Associates in March 2013. Historically, the PSS area was used by indigenous people so archaeological artefacts may be encountered during construction.

3. Supporting Technical Studies and Site Investigations

3.1 Geotechnical Investigation

A geotechnical Investigation was prepared by LACO Associates. The report includes but is not limited to asphalt concrete and aggregate base thickness for each road, depth to groundwater at boring locations, testing for naturally occurring asbestos, volume estimates, grading recommendations, and suggestions for stable excavation slopes.

3.2 GIS Optimization

A GIS model was developed to prioritize potential wetland mitigation areas within road segment in the PSS based on various constraints. Previously, URS identified wetland and upland habitats, and from this study identified roads to be removed that would result in the establishment of wetland. GHD later developed mapping that included potential future constraints, such as overgrown roads, roads that are not eligible for removal because the County and/or the California Department of Fish and Wildlife has requested that these roadways remain, and areas that contain populations of plants that serve as nectar plants or host plants for the Oregon silverspot butterfly. The GIS Optimization model was developed to combine the URS findings with the constraints listed above to map recommended roads to remove for mitigation.

3.3 Topographic Mapping

Points West Surveying conducted topographic mapping for the PSS. The topographic survey was based on a photogrammetric survey conducted by 3DiWest, supplemented by LIDAR data obtained

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from NOAA in their study of sea level rising. The photogrammetric survey was verified using conventional ground survey techniques to determine elevations of the project features. Discrepancies in the photogrammetry found during the ground survey were corrected and incorporated into the final topographic map. The survey includes one (1) foot contours along with spot elevations, planimetric features, and aerial photos. Edges of pavement lines were mapped on roads that will be removed. Some areas were too overgrown to identify the existing pavement, so pavement lines in these areas were interpolated. Overhead and underground utilities, primarily located along Tell Blvd., right-of-way lines, parcel boundaries, and vegetation were located and included in the map.

3.4 Hydrology

3.4.1 Groundwater Monitoring

Several hand-augured monitoring wells were installed at various sites at the PSS in order to determine the depth to the water table in the wet winter months and through the spring. The wells were installed late December 2012 and the levels are being recorded weekly and eventually bimonthly and monthly. In addition to hand monitoring, three of the well locations had transducers installed which record levels every one to 10 minutes. These three locations are located adjacent to Lake Earl and are being monitored to determine if the ground water elevation is affected by the level of the lake.

3.4.2 Overland flow Monitoring

Monitoring of overland flows was not conducted, but a site visit during a semi-substantial rain event was conducted in order to observe general overland flow patterns. The current grading of the PSS site causes pooling in the roads and there are some ditches adjacent to roads but most are overgrown. No obvious overland flow or specific drainage problems that may impact the design were observed.

3.5 Habitat Mapping

Using recent aerial photography, an unsupervised classification was run to create a base map of major habitat types within PSS. Habitat types were then verified on the ground and the map was modified and updated to incorporate those findings. In general, the resulting map provides a coarse overview of major habitat types on the project site and is intended to provide a planning tool for identifying seed mixes and quantities during preparation of design and for permitting documents. The habitat map also identifies larger occurrences of invasive plants, some of which are targeted for removal or management as part of the project.

3.6 Cultural Mapping

The Cultural Resources Investigation of the Pacific Shores Subdivision (PSS) Mitigation Area for the Del Norte County Regional Airport RSA Improvement Project identified archaeological sites within the PSS and mapped them. The previously identified archaeological sites of CA-DNO-248, CA-DNO-290 and 291 were assessed within the limits of the right-of-way. As a result of the field survey, no additional artifacts, features, sites, buildings or structures were identified within the area of potential effect (APE).

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4. Description of Proposed Mitigation Design Objectives and Criteria

4.1 Dune Restoration

In selected locations, where existing roads bi-sect historical dunes, the existing road section will be removed and sand placed to re-connect the dune. The reconnected portion will be approximately 50', spanning the width of the roadway and out to the edge of the ROW. The height of the dunes will be controlled by a maximum side slope of 3H:1V. The length of the dune along the roadway will closely match the existing adjacent dune. The sand used will come from the excavation of the frog ponds as near the dune restoration site as much as practical.

4.1.1 Proposed Mitigation and Design Objectives

Re-formation of SE-NW dune structure

Where existing roads bisect historical dunes, the existing road section will be removed and sand placed to re-connect the dune. Work would extend beyond the right-of-way limits only where adjoining lots have been acquired as part of the project or if CDFW has provided written authorization for work on adjacent state lands.

Invasive Plant Removal

On portions of existing dunes immediately adjacent to reconnections, invasive plants including but not limited to Scotch broom and European beachgrass will be removed to enhance habitat. Where patches of invasives extend onto existing CDFW owned lots, on a case by case basis and subject to written approval, removal may extend onto state lands to prevent re-invasion. Methods of invasive removal would generally be limited to hand tools in any areas beyond the right-of-way or anywhere sensitive plants or animals may be present, and would be subject to permit conditions and agency approval.

Re-vegetation

Areas of invasives removal on dunes may be sparsely re-vegetated with the appropriate dune mat seed mix, including OSB nectar species. Dune mat habitat naturally has partial vegetation cover with areas of bare sand, so some areas may require only very limited seeding.

4.1.2 Physical Design Criteria

Reconnect /Historical Dune

Dunes at PSS were created over millennia by windborne transport of sand, generally from northwest to southeast and driven by prevailing winds. In some areas there are relatively recent dunes overlying prehistoric dunes. In general, dunes today are present as low northwest to southeast trending ridges bisected by roads. In most areas sand transport has been greatly reduced by the presence of dense stabilizing vegetation cover. Re-connection of dunes and invasive plant removal may remobilize sand for a short period of time until dunes are stabilized by vegetation.

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Excavated sand from the frog pond construction will be used for the sand in the dune reconnections. The cut from the ponds will balance the fill for the dunes; no new material will be brought on-site. The physical characteristics of the existing sand restricts placement to maximum cut or fill slope of 3 horizontal to 1 vertical, per the projects geotechnical report, Appendix A

Flood-control Lake Earl influence

Re-connected dunes adjacent to Lake Earl will serve as natural barriers for those times when the lake level rises above the grade of the wetland. Currently, the dune is interrupted due to the road passing through, allowing the brackish water from the lake to easily travel into flood-prone areas. Reconnecting the dune will help reduce the amount of lake water potentially entering the site.

4.1.3 Biological Design Criteria

Invasive Species Removal

Invasive plant species, as defined in the BCRAA RSA Improvement MMP, are those species listed by the California Invasive Species Council (Cal-IPC) with a rating of high or moderate as well as the Humboldt/Del Norte Weed Management Area Strategic Management Weed List. Invasive and non-native plants currently present on the site are listed in Table 1.

There are a variety of invasive plants adjacent to road removal segments and within the complex dune/coastal prairie matrix. There is great potential for these non-native plants to persist once the canopy adjacent to the roads is removed. This section identifies invasive species known to occur at PSS including European beachgrass (*Ammophila arenaria*), Scotch broom (*Cytisus scoparius*), pampas grass (*Cortaderia jubata*), teasel (*Dipsacus sativus*), Harding grass (*Phalaris aquatica*), English ivy (*Hedera helix*), and velvet grass (*Holcus lanatus*). Non-native plants listed as limited by Cal-IPC will not be required for removal and will not impact the success criteria of the re-established habitats if they are found to naturally recruit in the re-established areas. Control techniques are described in detail in the Mitigation and Monitoring Plan and are very briefly summarized here.

A majority of the upland dune restoration is invasive plant removal and the dominant invasive plants in this habitat at PSS include European beachgrass, Scotch broom and Pampas grass; all of which are ranked as high on the Cal-IPC and HWMA invasive plant priority lists. The remaining invasive plants listed in Table 1 (next page) are plants found in the coastal prairie or adjacent to the road segments slated for wetland restoration.

Table 1 Invasive Plant Species in Project Area

Scientific Name	Common Name	Habitat
<i>Ammophila arenaria</i>	European beach grass	Coastal Dunes
<i>Cytisus scoparius</i>	Scotch broom	Range- Dunes, Roadside
<i>Rubus armeniacus</i>	Himalayan blackberry	Riparian areas, marshes
<i>Anthoxanthum odoratum</i> ¹	sweet vernal grass	Coastal prairie, coniferous forest
<i>Cirsium vulgare</i>	bull thistle	Riparian areas, marshes, meadows
<i>Bromus hordeaceus</i> ⁴	soft chess	Grasslands, sagebrush, serpentine soils, many other habitats
<i>Dactylis glomerata</i> ³	orchard grass	Grasslands, broadleaved forest, woodlands; common forage species
<i>Hypochaeris glabra</i> ³	smooth cat's ear	Scrub and woodlands, Widespread
<i>Plantago lanceolata</i> ⁴	English plantain	Many habitats
<i>Cortaderia sp.</i>	pampas grass	Coastal dunes, coastal scrub, Monterey pine, riparian, grasslands, wetlands
<i>Dipsacus fullonum</i>	Indian teasel	Grasslands, seep, riparian scrub. Impacts regionally variable, forms dense stands on occasion
<i>Foeniculum vulgare</i>	sweet fennel	Grasslands, scrub
<i>Hedera helix</i>	English ivy	Coastal forests, riparian areas
<i>Holcus lanatus</i>	Velvet grass	Coastal grasslands, wetlands. Impacts can be more severe locally, especially in wetland areas
<i>Senecio jacobaea</i> ²	tansy ragwort	wetland-riparian, coastal

Notes:

1. Little information available on impacts and limited ecological range
2. OSB host plant and removal is permitted in this restoration plan; Can be locally important in NW CA.
3. Widespread. Impacts appear to be minor. Some local variability. Low density and impact in wildlands
4. Very widespread, but monotypic stands uncommon. And/or in converted grasslands

Removal methods will in most areas be limited to manual techniques such as hand tools. Some additional low-impact methods of removal may be utilized subject to agency approval. Because of the presence of OSB and other rare or protected species it is anticipated that herbicide use will be restricted or prohibited, and that if allowed it will be limited to hand application in selected less sensitive locations. Herbicides would be used only if explicitly approved by resource agencies.

Invasives within the extent of pavement or within immediately adjacent (one to two feet) right-of-way may be removed with heavy equipment as part of road removal, assuming that no sensitive resources have been identified by pre-construction surveys.

Reference Site Description

A reference site for dune restoration has tentatively been identified on the west side of Martin Street north of Ocean Street. This is a proposed dune re-connection location, and lots containing most of the existing dune on the west side of the street are in CDFW ownership and thus are publicly accessible. The portion of the dune closest to the road includes mixed dune mat and invasive plants and is targeted for invasives control; however the portion of the dune in the interior of the lots

supports intact native dune mat habitat. Dune mat species composition varies within PSS, and it may be necessary to identify additional reference sites.

Re-vegetation

Dune establishment or enhancement areas will be replanted from seed by hand broadcasting or hydroseeding. Specific seed mixes and quantities will be identified in the Mitigation and Monitoring Plan and in final specifications.

4.2 Wetland Restoration

The proposed wetland restoration mitigation will include road removal and frog pond construction to re-establish and enhance wetlands. The areas outside of the road ROW are established wetlands, and the existing roads break up its continuity. By removing the roads, wetlands are restored to a more natural habitat.

4.2.1 Proposed Mitigation and Design Objectives

Road Removal

Existing roads will be removed to re-establish wetland habitat. Road sections including the asphalt and base rock will be removed and disposed of at an approved on or off-site location. The sub-grade below the base rock will be graded and scarified to meet wetland habitat criteria.

Frog Ponds

In wetland areas adjacent to dune structures, frog ponds will be excavated to mimic the northern red-legged frog breeding habitat. The ponds are clustered in groups of approximately four to five near each dune.

4.2.2 Physical Design Criteria

Hydrology

Ground water data along with juxtaposed wetlands will be used to design final grading depths and topographic variations.

Lake Earl Influences

Lake Earl naturally breaches around 10' msl (13.25' NAVD 88), but it is normally manually breached at lower levels. When the lake level is high enough it does flood areas of PSS, however these areas are very minimal. Roads prone to flooding are Marish St, Bruegger St, the south ends of Martin St, Middleton Dr, and Valentine St, and the west ends of Ocean Dr, Surf Dr and View Dr.

Road Removal

The depth of cut will depend on the thickness of asphalt concrete and aggregate base. From the geotechnical report, this depth of AC and aggregate base varies from 5.0 to 11.0 inches. The width spans from the edge of pavement to edge of pavement, which is approximately 24 feet. The cold planed material must be disposed of at a legal on or off-site location.

Grading

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In order to create a more natural surface undulation, a grading tolerance of +/- 4 inches was specified in the design. There are also engineered "grade variations" located throughout the PSS. These sites vary the graded surface by increasing the grade by 12 inches for a distance of 30 feet, then decrease the grade by 12 inches for a distance of 30 feet.

Substrate modification

After road removal the areas will be scarified to a depth of 10 inches deep at the road removal sites, loosening compacted material under the removed roads, and tilling any minimal remaining aggregate with native subgrade before grading is completed and after excavation.

4.2.3 Biological Design Criteria

NRLF Habitat

Northern red-legged frogs breed in shallow wetlands. Egg masses, deposited from January through March, are often deposited away from shore and in areas with submerged vegetation but with little emergent vegetation. Eggs may be deposited in areas of variable depth ranging from about 18 inches to several feet or more. Hydroperiod is critical for survival of tadpoles, which are unable to leave the water until mid to late summer. The ideal wetland would hold water into August in a typical year but would dry in very late summer to fall to exclude invasive bullfrogs, which require permanent standing water in wetlands.

The northern red-legged frog ponds will be 24' wide by 50' long. The depth will be controlled by a maximum side slope of 3H:1V. Final depth will be determined using ground water data collected in the summer of 2013.

Vegetation Removal

All vegetation located within the 24' existing roadway width will be cleared and grubbed. Some plants will be salvaged and replanted during plugging and mulching.

Vegetation clearing is expected to occur after August 15th, outside of the bird nesting season, to avoid impacts to nesting birds.

Re-vegetation

After construction is complete, newly exposed soil areas from the road removal sections (except frog ponds) will be revegetated with the appropriate plugs or seed mix. The following butterfly species require specific plants to survive, these plants will be included during re-vegetation activities.

The Oregon silverspot butterfly is protected under the U.S. Endangered Species Act, and a Biological Opinion to be issued by USFWS as part of Section 7 consultation will include permit conditions and conservation measures for that species. These are expected to include pre-construction surveys to identify occurrences of *Viola adunca*, the host plant which supports eggs, larvae or pupae at any time of year. If *Viola* is present then exclusion fencing or other appropriate protection measures would be implemented. Planting plan seed mixes also include OSB nectar species to offset temporal loss associated with removal of some nectar plants growing on roads in the western part of PSS.

The seaside hoary elfin and the coastal greenish blue are rare butterflies which are not currently protected at the state or federal levels. As a result of discussions with resource agencies, an effort

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is being made to minimize impacts to habitat important to these species, and to enhance selected habitat areas as part of sensitive habitat mitigation. The primary resource of concern is kinnikinnick (*Arctostaphylos uva-ursi*) which is the host plant for the seaside hoary elfin and which grows over the edges of roads to be removed in a few places. Some selected areas of beach pine removal or thinning where kinnikinnick is present in the understory have been chosen to offset this temporal loss, and efforts will also be made to salvage and replant kinnikinnick from the small affected areas of road removal.

Plant Salvaging

Butterfly Nectar Plants

Oregon silverspot Gumplant (*Grindelia stricta*) grows along the sides of roads to be removed in the western part of the site (mostly on Martin and Marish and associated cross streets and almost entirely west of Tell Avenue). Many of these areas are within the paved area and would be disturbed during road removal. Gumplant typically grows in linear patches a few feet in from each side of the road, and roots typically have penetrated the asphalt and extend into underlying rock mixed with organic debris. Because the roots extend below the road surface a salvage method able to work within the small patches of gumplant will be required. Limited testing has determined that a narrow-bladed shovel can be used to excavate clumps of gumplant with little difficulty. Methods to store gumplant remain to be determined; rapid replanting on areas of already removed and graded road or on adjacent right-of-way with sparse vegetative cover is recommended. Other nectar plants may be encountered on roads although they appear to be much less common than gumplant. These will be salvaged on a case by case basis using similar methods. No violets have been observed within the limits of excavation, although they are present in right-of-way. Any violets identified during pre-construction surveys will be protected with exclusion fencing and avoided.

Seaside hoary elfin. A few small patches of kinnikinnick extend over the edges of roads to be removed in the southeastern part of PSS. These will be salvaged by excavating with a shovel or other appropriate means and relocating the plants immediately into suitable nearby habitat in right-of-way or on lots acquired as part of the project.

4.3 Road Barriers

In areas where a road to be removed meets a road to remain, a road barrier will be constructed to discourage vehicle activity on the newly restored wetlands and dunes.

Biological Criteria

The road barrier will include stacking larger diameter trees (mostly beach pine) that were removed during vegetation removal and planting willow cuttings inserted through the stacked trees into the ground so that they will sprout and grow to help create a visual and physical barrier.

Physical Criteria

In addition to the added vegetation, sand will be mounded to increase the grade by one foot where the removed road meets the road to remain. The sand will come from an excavated area adjacent to the mound in order to balance the cut/fill. The mounded area will follow the edge of pavement in width and is 30 feet long, and the adjacent excavated material is 24 feet wide by 40 feet long.

4.4 Garbage Removal

PSS is used by many as a trash dumping site. Many of these areas have been identified and garbage will be physically removed as part of the project. Many of these sites are accessed through roads that will be removed, so if the trash is not cleaned up before construction, the site will no longer have access to clean up at a later time. Some of the trash has been identified as abandoned structures, general garbage, and potentially hazardous materials. The contractor will dispose of the trash at an approved, legal facility.

4.5 Coastal Prairie

4.5.1 Invasive Plant Removal

Within selected areas of right-of-way, and on portions of lots acquired from willing sellers, invasive plants including but not limited to Scotch broom and European beachgrass will be removed to enhance habitat. Where patches of invasives extend onto existing California Department of Fish and Wildlife (CDFW) owned lots, on a case by case basis and subject to written approval, removal may extend onto state lands to prevent re-invasion. Methods of invasive removal would generally be limited to hand tools in any areas beyond the right-of-way or anywhere sensitive plants or animals may be present, and would be subject to permit conditions and agency approval.

4.5.2 Re-vegetation

Areas of road removal adjacent to existing grassland habitat in select areas will be revegetated with the appropriate coastal terrace prairie seed mix, including OSB nectar species.

5. Final Design and Construction Sequencing

5.1 Design Submittals

The anticipated design schedule is as follows:

Mitigation and Monitoring Plan: April 2013

50% Draft Plans and Specifications: April 2013

95% Plans, Specifications, & Engineers Cost Estimate: June 2013

Final PS&E: October 2013

5.2 Pre-Construction Activities

The PSS Mitigation Project site has several special status flora and fauna species. Biological monitors shall inspect for nesting birds, northern red-legged frog, and Oregon silverspot butterfly larval or nectar plants prior to removing ANY road segments, or invasive vegetation or any activity which includes the use of equipment or ground disturbance.

Pre-Construction Surveys

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Prior to the beginning of ground disturbing work pre-construction surveys will be conducted in and immediately adjacent to areas of potential impact. Surveys will identify locations of *Viola adunca* (OSB larval host plant) and any other sensitive biological resources identified in permit conditions or in the MMP. Violet locations will be protected with orange exclusion fencing if they are within 10 feet of an area of potential ground disturbance. If any NRLF are located they will be captured by a qualified monitor and moved to the nearest suitable habitat away from impact areas.

5.2.1 Construction Sequence

The anticipated design schedule is as follows:

Table 2 Construction Schedule

Task Number	Task Description	Anticipated dates
1	Pre-construction surveys	June 2014
	Bird Survey	3 days prior to work
	Plant Survey	
	Butterfly Survey (including host plants)	
	NRLF Survey	
2	Protection Flagging	June- July 2014
3	OSB Nectar and Larval Species Seed Collection	Summer & Fall 2014
4	Construction Stake-out	June 2014
	R-O-W	
	Invasive Plant Removal	
	Access Routes	
5	Staging and Stockpile Establishment	June- July 2014
6	Perimeter Erosion Control Installation	
	Wattles	
	Silt fence	
	BMP's	
6	Equipment mobilization	August 2014
8	Traffic control	August 2014
9	Salvage OSB Host Plants ¹	Fall 2014
10	Wetland Earthwork	Fall/Winter 2014
	AC and Road Prism Removal	
	Re-grade and Contour Substrate	
	Scarify/De-compact	
11	Replacement of OSB Salvaged Material	Fall 2014
12	Establish Natural Levees	Fall 2014
13	Dune Restoration/Invasive Removal	Fall/Winter 2014
14	Coastal Prairie Restoration/Invasive Removal	
15	Revegetation	Fall/Winter 2014

Notes:

1. (rd. segment specific)

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5.2.2 Access and Staging

Access routes will be defined in the 50% Plans and Specifications. Contractors and monitoring biologist will use these identified access routes to alleviate potential adverse impacts to adjacent sensitive habitat or species. The Contractor is responsible for providing legal staging and material stockpile areas and must submit written agreements with the land owner(s) prior to construction.

5.2.3 Water Management Considerations During Construction

If groundwater is encountered while removing the roads or existing culverts the contractor is responsible for the design, operation and maintenance of the temporary dewatering system. Pumped water will be discharged to a stable area for containment/settling/filtration to contain and reduce turbidity before any flow is released back to any channel, drainage system or wetland area.

5.3 Construction Criteria, Assumptions, and Constraints

5.3.1 Construction Criteria

1. Contractor shall employ sediment and erosion control best management practices as needed throughout the project area. No objects or fill shall be placed where they can be eroded or washed into drainage systems in the project area.
2. Contractor shall minimize the number of passes by equipment on newly graded areas. Contractor shall avoid any presence in the existing wetland to minimize impact to these areas.
3. Existing culverts and over-crossings shall be inspected for wildlife prior to adjacent, overhead, or nearby work activities. If any wildlife is encountered during the course of the inspection, said wildlife shall be allowed to leave the area unharmed, and shall be flushed, hazed, or herded in a safe direction away from the project site. Endangered or threatened species may be handled or approached only by a biological monitor holding appropriate permits.
4. If any sensitive species are observed in project surveys, Contractor shall submit California Natural Diversity Data Base (CNDDB) forms to the CNDDB for all preconstruction survey data within five working days of the sightings, and provide USFWS and CDFW with copies of the CNDDB forms and survey maps.
5. Annual Maintenance and monitoring reports due by December 31st for 5 years.

5.3.2 Construction Assumptions

1. All permits and pre-construction requirements for project work are to be obtained prior to construction.

5.3.3 Construction Constraints

1. Submit SWPPP and NOI to RWQCB at least 30 days before project start
2. Conduct nesting bird survey three days prior to work if work is scheduled from between February 15 through August 15.

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3. Work within stream/riparian corridor shall be confined to the period of June 15 to October. Revegetation work is not confined to this time period but shall be completed in the same calendar year if possible.
4. Use of herbicides is expected to be severely restricted. Herbicides may be used only if pre-approved in writing by USFWS. If approved by USFWS, at least 60 days prior to the planned use of any herbicide at the PSS sites, the Applicant shall submit to the Water Board (1) a rationale for why herbicides are needed, (2) the name of the herbicide(s) proposed for use, (3) the application method and rate, (4) the locations proposed for herbicide use, (5) the toxic properties of the herbicide(s) proposed for use, including toxicity to ecological receptors (e.g., benthic macroinvertebrates, fish, amphibians, birds, and mammals), and (6) BMPs to prevent discharge of excess herbicide to waters of the State.
5. Each month all pesticide use should be reported to BCRAA or their representative.
6. Seeding: between September 15-October 30th depending on construction;
7. Container Stock and Plug Planting between October 15 and December 15;
8. Willow cuttings: December 15 through February 1.

5.4 Construction Completion

After the construction activities have been completed any temporary construction measures, such as protection fences or construction accesses will be removed. Additionally any haul routes, staging areas or disturbed areas will be stabilized to prevent any sediment laden water from leaving the site.

6. Task 2: Point St. George Western Lily Management Project

6.1 Project Goals and Objectives

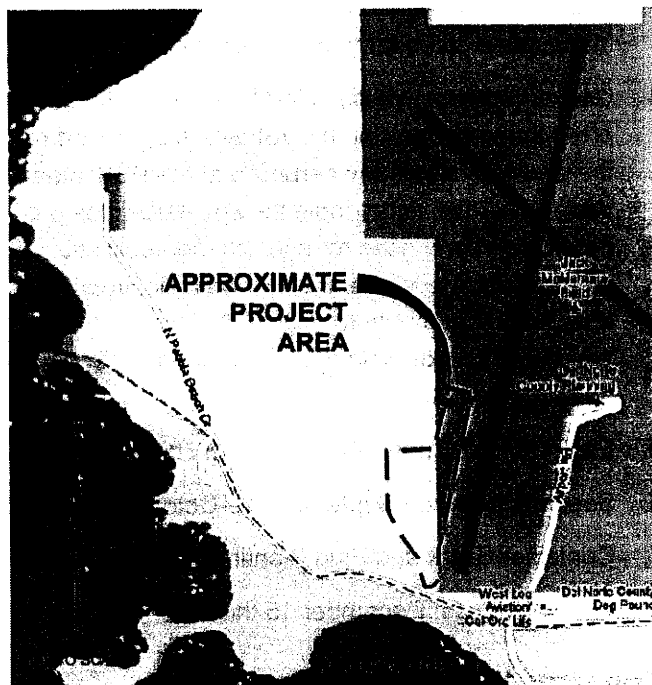
The goal of the Point Saint George Western Lily Management Project is to clear encroaching scrub/shrub along the west side of the The Del Norte County Regional Airport, Jack McNamara Field (CEC) to enhance survivability of remaining Western Lily sub-populations.

6.2 Project Location and History

Point Saint George Western Lily Management Project is located on the west side of The Del Norte County Regional Airport, Jack McNamara Field (CEC). The site is situated directly east of the Pacific Ocean. The site is located in the Crescent City coastal plain and is part of the Pacific Northwest Coastal Region dune habitat (USFWS 1984) which contains a complex landscape mosaic of coastal habitats with a variety of flora and fauna including sensitive plant and animal species. See Figure 2 below for site location.

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Figure 2 Point Saint George Site Location Map



6.3 Description of Existing Conditions and Land Use

6.3.1 Vegetation

The mitigation project site presently includes a mosaic of beach pine forest, willow shrubland, and wetlands dominated by slough sedge. Small areas support the federally listed western lily. In general most of the site is densely overgrown with woody vegetation with small and scattered herbaceous openings.

6.3.2 Wildlife

Sensitive animal species including northern red-legged frog and various birds most likely occur within the mitigation project areas. No recent survey information is available.

7. Supporting Technical Studies and Site Investigation

7.1 Habitat Mapping

No recent habitat mapping is available, although earlier studies have been done by others for the site.

8. Description of Proposed Habitat Management

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8.1 Proposed Conditions

8.1.1 Vegetation Removal

Vegetation removal within the limits of the PSG Western Lily Management Project area will consist of clearing trees, shrubs and herbaceous vegetation for a total of approximately 14 acres. This work will include the placement of protection fencing and the removal and disposal of specified vegetation.

9. Final Design and Construction Sequencing

9.1 Access and Staging

Access and staging at the PSG Western Lily Management Project site will likely come from one of two access points, Pebble Beach Drive or the CNC airport runway 35 taxiway. Staging would occur within the project area, at an approved location, which does not impact sensitive habitat.

9.2 Construction Completion

After the vegetation removal activities have been completed any temporary construction measures, such as protection fences or construction accesses will be removed. Additionally any haul routes, staging areas or disturbed areas will be stabilized to prevent any sediment laden water from leaving the site.

10. Regulatory Assessment for PSS and PSG

Following is an introduction to the federal, state, and local regulations that provide jurisdictional setting for evaluating the proposed projects.

10.1 Federal Permit Requirements

10.1.1 The U.S. Army Corps of Engineers (USACE)

The U.S. Army Corps of Engineers (USACE) regulates Waters of the United States (U.S.) under Section 404 of the Clean Water Act. Waters of the U.S. are broadly defined as waters used in commerce, including interstate waters and wetlands, all other waters, and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three parameter method described in the Corps of Engineers Wetlands Delineation Manual (1987) are identified by the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Areas that are inundated for sufficient duration and depth to preclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water line (OHW). This typically includes river, streams, lakes, and large and deep ponds.

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10.1.2 U.S. Fish and Wildlife Service (USFWS) / National Marine Fisheries Service (NMFS)

Special status species include those listed as endangered, threatened, or as candidate species by U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) under the U.S. Endangered Species Act (ESA) or by the California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act (CESA).

Critical Habitat is defined by the ESA as a specific geographic area containing features essential for the conservation of an endangered or threatened species. The ESA requires consultation with USFWS or NMFS by federal lead agencies for activities they carry out, authorize, or fund.

10.1.3 Tribal Historic Preservation Officer (THPO)

The THPO is designated by a federally recognized Indian tribe to direct a program approved by the National Park Service and the THPO have assumed some or all of the function of State Historical Preservation Officers of Tribal lands.

The THPO's role in this project is to determine if any of the roads to be removed contain tribal archaeological sites. If any materials are recovered during construction, the contractor should contact the THPO before proceeding with work in that area.

10.2 State and Regional Permit Requirements

10.2.1 State Water Resource Control Board (SWRCB)

"Waters of the State" are defined by California's Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) regulates Waters of the State with special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and may not be completely protected by federal or other programs. RWQCB jurisdiction includes isolated wetland and waters that may not be regulated under Section 404 of the Clean Water Act. Waters of the State are regulated under the State Water Quality Certification program which covers discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Act.

10.2.2 California Department of Fish and Wildlife (CDFW)

A list of Species of Special Concern (SSC) is also maintained by CDFW. California SSC species usually have no special legal status, but they are considered under the California Environmental Quality Act (CEQA).

Plant species on California Native Plant Society (CNPS) Lists 1 and 2 are considered special status plant species and impacts to these species are considered significant under CEQA. CNPS List 3 and 4 plants do not have formal protection by CEQA but are often included in database searches for completeness.

CDFW provides oversight of habitats listed as sensitive in CNDDDB, based on global and state rarity ranking by USGS quadrangle. CDFW provides the following guidance for addressing high ranking vegetation types in project review.

Riparian habitat is regulated by CDFW when growing in association with a CDFW regulated stream, and would thus be discussed below under "Other Sensitive Plant Communities". The California Endangered Species Act is regulated by CDFW.

10.2.3 California Coastal Commission (CCC)

The Coastal Act defines "environmentally sensitive area" as an, "area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Section 30107.5).

Three important elements define an ESHA: 1) a geographic area can be designated ESHA because of the presence of individual species of plants or animals or because of the presence of a particular habitat; 2) in order for an area to be designated as ESHA, the species or habitat must be either rare or it must be especially valuable; and 3) the area must be easily disturbed or degraded by human activities.

Coastal Act Section 30240 states in part that:

- (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.
- (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

10.3 Local Permit Requirements

10.3.1 Del Norte County

An Encroachment Permit will be required from Del Norte County for Pacific Shores Mitigation

10.4 Environmental Review

10.4.1 CEQA/NEPA

In 2011, the Border Coast Regional Airport Authority (BCRAA) finalized an EA for the proposed improvements to the Runway Safety Areas (RSAs) at Del Norte County Regional Airport, Jack McNamara Field (CEC or the Airport) to identify and consider potential environmental impacts associated with the project. The EA was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 U.S. Code [USC] §4321 et seq.); Federal Aviation Administration (FAA) Order 1050.1E. An Environmental Impact Report was prepared pursuant to CEQA and certified by BCRAA.

The RSA improvements are needed to bring the Airport's RSAs into compliance with FAA design standards as promulgated in Airport Design Advisory Circular 150/5300-13 and as required for airports certificated under Federal Aviation Regulations Part 139, Certification and Operations: Land Airports Serving Certain Air Carriers (14 CFR Part 139) under the 2006 Department of Transportation Appropriations Act (Public Law [PL] No. 109-115). PL 109-115 (Congressional Bill House of Representatives 3058: Transportation, Treasury, Housing and Urban Development, the

Judiciary, District Of Columbia, and Independent Agencies Appropriations Act, 2006, PL 109-115, November 30, 2005, 119 Statute 2401) requires that the owner and operator of an airport certificated under 49 USC 44706 shall, not later than December 31, 2015, improve the airport's RSAs to comply with the FAA design standards required by 14 CFR Part 139.

11. Pacific Shores Mitigation and Point Saint George Western Lily Management Opinion of Probable Construction Cost

Table 3 contains a list of the anticipated bid items required to execute the PSS Mitigation Project and the PSG Western Lily Management Project and associated costs. This table will be updated with quantity, unit cost and totals with the 95% Plans, Specifications, and Estimate.

Table 3 Opinion of Probable Construction Cost

BID SCHEDULE ITEMS					
Item No.	Description	Quantity	Units	Unit Cost	Total
1	Mobilization/Demobilization		LS	\$	\$
2	Construction Staking		LS	\$	\$
3	Water Pollution Control		LS	\$	\$
4	Garbage Removal		TON	\$	\$
5	Plant Salvaging		SF	\$	\$
6	Clearing & Grubbing		LS	\$	\$
7	Vegetation Removal – Point St. George		LS	\$	\$
8	Vegetation Removal		LS	\$	\$
9	Culvert Removal		EA	\$	\$
10	Cold Plane		CY	\$	\$
11	Ripping		SY	\$	\$
12	Frog Ponds		EA	\$	\$
13	Dune Reconnections		EA	\$	\$
14	Grade Variations		EA	\$	\$
15	Road Barriers		EA	\$	\$
16	Re-vegetation and Mulching		SY	\$	\$
17	Seeding and Mulching – Point Saint George		SY	\$	\$
	Total Opinion of Probable Construction Cost				\$

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12. Specifications Outline

Technical Specifications

1. General
2. Order of Work and Progress Schedule
3. Existing Facilities
4. Preservation of Property
5. Dust Control
6. Control of Water
7. Mobilization and De-mobilization
8. Construction Staking
9. Water Pollution Control
10. Garbage Removal
11. Plant Salvaging
12. Clearing and Grubbing
13. Vegetation Removal – Point Saint George
14. Vegetation Removal
15. Culvert Removal
16. Cold Plane
17. Excavation
18. Ripping
19. Grading
20. Frog Ponds
21. Dune Reconnections
22. Grade Variations
23. Road Barriers
24. Revegetation and Mulching
25. Seeding and Mulching – Point Saint George
26. Final Clean Up

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13. References

- Limited Scope Geotechnical Report for the Pacific Shores Subdivision Mitigation Area for the Del Norte County Regional Airport RSA Improvement Project. Prepared for GHD Inc. Prepared by LACO Associates, Inc. March 2013.
- A Cultural Resources Investigation of the Pacific Shores Subdivision Mitigation Area for the Del Norte County Regional Airport RSA Improvement Project. Prepared for GHD, Inc. Prepared by Roscoe and Associates. March 2013.
- Roadway Segment Selection Methodology for Wetland and Habitat Mitigation at Pacific Shores Subdivision for Proposed Runway Safety Area (RSA) Improvement Project at Jack McNamara Field, Del Norte County Regional Airport (CEC), Crescent City, CA. Prepared for James Bernard, Airport Director for Del Norte County Regional Airport. Prepared by GHD, Inc. January 2013
- Environment Impact Report for the Runway Safety Area Improvement Project at Del Norte County Regional Airport, Jack McNamara Field (CEC). Prepared for the U.S. Department of Transportation and Federal Aviation Administration. Prepared by Border Coast Regional Airport Authority and URS Corporation. February 2011.
- Environment Impact Assessment for the Runway Safety Area Improvement Project at Jack McNamara Field (CEC). Prepared for the U.S. Department of Transportation and Federal Aviation Administration. Prepared by Border Coast Regional Airport Authority and URS Corporation. February 2011.
- Biological Assessment for the Runway Safety Area Improvement Project at Jack McNamara Field (CEC). Prepared for the Federal Aviation Administration. Prepared by GHD Inc. February 2013.
- Wiedemann, A.M. 1984. The Ecology of Pacific Northwest Coastal Sand Dunes: A Community Profile. U.S. Fish and Wildlife Service. <http://www.mwrc.usgs.gov/techrpt/84-04.pdf>
- U.S. Fish and Wildlife Service. 1993. 660 FW/2, Wetlands Classification System. <http://www.fws.gov/policy/660fw2.html>

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