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Staff: Jim Baskin
Staff Report: September 27, 2007
Hearing Date: October 12, 2007
Commission Action:

STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.:

1-07-005

APPLICANT:

City of Crescent City

PROJECT LOCATION:

Along the inner-harbor shoreline of Crescent City Harbor from within Beach Front Park, extending east-southeasterly aerially crossing over the mouth of Elk Creek, and along Sunset Circle/RV Park Road to its intersection with Highway 101 South / Elk Valley Road, within the City of Crescent City, Del Norte County, APNs 118-020-31, 118-380-28, and 118-380-32.

PROJECT DESCRIPTION:

Harbor Trail – North Segment Project entailing construction of: (1) a Class I multipurpose trail from the Cultural Center in Beach Front Park to Sunset Circle/RV Park Road, including a 110-foot free-span pedestrian/bicycle bridge crossing of Elk Creek; (2) a pedestrian harbor/creek vista overlook; (3) 24-space asphalt surface parking lot with bio-swale/drainage retention basin; (4) couplet restroom facilities; (5) various concrete walkways, bench and seat wall installations and directional & interpretive signage; and (6) a Class III roadside bike route

along Sunset Circle to the intersection of Highway 101 and Elk Valley Road.

LOCAL APPROVALS RECEIVED: City of Crescent City Design Review Approval No.

OTHER APPROVALS RECEIVED: (1) U.S. Army Corps of Engineers Permit FCWA Section 404 Nationwide Permit No. 13 – Bank Stabilization.

SUBSTANTIVE FILE
DOCUMENTS:

Biological Constraints Analysis and Wetland Delineation for City of Crescent City Harbor Trails Project (Mad River Biologists, July 31, 2003/Tamara Gedik February 17, 2006); *Final Preliminary Geotechnical Investigation Report of Findings – Harbor Trail Pedestrian Bridge, Crescent City, California* (LACO Associates, May 8, 2006); *Harbor Trail North Segment CEQA Mitigated Negative Declaration SCH No. 20041220056* (City of Crescent City, January 7, 2005); *Grading and Erosion Control Plan* (Harris Design, January 15, 2007); and (Revised) *Preliminary Pedestrian Bridge Plan* (Stover Engineering, September 12, 2007).

SUMMARY OF STAFF RECOMMENDATION

Staff recommends that the Commission approve with conditions this application for the construction of the City of Crescent City’s Harbor Trail – North Segment.

The project would entail the initial phase of construction of a multiuse, pedestrian, and bicycle trail and related coastal access support facilities to provide a through connection for non-vehicular transit along inner Crescent City Harbor between Beach Front Park and South Beach, popular coastal recreational destinations for both local residents and visitors to the area. A principal feature of the proposed project is a 110-foot-long pedestrian/bicycle trail bridge over lower Elk Creek.

The project entails the development of coastal access facilities that would enhance non-vehicular transit between sites offering a variety of coastal recreational opportunities within the city park and beach strand areas at either end of the project. These project attributes are recognized and encouraged in the Coastal Act as high-priority coastal-dependent uses. However, notwithstanding the public benefits the project would afford, the development requires approximately 150 square feet of wetland fill for a small

portion of the proposed trail that cannot feasibly be avoided. In addition, construction, grading, and paving activities would be undertaken partially within and/or in close proximity to intertidal and riverine wetlands associated with Elk Creek, a Class I, first-order, anadromous fish-bearing watercourse, and other environmentally sensitive habitat areas, particularly rare plant species habitat. Despite its intended benefits, if not conducted and maintained properly, the project could have significant direct and cumulative adverse impacts on these sensitive environmental resources.

Staff believes the small amount of wetland fill associated with the project is for a permissible use consistent with Section 30233(a)(7) of the Coastal Act as “nature study, aquaculture, or similar resource dependent activities.” Staff is recommending fourteen special conditions to ensure that environmentally sensitive resources and other coastal resources in the project area are adequately protected such that potential significant impacts are avoided and/or reduced to insignificant levels, and all necessary property rights to conduct the project have been secured:

Special Condition No. 1 requires that prior to issuance of the coastal development permit, a compensatory wetlands replacement mitigation and monitoring plan be prepared and submitted for the approval of the Executive Director detailing provisions for the creations of new palustrine wetlands to compensate for the wetlands to be unavoidably filled for creation of a small segment of the Class I trail segment.

Special Condition No. 2 requires the applicant to prepare and submit for the Executive Director’s approval a stormwater runoff and erosion control plan, identifying appropriate construction-phase and permanent water best management practices to be incorporated into the project to prevent potential impacts to water quality, and a hazardous materials spill prevention and clean-up plan detailing both the efforts to be taken and the materials and equipment available for preventing and responding to any accidental release of hazardous materials during construction of the coastal access facilities.

Special Condition No. 3 sets specific construction phase performance standards to be followed during development of the project improvements to further ensure that water quality impacts are avoided and minimized.

Special Condition No. 4 requires the applicant, prior to issuance of the permit, to submit for the review and approval of the Executive Director, a final landscaping plan, detailing the types and locations of revegetative, bio-filtration, and decorative plantings to be installed at the project site. The plan shall also include provisions for the exclusive use of native species derived from local genetic stocks, where available, and prohibitions on the use of certain problematic rodenticides.

Special Condition No. 5 directs that the development be implemented in strict compliance with the proposal set forth in the permit application as modified by the special conditions. Any deviations from the approved site plan, mitigation and

monitoring plan, or stormwater/erosion control or landscaping plans shall require an approved permit amendment, unless the Executive Director determines that a permit amendment is not legally required.

Special Condition No. 6 requires the proposed bridge crossing of Elk Creek to be constructed in conformance with the recommendations of the approved geo-technical report prepared for the project, as modified by a supplemental report prepared by the project engineer.

Special Condition No. 7 requires the permittee to assume all risks and agree to indemnify the Commission against any and all claims that may result from development in an area with known flood and geologic hazards.

Special Condition No. 8 requires the applicant prior to permit issuance to submit, for the review and approval of the Executive Director, a signage, fencing, barrier, and seating plan demonstrating that these site amenities will not adversely affect visual resources of the area.

Special Condition Nos. 9-13 require the applicant, prior to issuance of the permit in most cases and prior to commencement of construction in one case, to submit evidence that any necessary authorizations from the State Lands Commission (legal property interest), the City of Crescent City (design review), the Department of Fish and Game (streambed alteration agreement), the Department of Transportation (encroachment permit), and the U.S. Army Corps of Engineers (FCWA Section 404 individual or nationwide permit) have been obtained.

Special Condition No. 14 requires that in the event that the City chooses to sell the property, the City shall first record a deed restriction imposing all terms and conditions of the permit as conditions, covenants, and restrictions on the use of the property to inform purchasers of the permit requirements.

Staff recommends that the Commission find the project, as conditioned, consistent with the Chapter 3 policies of the Coastal Act.

The motion to adopt the Staff Recommendation of Approval with Conditions is found on page 5.

STAFF NOTE

1. Jurisdiction and Standard of Review.

The proposed project site is located in the Commission's retained permit jurisdiction. The City of Crescent City has a certified LCP, but the site is within an area shown on State Lands Commission maps over which the State retains a public trust interest. Therefore, the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

I. MOTION, STAFF RECOMMENDATION, AND RESOLUTION

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve Coastal Development Permit No. 1-07-005 pursuant to the staff recommendation.

Staff Recommendation of Approval:

Staff recommends a **YES** vote. 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 to Approve Permit:

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: See attached.

III. SPECIAL CONDITIONS:

1. Final Wetland Mitigation Plan

A. PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005, the applicant shall submit for review and written approval of the Executive Director, a final wetland mitigation plan for all wetland impacts

associated with the proposed project that has been developed in consultation with the California Department of Fish & Game and U.S. Fish & Wildlife Service.

1. The plan shall demonstrate that:
 - (a) Compensatory in-kind palustrine emergent persistent wetlands / Northern coastal scrub – willow series habitat area is provided by creation of new wetlands on an upland area based upon a replacement ratio of 2:1;
 - (b) All wetland impacts that are identified as temporary (such as temporary fill areas) shall be fully restored. Restoration of temporarily impacted areas shall include at a minimum, restoration of before-impact elevations, restoration of before-impact hydrology, removal of all non-native plant species, and replanting with locally collected native wetland plant species;
 - (c) Improvement of the mitigation site will be completed within one year of the completion of the portion of the trail that involves filling the wetlands;
 - (d) The mitigation site shall be as close to the impacted portion of the wetland as feasible and must be located within the coastal zone of Crescent City or Del Norte County;
 - (e) The mitigation site shall provide for Northern coastal scrub – willow series plant growth of an equivalent percentage density and species diversity as exists in the wetland to be filled;
 - (f) The mitigation site will be monitored for five years following improvement of the mitigation site to ensure the success of the mitigation; and
 - (g) The mitigation site shall be remediated within a year of a determination by the permittee or the Executive Director that monitoring results indicate that the site does not meet the identified performance standards in the approved final monitoring and mitigation program. If the performance criteria have not been met at the end of five years following the completion of construction of the project, the applicant shall submit an amendment to the coastal development permit proposing additional mitigation to ensure all performance criteria are satisfied consistent with all terms and conditions of this permit.

2. The plan shall include, at a minimum, the following:
 - (a) A detailed site plan of the wetland impact area as disclosed in “*Biological Constraints Analysis and Wetland Delineation for City of Crescent City Harbor Trails Project*,” report dated July 31, 2003, mapping dated August 1, 2003 and February 17, 2006, as

- prepared by Mad River Biologists and Tamara Gedik, as submitted to the Commission on January 18, 2007. The final plan must delineate all impact areas (such as on a map that shows elevations, surrounding landforms, etc.), the types of impact (both permanent and temporary), and the exact acreage of each impact so identified;
- (b) The baseline ecological assessment of the wetland impact area submitted on January 18, 2007;
 - (c) A detailed final site plan of the compensatory replacement wetlands mitigation site illustrating the following features:
 - i. The replacement mitigation site;
 - ii. The location of reference and monitoring cross-sections of palustrine emergent persistent wetland / Northern coastal scrub – willow series habitat area within both Project Study Area No. 2 and the replacement site shall be shown; and
 - iii. The extent of restored areas and the buffer surrounding the restored areas from adjacent development.
 - (d) The goals, objectives, and performance standards for the mitigation site, including the following:
 - i. Plant cover percentages, density, and species diversity for replacement palustrine emergent persistent wetlands / Northern coastal scrub – willows series habitat based upon that in the reference area; and
 - ii. Floral re-colonization success reference and monitoring counts for emergent persistent wetlands/ Northern coastal scrub – willows series replacement habitat based upon direct sampling of the cover and density of appropriate hydrophytic indicator species using established biological survey protocols.
 - (e) The final design and construction methods that will be used to ensure the mitigation site achieves the defined goals, objectives, and performance standards;
 - (f) Provisions for submittal, within 30 days of completion of initial restoration work of “as built” plans demonstrating that the wetland mitigation site has been established in accordance with the approved design and construction methods; and
 - (g) Proposed remediation measures for ensuring the success of the mitigation.
- 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 required.

2. Erosion and Run-Off Control Plans

A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005**, the applicant shall submit, for review and approval of the Executive Director, a plan for erosion and run-off control.

1. EROSION CONTROL PLAN

a. The erosion control plan shall demonstrate that:

- (1) During construction, erosion on the site shall be controlled to avoid adverse impacts on adjacent environmentally sensitive resource areas;
- (2) The following temporary erosion control measures shall be used during construction: hay bale and/or silt fence barriers around all ground-disturbed excavations, stormwater drainage inlet protection;
- (3) Following construction, erosion on the site shall be controlled to avoid adverse impacts on adjacent environmentally sensitive resource areas;
- (4) The following permanent erosion control measures shall be installed: landscaping of all open areas not otherwise developed with areas not otherwise developed with structures or impervious surfacing; and
- (5) The erosion control plan is consistent with all terms and conditions of the permit.

b. The plan shall include, at a minimum, the following components:

- (1) A narrative report describing all temporary run-off and erosion control measures to be used during construction and all permanent erosion control measures to be installed for permanent erosion control;
- (2) A site plan showing the location of all temporary erosion control measures;
- (3) A schedule for installation and removal of the temporary erosion control measures;
- (4) A site plan showing the location of all permanent erosion control measures; and
- (5) A schedule for installation and maintenance of the permanent erosion control measures.

2. RUN-OFF CONTROL PLAN

- a. The run-off control plan shall demonstrate that:
 - (1) Runoff from the project shall not increase sedimentation into coastal waters;
 - (2) Runoff from all trail surfaces, bridge decking, improved streets, and other impervious surfaces along the project trail and roadways shall be directed/collected and discharged into either vegetated trailside swales or the centralized bio-filtration detention drainage basin as illustrated on project site, grading, and erosion control plans to avoid degradation of water quality either on or off the site;
 - (3) Stormwater run-off from all parking areas, driveways and other impervious surfaces within the coastal access support facilities on the site shall be collected and conveyed into the centralized bio-filtration detention drainage basin as illustrated on project site, grading, and erosion control plans avoid ponding, erosion, or ater quality impacts either on or off the site; and
 - (4) The proposed runoff control plan is consistent with all terms and conditions of the permit.

- b. The plan shall include, at a minimum, the following components:
 - (1) A schedule for installation and maintenance of the vegetated swale and bio-filtration detention drainage basin systems; and
 - (2) A site plan showing finished grades (at one-foot (1') contour intervals) and the location of the drainage improvements.

- B. The erosion and runoff control plan shall, prior to submittal to the Executive Director, be reviewed and certified by a qualified professional to ensure that the plan is consistent with the drainage requirements of the City of Crescent City Public Works Department and the stormwater runoff treatment standards set forth herein.

- 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.

3. Construction Responsibilities and Debris Removal

The permittee shall comply with the following construction-related requirements:

- A. No construction materials, debris, or waste shall be placed or stored where it may be subject to wave erosion and dispersion;

- B. Any and all debris resulting from construction activities shall be removed from the coastal waters immediately;
- C. Sand from the beach, cobbles, or shoreline rocks shall not be used for construction material;
- D. Staging and storage of construction machinery and storage of debris shall not take place on any adjacent coastal access support facilities (e.g., parking lots, bike paths, or walkways);
- E. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete, oil or petroleum products, or other organic or earthen material from any grading and construction activities shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into coastal waters;
- F. Any fueling of construction equipment shall occur on the paved areas within the adjoining developed public park or recreational vehicle park at a minimum of 100 feet landward from the Mean High High Water (MHHW) line of the Crescent City Harbor or Ordinary High Water (OHW) line of Elk Creek;
- G. Silt screens, straw bales, and/or coir-rolls appropriate for use in riverside and floodplain settings applications shall be installed around the perimeter of the areas to be graded and excavated prior to the initiation of grading and excavation activities and shall be maintained throughout project construction. Additional silt and sediment barrier materials shall be kept at the site and deployed as needed to reinforce sediment containment structures should unseasonable rainfall occur;
- H. If rainfall is forecast during the time construction activities are being performed:
 - (i) all exposed soils materials excavated to form the project's roadway, coastal access support facilities, swales, and bio-filtration detention drainage basin improvements shall be covered with minimum 10-mil plastic sheeting, secured with sand bagging or other appropriate materials, and (ii) any other exposed soil areas shall be promptly mulched before the onset of precipitation;
- I. Mechanized heavy equipment, including excavation, paving, and materials delivery vehicles used during the construction process shall not be staged, operated, stored, or re-fueled within 100 feet of the waters of Crescent City Harbor or Elk Creek;
- J. To minimize the entrainment and entry of hydrocarbon-tainted runoff into coastal waters, asphaltic concrete paving operations shall be performed during dry-weather periods when the National Weather Service's Northwestern California forecast for the Crescent City sub-area of the Redwood Coast predicts a less than

50 percent chance of precipitation for the timeframe in which the paving work is to be conducted; and

- K. Fuels, lubricants, and solvents shall not be allowed to enter the waters of Elk Creek or Crescent City Harbor. Hazardous materials management equipment including oil containment booms and absorbent pads shall be available immediately on-hand at the project site, and a registered first-response, professional hazardous materials clean-up/remediation service shall be locally available on call. Any accidental spill shall be rapidly contained and cleaned up. All heavy equipment operating in or near the water's edge shall utilize vegetable-based oil as hydraulic fluid.

4. Landscaping Plan

- A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005**, the applicant shall submit for the review and written approval of the Executive Director, final landscaping plans for the development to meet the requirements of the LCP regarding parking lot landscaping. The plan shall be prepared by a licensed landscape architect.

1. The plan shall demonstrate that:
 - a. Only native plant species obtained from local genetic stocks shall be planted with the restoration and mitigation sites. If documentation is provided to the Executive Director prior to planting that demonstrates that native vegetation from local genetic stock is not available, native vegetation obtained from genetic stock outside of the local area may be used;
 - b. Only non-invasive plant species shall be planted as landscaping within the parking lot coastal access support facility at the site;
 - c. 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 planted within the property;
 - d. Rodenticides containing any anticoagulant compounds, including, but not limited to, Bromadiolone or Diphacinone shall not be used;
 - e. All planting will be completed within 60 days after completion of construction;

- f. All required plantings will be maintained in good growing conditions through-out the life of the project, and whenever necessary, shall be replaced with new plant materials to ensure continued compliance with the landscape plan;
- g. Parking lot landscaping is consistent with the standards of Coastal Zone Zoning Regulations Section 17.76.120.M, including minimum requirements that:
 - (1) Landscaping shall be provided along all street side property lines not occupied by driveways;
 - (2) A planter no less than thirty-six inches in width provided with an acceptable irrigation system and planted and maintained with evergreen shrubs; and
 - (3) One tree for every five spaces, said trees being a minimum $\frac{3}{4}$ -inch caliper in size at time of planting, placed in tree wells at least four feet by four feet in size, provided with a means of irrigation and maintained in a living condition.
- 2. The plan shall include, at a minimum, the following components:
 - a. A map showing the type, size, and location of all plant materials that will be on the developed site, the irrigation system, topography of the developed site, and all other landscape features, and
 - b. A schedule for installation of plants, specifically prohibiting the installation of 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;
 - c. Provisions for on-going maintenance and replacement of plants as may be needed from time-to-time; and
 - d. Prohibitions against the use of rodenticides containing any anticoagulant compounds, including, but not limited to, Bromadiolone or Diphacinone; and
- 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 plan shall occur without a Commission amendment to the coastal development permit unless the Executive Director determines that no amendment is legally required.

5. Future Development Restriction

This permit is only for the development described in Coastal Development Permit Application No. 1-07-005. All development authorized by Coastal Development Permit No. 1-07-005 must occur in strict compliance with the proposal set forth in the application for the permit as modified by the special conditions. Any deviation from the project proposal, including a change in the location or extent of the access trail and support facilities, or offsite road improvements, increases in the intensity, density, or specific use of the site, or any other changes to the proposed project may require an amendment to Permit No. 1-07-005 from the Commission or securement of an additional coastal development permit from the Commission.

6. Conformance of Design and Construction Plans to Geotechnical Report Geologic Hazard

- A. All final design and construction plans, including foundations, grading and drainage plans, shall be consistent with all recommendations contained in the engineering geologic report titled *Preliminary Geotechnical Investigation Report of Findings Harbor Trail Pedestrian Bridge, Crescent City California*, prepared by LACO Associates and dated May 8, 2006, as modified by the letter-report supplement prepared by Stover Engineering, dated September 2007. **PRIOR TO THE ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005**, the applicant shall submit, for the Executive Director's review and approval, evidence that an appropriate licensed professional has reviewed and approved all final design and construction plans and certified that each of those final plans is consistent with all of the recommendations specified in the above-referenced geologic evaluation approved by the California Coastal Commission for the project site as applicable to the revised bridge span and relocated abutments.
- 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 required.

7. Assumption of Risk, Waiver of Liability and Indemnity Agreement

By acceptance of this permit, the applicant acknowledges and agrees (i) that the site may be subject to hazards from waves, storm surge, and flooding; or, erosion and earth movement; (ii) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and

employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

8. Lighting, Signage, Fencing, Barriers, and Seating Plan

A. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005**, the applicant shall submit, for review and approval of the Executive Director a plan for all exterior lighting, directional, cautionary, interpretive, and commemorative signage, fencing, barriers, and seating to be constructed as part of the Harbor Trail Project.

1. The plan shall demonstrate that the lighting, signage, barriers and other site improvements to be erected at the project site:
 - a. Do not introduce significantly increased levels of lighting or glare into the area that could directly, indirectly, or cumulatively adversely impact biological and visual resources through, among other means: (1) requiring fixtures to be down-cast with full cut-offs, (2) limited lighting levels to low-wattage output necessary to provide minimal illumination necessary for personal safety and site security, (3) orientations that prevent the lighting from shining beyond the trail or parking lot areas, and (4) prohibiting the use of highly reflective building materials;
 - b. Are visually compatible with the character of surrounding areas with respect to height and bulk, and do not significantly obstruct views from public vantage points (Beach Front Park, Highway 101, Sunset Circle, and RV Park Road);
 - c. Do not significantly block views from along Highway 101 in the vicinity of its Elk Creek crossing through restricting the height of the path/bikeway bridge rails to a maximum 17.13 feet above mean sea level and limiting the railing design to the open cross-braced form providing for maximized transparency as illustrated on Sheet B of the Design Details for the *Crescent City Harbor Trail Plan*, dated August 2003, attached as Exhibit No. 10 of the project staff report; and
 - d. Conform in architectural style, construction materials, surface treatments, and physical appearance with other similar improvements within the inner Crescent City Harbor area.
2. The plan shall contain at a minimum:

- a. Site plan location of all exterior lighting, signage, fencing, barriers, and seating;
 - b. Design specifications for all luminaries;
 - c. To-scale, dimensioned elevation plan depictions of the signage, including clear representation of sign verbiage and symbology; and
 - d. A description of the materials and colors of the sign elements.
- 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 required.

9. State Lands Commission Review

PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005, the applicant shall submit to the Executive Director a written determination from the State Lands Commission that:

- A. No State or public trust lands are involved in the development; or
- B. State or public trust lands are involved in the development and all permits required by the State Lands Commission have been obtained; or
- C. State or public trust lands may be involved in the development, but pending a final determination an agreement has been made with the State Lands Commission for the project to proceed without prejudice to that determination.

10. City of Crescent City Design Review Approval

PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005, applicant shall provide to the Executive Director a copy of the discretionary design review approval issued by the City of Crescent City. The applicant shall inform the Executive Director of any changes to the project required by the City. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

11. California Department of Fish and Game Approval

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT NO. 1-07-005, the applicant shall provide to the Executive Director a copy of any permit, letter of permission issued by the California Department of Fish and Game (CDFG), or executed streambed alteration agreement, or evidence that no permit, permission, or

contractual agreement is required. The applicant shall inform the Executive Director of any changes to the project required by the CDFG. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

12. Encroachment Permit

PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005, the applicant shall submit to the Executive Director for review and written approval, evidence of an encroachment permit from the California Department of Transportation. The encroachment permit or exemption shall evidence the ability of the applicant to develop within State properties, including public street rights-of-way, as conditioned herein.

13. U.S. Army Corps of Engineers Approval

PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION, the permittee shall provide to the Executive Director a copy of a permit issued by the Army Corps of Engineers, or letter of permission, or evidence that no permit or permission is required. The applicant shall inform the Executive Director of any changes to the project required by the Army Corps of Engineers. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

14. Agreement to Record Deed Restriction if Property Conveyed

A. **PRIOR TO ANY CONVEYANCE OF THE PROPERTY THAT IS THE SUBJECT OF THIS COASTAL DEVELOPMENT PERMIT**, the applicant shall execute and record a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property (hereinafter referred to as the “Standard and Special Conditions”); and (2) imposing all Standard and Special Conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The restriction shall include a legal description of the applicant’s entire parcel or parcels. It shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the Standard and Special Conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes – or any part, modification, or amendment thereof – remains in existence on or with respect to the subject property.

- B. **PRIOR TO ISSUANCE OF COASTAL DEVELOPMENT PERMIT NO. 1-07-005**, the applicant shall submit a written agreement, in a form and content acceptable to the Executive Director, incorporating all of the above terms of this condition.

IV. **FINDINGS AND DECLARATIONS.**

A. **Site and Project Description.**

The project area comprises the inner Crescent City Harbor area from the Crescent City Visitor's Center within Beach Front Park extending generally east-southeasterly to both ends of Sunset Circle as it intersects with Highway 101 at N Street on its north terminus and at Elk Valley Road / Huston Street to the south (see Exhibit Nos. 1-4). Initially coinciding with the route of an existing pedestrian trail through the park, the project bounds include an aerial crossing of lower Elk Creek just south of the Highway 101 southbound one-way couplet, the 1.16-acre "Endert parcel" adjoining the former Shoreline RV Park currently being redeveloped by the City, and the immediate public street right-of-way roadsides of Sunset Circle and RV Park Road. The City's coastal access inventory, as contained in the Land Use Plan portion of its certified Local Coastal Program (LCP) identifies the project area as lying along the route of the "Harbor-City" Trail. In addition, the area is diagrammatically shown as comprising a portion of "Del Norte Co. Section 9" of the California Coastal Trail (see Exhibit No. 5).

The City of Crescent City is proposing the *Harbor Trails – North Segment Project* improvement and development project to provide another linkage in the regionally planned, continuous, multi-use coastal trail and bicycle path linking Point Saint George to South Beach. The trail also functions as a nature trail, as the development will include interpretive panels and a kiosk with interpretative materials. The *North Segment* phase of the project would entail construction of a Class I multipurpose trail from the Cultural Center, located at the intersection of Front Street and L Street within Beach Front Park to Sunset Circle, including a 110-foot-long free span pedestrian/bicycle bridge across Elk Creek, and development of a Class III bike route continuing from the Class I segment along Sunset Circle to the Highway 101/Elk Valley Road intersection (see Exhibit No. 6).

Access support facilities to be developed as part of the *North Segment* phase include an asphaltic-concrete surfaced, 24-space public access parking lot and a small public restroom, together with bench and low wall seating, sidewalks, perimeter fencing, decorative landscaping and additional directional cautionary, and commemorative signage. To mitigate for the effects of the beach pine removal on visual resources, increased stormwater runoff from impervious surface improvements, and traffic impacts from increased multimodal conflicts associated with the construction and use

of the facilities, the City proposes to install restoration plantings at a 2:1 replacement ratio, construct a roughly 3,000-square-foot, bio-filtration stormwater detention drainage facility, and make roadside improvements Sunset Circle and RV Park Road, respectively.

The City also intends to upgrade current portions of the pedestrian trail system by widening the pathway to accommodate bicycles and pedestrian traffic, including an access ramp from the top of the creek bank within Beach Front Park down to the beach, removing trail surface paving through portions along the abandoned alignment, and the installation of interpretive signage at key areas to guide individuals along the trail.

Under a future, yet to be funded *Harbor Trail – South Segment Project* phase, the trail would eventually continue further to the southeast either along southbound Highway 101 or currently undeveloped Vance Street, enter the Crescent City Harbor via Citizen's Dock, pass along Starfish Way to Anchor Way, and terminate back onto Highway 101 as a Class III roadside pedestrian/bicycle path with trail linkages down onto South Beach (see Exhibit No. 10).

B. Protection of Marine Resources and Coastal Water Quality.

1. Applicable Coastal Act Policies and Standards

Section 30108 defines the term “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 30108.2 of the Coastal Act defines “fill” as:

“the placement of earth or any other substance or material in a submerged area.”

Section 30230 of the Coastal Act states, in applicable part:

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 addresses the protection of coastal water quality and marine resources in conjunction with development and other land use activities. Section 30231 states:

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

Section 30233(a) of the Coastal Act provides as follows, in applicable part:

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.* [Emphases added.]

2. Consistency Analysis

The project involves the construction of public coastal access facilities along the immediate shoreline areas of Crescent City Harbor and over Elk Creek. Based upon a routine wetland delineation and biological constraints analysis conducted by Mad River Biologists from April through June 2003, site use restrictions identified in the report were incorporated in preparation of a proposed Harbor Trails development project (see Exhibit No. 7).

The above policies set forth a number of different limitations on what development projects may be allowed in coastal wetlands. For analysis purposes, the limitations can be grouped into four general categories or tests. These tests are:

- The purpose of the filling, diking, or dredging is for one of the uses enumerated in Section 30233(a);
- The project has no feasible less environmentally damaging alternative;
- Feasible mitigation measures have been provided to minimize adverse environmental effects; and
- The biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

1. Permissible Use for Fill

The first test for a proposed project involving fill is whether the fill is for one of the seven allowable uses under Section 30233(a). Among the allowable uses involving dredging, diking, and filling in wetlands which most closely match the project objectives is “nature study,” enumerated as Section 30233(a)(7).

The project includes a proposal to fill an approximately 150-square-foot area of forested wetland associated with development of the western trail approach to the Elk Creek bridge crossing. The proposed wetlands fill is needed for the construction of a small portion of the Harbor Trail which: (1) due to the presence of adjoining state highway and public sewer infrastructural elements; and (2) the need to provide an alignment necessary to meet Class I bikeway standards as required by the funding agency, could not be completely avoided.

The Commission has considered the development of new recreational trail segments through wetlands and other environmentally sensitive resource areas, where design

efforts have been made to minimize such intrusions to the smallest feasible area or least impacting routes, and where the trail segment functions as a nature trail, to be a form of “nature study... or similar resource dependent activities” (see findings for County of Santa Barbara LCP Amendment No. STB-MAJ-3-02 (Toro Canyon Planning Area) and County of Humboldt LCP Amendment No. HUM-MAJ-1-03 (Riparian Corridor Trails)).

Trails are utilized for a variety of utilitarian and aesthetic reasons. Although the use of trails does not in every case entail nature study, the proposed facilities certainly support such a pursuit. The trail plan and project narrative include provisions for installation of numerous interpretive panels along the path/bikeway’s route, the installation of an interpretative display kiosk at the creek/harbor vista overlook point, and benches and seating within the parking lot facility and along the trail for resting and contemplation of the natural setting. Furthermore, in terms of trails being resource-dependent, in addition to being a route for non-motorized transit between points, separate and apart from vehicular accessways, recreational trails serve a second function of providing physical access to scenic, usually undeveloped natural areas, for aerobic exercise and/or more meditative pastimes. These accessways provide opportunities for visitors to such areas to interact with the natural environment through sensorial observation and contemplation of the physical and biological features encountered along the trail.

“Nature study” is formally defined as, “the study of animals and plants in the natural world, usually at an elementary level.”¹ In her treatise on the importance of fostering a conservation ethic in children through environmental education starting at an early age, the renowned natural science educator Anne Botsford Comstock characterizes “nature study” as follows:

It consists of simple, truthful observations that may like beads on a string, finally be threaded upon the understanding and thus held together as a logical and harmonious whole... In nature study, the work begins with any plant or creature which chances to interest the pupil. It begins with the robin that comes back to us in March promising spring; or it begins with the maple leaf which flutters to the ground in all the beauty of its autumnal tints. A course in biological science leads to the comprehension of all kinds of life on our globe. Nature study is for the comprehension of the individual life of the bird, insect, or plant that is nearest at hand.²
[Emphases added.]

By providing venues for incidental exploration of the physical and biological world, trails in natural settings are generally recognized as one of the best ways to ensure continued public support for protecting environmentally significant natural areas and to encourage

¹ *Webster's Revised Unabridged Dictionary*, C. & G. Merriam Company, 1913.

² Anne Botsford Comstock, *Handbook of Nature Study*, Comstock Publishing Associates, Inc., 1939

an appropriate level of visitation. This perspective is at the core of the many public outreach and grant-funding efforts undertaken by natural resource conservation-oriented public agencies and other non-government organizations, from the Coastal Conservancy to many of the numerous land trusts involved in public access acquisition and development. Regardless of their age, people in general are more likely to develop a stewardship ethic toward the natural environment if they are educated about the importance to the overall ecosystem, especially if they provided the opportunity to experience the physical, mental and spiritual benefits of these areas first-hand. Providing for the development of trails into riparian corridors and other shoreline areas can be an ideal setting for such activities, as they offer a safe, convenient and unique perspective of the rich and diverse biological resources associated with watercourses, estuaries, and the open coastline.

Thus, trails through riparian corridors and shoreline areas such as the project site may similarly be considered a form of “*nature study... or similar resource-dependent activities,*” as they are: (1) a development type integral to the appreciation and comprehension of biophysical elements that comprise riparian areas; and (2) dependent upon the presence of the natural area resource through which they pass to provide a nature study experience.

Therefore, the Commission finds that the proposed placement of fill within coastal waters and wetlands for purposes of constructing the Harbor Trail North Segment is for one of the allowable uses for dredging, diking, and filling of coastal waters pursuant to Section 30233(a)(7) of the Coastal Act.

2. Least Environmentally Damaging Feasible Alternative

The second test of Section 30233(a) is whether there are feasible less environmentally damaging alternatives to the proposed project. In this case, the Commission has considered project options, and determines that there are no feasible less environmentally damaging alternatives to the project as conditioned. Alternatives that have been identified include: (1) shifting the trail’s western approach to the Elk Creek bridge crossing further to the north to avoid all wetland fill; and (2) the “no project” alternative.

a. Trail Configurations/Alignments that Fully Avoid Wetlands

As disclosed in the project description, the project application was revised to increase the bridge span over Elk Creek from 80 to 110 feet so that approximately 255 cubic yards of fill within an approximately 4,000 square-foot area situated between the streambanks for construction of the abutments could be avoided. One alternative to avoid the proposed filling of approximately 11 cubic yards within a 150 square-foot area of palustrine emergent persistent wetland / Northern coastal scrub – willow series habitat area would be to further reconfigure the project by shifting the trail alignment further to the north. This alternative would

require that a portion of the Class I path/bikeway be narrowed from the proposed ten-foot down to the minimum eight-foot width allowable for such facilities³ and its alignment shifted approximately eight feet northerly toward the Highway 101 roadside. This alternative would cause increased hazards to bicyclists contrary to Class I bike standards⁴ by placing the northbound trail side correspondingly closer to an above-ground mounted high-pressure sewer main line. This pipeline could not be similarly relocated without extensive costs and increased potential resource impacts to the surrounding coastal water bodies. Additionally, such a shifted trail alignment would require that the existing roadside railing terminus along southbound Highway 101 be similarly shifted from its present out-flaring configuration away from the flow of traffic to one that would be more parallel to the flow of traffic. Caltrans staff have indicated that such a reconfiguration or removal of the railing through the affected trail segment would not meet established state barrier railing end-flare geometrics standards and would likely increase the collision incidents through this convex curved section of roadway, and/or expose trail users and public infrastructure to a greater traffic safety risks of injury and damage, respectively.^{5,6} Therefore, when all economic, environmental, technological and social factors are considered, narrowing and lateral realignment of the trail is not a feasible less environmentally damaging alternative.

b. No Project Alternative

The no project alternative means that no separate through connection would be developed between the trail portions within Beach Front Park and on the east side of Elk Creek leading toward the Crescent City Harbor. The objective of the proposed project—to provide a grade-separate Class I pedestrian and bicycling facilities through the urban portions of Crescent City would not be met. Without the proposed trail segment through the small area of wetlands, no feasible access to the bridge crossing of Elk Creek could be developed. As a result, pedestrians and cyclist would have to continue the present pattern of portaging the creek by halting at the trail's terminus in southeastern Beach Front Park, clamber over the roadside barrier railing and utilize the existing sidewalk along the posted 30 mile-per-hour convex curved stretch of Highway 101 to cross over Elk Creek, a less-

³ See Chapter 1000, Section 1003.1(1) “Widths,” *Highway Design Manual*, California Department of Transportation, Division of Design for Project Delivery, September 1, 2006, excerpted in Exhibit No. 8.

⁴ See Chapter 1000, Section 1003.1(2) “Clearance to Obstructions,” *Highway Design Manual*, California Department of Transportation, Division of Design for Project Delivery, September 1, 2006, excerpted in Exhibit No. 8.

⁵ See Figures 7-2a, 7-2b, and 7-3 Chapter 7, “Traffic Safety Systems,” *Traffic Manual*, California Department of Transportation, Traffic Operations, May 19, 2004, excerpted in Exhibit No. 8.

⁶ Jim Hibbert, CDOT – District 1, Pers. comm.

than-pleasant and potentially hazardous undertaking, before continuing on toward the harbor and beach areas further to the east and south. Northbound cyclists in particular would have an even more difficult detour: So as not to violate California Vehicle Code bicycle statutes prohibiting the riding on sidewalks or against the direction of traffic flow, cyclists coming up Sunset Circle heading to Beach Front Park would be required to cross over four lanes of Highway 101, ride for one block along the northbound highway couplet's outboard Class III bikeway to Front Street, execute a left turn across two lanes of traffic at the un-signalized intersection, cross through the signalized southbound highway couplet, before finally executing a left turn across Front Street (or walk their bicycle through the pedestrian crosswalk) to enter the park and resume riding along the official Harbor Trail "route." Such contorted maneuvering would likely serve as a disincentive for many to use this segment of the Harbor Trail and represents a continuation in exposing pedestrians and cyclists to significant traffic safety risks the proposed trail would eliminate with only a minimal amount of wetland ESHA being affected. Accordingly, taking into consideration the economic, environmental, and social factors, the no project option is not a feasible less environmentally damaging alternative.

Thus, based on the alternatives analysis above, the Commission concludes that the proposed project is the least environmentally damaging feasible alternative.

3. Feasible Mitigation Measures

The third test set forth by Section 30230 and 30233 is whether feasible mitigation measures have been provided to minimize significant adverse environmental impacts.

Depending on the manner in which the proposed access facilities are constructed and maintained, the proposed project could have potential adverse effects on the aquatic, emergent, and upland terrestrial environments of Elk Creek, Crescent City Harbor, and the project site environs by: (a) filling 150 square-feet of emergent estuarine and palustrine wetlands from construction of the Class I bikeway's eastern approach to the Elk Creek bridge crossing; (b) polluting estuarine aquatic fish and wildlife habitat with sediment, debris, or hazardous materials originating from the project; (c) planting of exotic invasive plant species in areas disturbed by construction or construction activities that foster the spread of potentially rare plant population; and (d) using certain rodenticides that could deleteriously bio-accumulate in predator bird species.

a. Filling of Wetlands / Development Adjacent to ESHA

The project involves construction activities in and adjacent to the emergent estuarine and palustrine wetlands along lower Elk Creek. As discussed in the preceding permissible use criterion, although dredging diking, and filling within the stream banks of Elk Creek have been fully avoided by revisions to the project's original design, approximately 150 square feet of unavoidable fill would need to be placed within the palustrine emergent

persistent wetland / Northern coastal scrub – willow series habitat area to create the base and trail surface for the western segment of Class I bikeway/path leading up to the bridge crossing. In addition, unless delimited appropriately, the trail improvements could potentially provide numerous locations for trail users to intrude into environmentally sensitive areas. To offset these potential impacts, the applicant proposes the following mitigation measures:

- Existing native trees will be retained wherever possible. Any native trees removed during construction will be replaced at a 2:1 ratio. Replacement trees will be located adjacent to the trailhead.
- Wetland setbacks will be maintained per agency requirements. Any reduction in wetland setbacks will be reviewed and approved by the appropriate agency before any changes are implemented.
- Botanically sensitive areas will be marked to discourage damage and educate visitors.
- The city's leash law will assist in limiting disturbance by dogs along the trail.
- The post and chain fencing currently in use along other bike/pedestrian paths will be used as fencing in all sensitive areas to prevent access and maintain aesthetics.

Notwithstanding the above-listed mitigation measures having been incorporated into the proposed project, the Commission has further conditioned the permit to ensure that all potentially significant adverse impacts to environmentally sensitive habitat areas are minimized: Special Condition No. 1 requires the applicant to submit, for the review and approval of the Executive Director, a final wetlands mitigation and monitoring plan that provides for the establishment of palustrine emergent persistent wetlands / Northern coastal scrub – willow series habitat at a 2:1 replacement to compensate for the direct spatial and indirect temporal loss of wetlands to be filled for the trail's construction. Given the relatively small area affected, its location on the upland edge of the subject wetland ESHA, the relatively fast-growing nature of willows, and the lack of multi-stratum complexity of the resource area involved, the Commission finds the required mitigation at a 2:1 replacement ratio will be sufficient to mitigate for the filling.

Furthermore Special Condition No. 5 requires the applicant to develop the project in strict conformance to the application, as may be modified by any special conditions, including the inclusion of the above-described mitigation measures regarding trailside revegetation of any native trees removed during construction, constructive noticing of the environmental sensitivity of the project area through erection of appropriate signage, and the placement of barriers around the trail, vista point, and support facility perimeters. As conditioned, the project will minimize adverse environmental effects on emergent estuarine and palustrine emergent persistent / Northern coastal scrub- willow series wetlands along Elk Creek.

b. Impacts to Estuarine Water Quality and Aquatic Habitat

Construction activities in and adjacent to the creek and harbor could result in degradation of water quality through the entry of soil materials either directly or entrained in runoff passing over ground disturbed areas. To prevent sediment and other discharge from upland sources into Elk Creek and the Crescent City Harbor, the applicant proposes the following mitigation measures:

- Protective measures will be put into place during construction to prevent or minimize wetland contamination due to in-fill material, pedestrian and vehicle traffic, disturbance of wetland vegetation and/or runoff of pollutants.
- Silt fences or barriers will be used to retain disturbed soils and prevent soils from entering Elk Creek. The fences or barriers will remain in place until ground cover vegetation is completely reestablished.
- Bridge construction will be done during the dry season (April-October) to allow for better erosion control. Equipment staging area will be on the south side of Elk Creek on a paved or hardened surface.
- Equipment refueling will be done only in upland areas. Equipment will be properly maintained and reasonably clean of grease and oil prior to entering construction area.
- Hazardous materials spill abatement equipment will be kept on site at all times.
- A storm water retention pond will be located between the trailhead parking lot and Highway 101 to serve the parking lot and Sunset Circle, if needed. The approximate size of the pond will be 30 feet x 100 feet with the final size determined after the site is completely surveyed.

The Commission has further conditioned the permit to ensure that all potentially significant adverse impacts to coastal water quality are minimized: Special Condition No. 2 requires the applicant, prior to permit issuance, to submit, for the Executive Director's review and approval, an erosion and runoff control plan that includes certain specified water quality best management practices for minimizing impacts to coastal waters associated with the filling and construction activities to be conducted in proximity to Elk Creek and the Crescent City Harbor. As the water quality measures proposed by the applicant were quite vague and lacked specificity as to the locations and types of measures to be employed, development of a formal erosion and runoff control plan is necessary to address those deficiencies.

c) Introduction of Exotic Invasive Plants

The use of non-invasive plant species adjacent to environmentally sensitive habitat areas (ESHAs) is critical to protecting such areas from disturbance. If invasive species are planted adjacent to an ESHA they can displace native species and alter the composition, function, and biological productivity of the ESHA.

The project generally identifies the planting of native tree species to mitigate for the loss of any trees removed during project construction and that, "where possible, invasive

exotic species of vegetation will be removed.” However, the proposed project does not further specify the source or composition of the replacement native trees nor precludes the planting of other plant species beyond those identified in the permit application.

To assure that the biological integrity of the project area is maintained, the Commission attaches Special Condition No. 4. Special Condition No. 4 requires that for all project restoration and mitigation sites only native species appropriate to the site be used. Plantings derived from local genetic stocks are to be used when available. For decorative landscaping within the parking lot access support facility, use of exotic invasive species are prohibited. Special Condition No. 4 also specifically prohibits the planting of any 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. Furthermore, no plant species listed as a ‘noxious weed’ by the governments of the State of California or the United States are to be utilized in project revegetation and landscaping areas.

d) Use of Anticoagulant-based Rodenticides

To help in the establishment of vegetation, rodenticides are sometimes used to prevent rats, moles, voles, and other similar small animals from eating the newly planted saplings. 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 areas. As the target species are preyed upon by raptors or other environmentally sensitive predators and scavengers, these compounds can bioaccumulate in the animals that have consumed the rodents to concentrations toxic to the ingesting non-target species.

To avoid this potential cumulative impact to environmentally sensitive wildlife species, Special Condition No. 4 contains a prohibition on the use of such anticoagulant-based rodenticides.

e) Mitigation Conclusion

Therefore as proposed and further conditioned as described above, the Commission finds that feasible mitigation is included within the project design to minimize all significant adverse impacts associated with the proposed filling of coastal waters.

4. Maintenance and Enhancement of Marine Habitat Values

The fourth general limitation set by Section 30233 and 30231 is that any proposed filling in tidal waters or submerged land must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

As discussed above, the project will not have significant adverse impacts on the estuarine marine resources of lower Elk Creek and Crescent City Harbor. The mitigation measures incorporated into the project and required by the Special Conditions discussed above will ensure that the construction of the trail and access support facilities and other related improvements would not significantly adversely affect the biological productivity and functional capacity of the tidal waters or marine resources. Furthermore, by aiding the re-establishment of emergent salt-tolerant vegetation through construction of a 3,000 square-foot detention basin in a filled and reclaimed portion of the highway right-of-way, the project will both serve to increase the amount of emergent vegetated areas fringing the harbor and creek, as well as help prevent these waterbodies from being further degraded. Therefore, the Commission finds that the project, as proposed, will maintain and enhance the biological productivity and functional capacity of the habitat consistent with the requirements of Section 30233 and 30231 of the Coastal Act.

5. Conclusion

The wetland fill associated with the project is for one of the allowable uses enumerated in Coastal Act at Section 30233(a)(7). Furthermore, the applicant has documented that there are no other less damaging alternatives available to further reduce or avoid the subject filling of wetlands. Moreover, as proposed and augmented by the attachment of additional special conditions to the permit's approval, all feasible mitigation measures have been provided to minimize the environmental impacts of the project and maintain and enhance the biological productivity and quality of coastal waters. Therefore, the Commission finds the project to be consistent with Sections 30230, 30231, and 30233(a) of the Coastal Act.

C. Protection of Environmentally Sensitive Riparian Habitat Areas.

Section 30240 of the Coastal Act states:

- (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.*

Coastal Act Section 30107.7 defines "environmentally sensitive area as meaning:

...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.

Section 30240 of the Coastal Act states that development in areas adjacent to environmentally sensitive habitat 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 areas.

A Biological Constraints Analysis and Wetland Delineation performed by Mad River Biologists in 2003 found that the proposed development would be situated adjacent to several distinct coastal wetlands and rare plant environmentally sensitive habitat areas. In addition, the report noted the presence of two special status plants in the project area: Wolf's evening primrose (*Oenothera wolffii*) and Beach pea (*Lathyrus japonicus*), species that appear on the California Native Plants Society's List 1B and List 2⁷, respectively. However, these rare plant outcroppings are not within the immediate area where the trail and support facilities construction would be performed and care would be taken in the staging of equipment and materials to avoid impacts to these distinct and readily-identifiable rare plants.

Also noted in the report were three California or Federal listed species of birds: brown pelican (*Pelecanus occidentalis*), bald eagle (*Haliaeetus leucocephalus*), and peregrine falcon (*Falco peregrinus*), and fifteen other avian species on the California Species of Special Concern list occurring in the vicinity of the project site. In addition, the Northern Red-legged Frog (*Rana aurora aurora*), a California Species of Special Concern, is likely to occur in the vicinity of the project area. The report concluded that damage to sensitive species will be avoided or mitigated by directing pedestrian trails away from sensitive habitat areas to the greatest extent feasible and by providing fencing to prevent access. Native riparian vegetation should also be preserved and encouraged to expand in the project area to benefit native wildlife.

- Undesired ornamental cultivars and/or hybrids of evening primrose will be removed as possible during construction and after a sufficient growing cycle has occurred to allow for plant identification.

⁷ Pursuant to the Native Plant Protection Act (NPPA) and the California Endangered Species Act (CESA), plants appearing on the California Native Plant Society's "List 1B" and "List 2" meet the definition as species eligible for state listing as a rare, threatened, or endangered plant. List 1B plants are defined as "rare plant species vulnerable under present circumstances or to have a high potential for becoming so because of its limited or vulnerable habitat, its low numbers of individuals per population (even though they may be wide ranging), or its limited number of populations." List 2 plants are defined as "plants rare, threatened, or endangered in California, but more common elsewhere." The NPPA mandates that plants so listed be considered in the preparation of all environmental analyses conducted pursuant to the California Environmental Quality Act (CEQA).

- The post and chain fencing currently in use along other bike/pedestrian paths will be used as fencing in all sensitive areas to prevent access and maintain aesthetics.
- Botanically sensitive areas will be marked to discourage damage and educate visitors.
- Wetland setbacks will be maintained per agency requirements. Any reduction in wetland setbacks will be reviewed and approved by the appropriate agency before any changes are implemented.
- Protective measures will be put into place during construction to prevent or minimize wetland contamination due to in-fill material, pedestrian and vehicle traffic, disturbance of wetland vegetation and/or runoff of pollutants.
- Existing native trees will be retained wherever possible. Any native trees removed during construction will be replaced at a 2:1 ratio. Replacement trees will be located adjacent to the trailhead.
- Where possible, invasive exotic species of vegetation will be removed.
- The city's leash law will assist in limiting disturbance by dogs along the trail.

The Commission thus finds that the environmentally sensitive habitat areas adjacent to the development would be protected against any significant disruption of habitat values, and only uses dependent on those resources would be developed within those areas. In addition, the proposed access facilities improvements and their associated construction staging areas, and offsite road and drainage improvements have been sited and designed to prevent impacts that would significantly degrade environmentally sensitive areas, and would be compatible with the continuance of those habitat and recreation areas. Therefore, the Commission finds that the proposed development, as proposed and conditioned, is consistent with Section 30240 of the Coastal Act.

D. Public Access and Coastal Recreational Opportunities.

1. Applicable Coastal Act Policies and Standards

Coastal Act Sections 30210, 30211, and 30212 require the provision of maximum public access opportunities, with limited exceptions.

Coastal Act Section 30210 requires in applicable part that maximum public access and recreational opportunities be provided when consistent with public safety, private property rights, and natural resource protection. Section 30211 requires in applicable part that development not interfere with the public's right of access to the sea where acquired through use (i.e., potential prescriptive rights or rights of implied dedication). Section 30212 requires in applicable part that public access from the nearest public roadway to the shoreline and along the coast be provided in new development projects, except in certain instances, such as when adequate access exists nearby or when the provision of public access would be inconsistent with public safety.

In applying Sections 30210, 30211 and 30212, the Commission is 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 public access.

In addition Coastal Sections 30220 through 30224 direct that suitable oceanfront private and public lands be reserved, protected, and prioritized for recreational oriented development in the interest of fostering recreational opportunities and other coastal-dependent uses.

2. Consistency Analysis

Primary objectives of the development are to provide enhancements to public coastal access, recreational, and nature study opportunities in the Crescent City Area. The project's construction is specifically recommended as a priority implementation measure for completion of the California Coastal Trail, as set forth in the Coastal Conservancy's "SB 908 Report."⁸ In addition to serving as a coastal recreational access facility, the development would also serve to further regional non-vehicular transportation plan goals providing separate trail and path facilities parallel to Highway 101 for pedestrian and bike traffic traveling in the urbanized Crescent City area. With regard to coastal recreational opportunities, the project would increase public recreational land by 1.16 acres, favorably affecting the current *per capita* ratio of 48 acres of park per 1,000 people within the Crescent City municipality.

Thus, the development would establish new public beach access facilities and foster expanded use of existing recreational amenities. Therefore, the Commission finds that the proposed project as conditioned, which includes substantial new public access facilities, is consistent with the public access and coastal recreation policies of the Coastal Act.

E. Natural and Man-Made Hazards Avoidance and Minimization.

1. Applicable Coastal Act Policies and Standards

The Coastal Act contains policies to assure that new development provides structural integrity, minimizes risks to life and property in areas of high geologic and flood hazard, and does not create or contribute to erosion. Section 30253 of the Coastal Act states in applicable part:

New development shall:

⁸ *Completing the California Coastal Trail*, Coastal Conservancy, January 2003

- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. (Emphases added.)

2. Consistency Analysis

The project entails development in an area subject to significant exposure to geologic and flood hazards. In April 2006, a preliminary geotechnical evaluation was prepared for the project, focusing on construction of the bridge crossing of Elk Creek. The subsequent report (LACO Associates, May 8, 2006) reviewed the stability of the proposed bridge crossing area and identified a series of geologic hazards that could potentially affect the project site, including: (1) tsunami inundation; (2) strong earthquake shaking; (3) liquefaction; (4) fluvial erosion; and (5) flooding (see Exhibit No. 9).

With respect to the various seismic hazards, although no active faults are identified within the immediate project area and no significant earthquake damage has been sustained in the community in the historic past, the threat of a strong seismic shaking, subsidence, or tsunami inundation could result from local or distant earthquake activity. Fortunately, the project site is located within the coverage area of the City's tsunami warning system which, in the event of such potentially dangerous events, would adequately alert trail users to evacuate the immediate harbor area. Moreover, the project only entails the construction of recreational trail and limited permanent structures in the form of the bridge and restrooms. The bridge has been designed to meet appropriate coastal flooding standards. The restroom will be pre-cast concrete, designed to meet requirements of California Building Code (CBC) Seismic Zone 4. With regard to seismic-related subsidence, based upon UBC Table 18-1-A criteria, the City Engineer has noted that there are no known expansive soils within the City area. Furthermore, there are no erosion or landslide issues at or around the relatively flat project site. As an alluvial coastal plain, much of the Crescent City area is subject to liquefaction during catastrophic seismic events however no record of liquefaction occurring during historic earthquake episodes has been identified in the project area.

As regards flood hazards, the report noted that the Federal Emergency Management Agency's Flood Insurance Rate Map (FEMA-FIRM) Community Panel No. 0600390001D, dated September 29, 1986, designates the bridge crossing locales as being within "Zone V15," corresponding to a design floodway with potential 100-year recurrence frequency inundation up to a 15-foot depth above sea level. The bridge has been designed to meet appropriate coastal flooding standards for non-critical/non-

residential structures taking into account the frequency and intensity of predicted flood risks.

The report went on to set forth several construction criteria and development recommendations for assuring the structure's long-term stability. Among these recommendations, are specific loading design and foot embedment standards for the bridges wing-wall abutments. The report concluded that provided the bridge was designed and constructed in accordance with this data and Chapter 16 of the 2001 edition of the CBC, seismic hazards in the form of exposure risks to human life and property at this site would be feasibly reduce if not completely eliminated.

Noting the shallow groundwater and poorly graded, cohesionless soils (i.e., sands and silts) underlying the project area, the report found these conditions to be conducive to liquefaction during a moderate to strong earthquake. Liquefaction of soils adjacent to or underlying the abutments could result in settlement or lateral movement of the structure. The report noted that numerous accounts of this type of deformation have been observed in the Crescent City area as a result of seismically-induced liquefaction. Mitigation of this hazard would require that the design and construction of the bridge include deep piers or piles to transfer loads to deeper/denser soils situated at depths of more than 20 feet below ground surface (bgs). Notwithstanding the poorly graded nature and persistent saturated condition of the sands underlying the site, the report concluded that the age and density of the sediments indicate a moderate to low potential for liquefaction to occur at this site, that such risks were structural in nature and generally not life-threatening, and therefore, the recommendation regard deep-set footings could be characterized as optional.

With regard to fluvial hazards, the report noted that the proposed locations for the bridge abutments are situated on the lateral margins of Elk Creek, and therefore would be subjected to erosive forces of flowing water. To prevent undercutting of the abutments by water flows the report recommended that the abutments be embedded at least five feet below the thalweg of Elk Creek.

With respect to the bearing strength of the underlying soils, the bridge abutment sites for the original 80-foot free span design consist of medium dense to dense sands with minor silty and gravely layers. The report recommended embedment into the native materials to approximately five feet below the active channel, corresponding to an estimated elevation of approximately three to five feet below mean sea level. An allowable bearing capacity of 1,500 pounds-per-square-foot (psf) for soils at the recommended bearing depth was assigned, with no further soil mechanics analyses being indicated.

In response to the redesign to a 110-foot bridge span, the foundation design recommendations were revisited by Stover Engineering, the project engineer. In a report supplement, the project engineer found that, based upon relocation 15 feet further outboard from the in-channel location of abutments for the original bridge design, site conditions for footings dramatically improve such that the embedment depth for footings

could be modified from a 20-foot depth to a three- to five-foot depth, provided the 1,500 psf loading standard was maintained (see Exhibit No. 9).

Finally, with regard to recommendations for reducing flood hazards, the LACO report noted that as the project site is located within a region that would be inundated by the 100-year flood, construction of the bridge span above the anticipated flood elevation to avoid damage from large floating debris that is often incorporated in floodwaters might be prudent. However, the consulting geologist noted that, in general, as flooding that would significantly jeopardize the structure was not anticipated, such a recommendation could be viewed as optional. Given the presence of a debris rack on the outfall of the highway culvert immediately adjacent to the bridge site, the relatively low probability of catastrophic flooding in the area, the non-residential type of structure involved, and the geologist's determination that flooding is not anticipated that would significantly jeopardize the structure, the Commission finds that the design of the bridge as currently proposed would minimize risks to life and property in areas of high flood hazard and would assure stability and structural integrity.

To ensure that all obligatory design features needed to reduce significant geologic and flood risks are incorporated into the development such that its structural stability and integrity are assured, the Commission attaches Special Condition No. 6. Special Condition No. 6 requires the applicant to incorporate the recommendations of the LACO geotechnical analysis, as modified for the revised bridge design by Stover Engineering, into the construction of the trail bridge crossing of Elk Creek and submit evidence, for the review and approval of the Executive Director, that a professional engineer has approved the construction plans and verified incorporation of the reports' recommendations.

Additionally, the Commission attaches Special Condition No. 7, which requires the landowner to assume the risks of flooding and geologic hazards to the property and waive any claim of liability on the part of the Commission. Given that the applicant has chosen to implement the project despite flooding and geologic risks, the applicant must assume the risks. Special Condition No. 7 notifies the applicant that the Commission is not liable for damage as a result of approving the permit for development. The condition also requires the applicant to indemnify the Commission in the event that third parties bring an action against the Commission as a result of the failure of the development to withstand the hazards. Special Condition No. 14 requires the applicant to record a deed restriction imposing all conditions of the permit as covenants, conditions and restrictions on the use and enjoyment of the property in the event the property is ever proposed to be conveyed to another party. Recordation of such a deed would ensure that future owners of the property will be informed of the risks and the Commission's immunity from liability. As conditioned, the Commission finds the proposed project is consistent with Section 30253 of the Coastal Act.

F. Visual Resources.

1. Applicable Coastal Act Policies and Standards

Coastal Act Section 30251 requires permitted development to be designed and sited to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, and to be visually compatible with the character of surrounding areas.

2. Consistency Analysis

The project site is located near the shoreline of Lower Elk Creek / inner Crescent City Harbor. The area setting is that of a mixture of public parklands, resource area open space, visitor-serving and commercial-recreational uses, coastal-dependent / coastal-related industrial uses, and public facilities (harbor marina and small boat basin) situated on an embayment surrounded by a coastal plain of low topographic relief. The project site is visible from several public recreational areas and roads, including the Beach Front Park, from the harbor shoreline trails, and from portions of southbound Highway 101, Sunset Drive, RV Park Road and Huston Street. In addition, distant views of the site are afforded from the waters of the harbor. The City of Crescent City LCP does not designate the project area as “highly scenic.”

The project components that affect coastal visual resources relate to the cumulative effects the proposed above-grade site improvements would have on the character of these visual resources. During the last several decades, following from the disastrous March 28, 1964 Crescent City Tsunami, numerous buildings have been constructed on the City’s southeastern harbor frontage, resulting in an eclectic assortment of civic and commercial-industrial use structures. As site development has occurred, harbor viewing corridors between the buildings have been replaced by building facades. Over time, the visual setting of the project area has changed, becoming more urbanized in appearance.

The elevation of the road surface of adjacent Highway 101 is approximately twelve feet above sea level. The elevation of the bridge surface will be at or below the road surface. The road bridge railing is approximately fifteen feet above sea level. The highest point on the pedestrian bridge will be approximately 17 feet above sea level. The bridge selection criteria has specified the need to maintain a low structural profile and open character for the bridge span to prevent obstruction of views. Accordingly, the path/bikeway railing has been limited to four feet, the minimum necessary for such Class I facilities and an open braced design has been selected. To further assure the protection of coastal views in the bridge crossing area, the Commission attaches Special Condition No. 8. Special Condition No. 8 sets limitations on the design and height of the bridge railing indicated by the applicant’s bridge selection criteria so that the blocking of views from Highway 101 are minimized.

To ensure that the appearance of the new access vehicular parking lot support facilities are compatible with the visual character of the entire surrounding area, including these open space areas, the applicant has included landscaping within the project description (see Exhibit No. 6). The site plan depicts numerous trees, shrubs and groundcovers to be planted within the parking lot facility and along the path/bikeway, and within the bio-filtration swale/detention basin. Low-energy, shielded lights are also proposed to be used in the parking lot area. Other than specifying the use of native plants and low-level lighting, no details were provided as to the particular species to be planted, or whether any irrigation systems for watering the trees and shrubs, or any other landscaping fixtures might also be installed, or the specific types and locations of site illumination to be installed.

The Commission finds that the proposed landscaping will provide a vegetative buffer between the project site improvements and public coastal viewing areas that will effectively screen the proposed coastal access vehicular parking support facilities. In addition, the use of native landscaping would be consistent with the surrounding areas, provided they are comprised of native plant species found in the immediate vicinity.

To ensure biological compatibility and the successful establishment and ongoing viability of the proposed vegetated visual screening, the Commission attaches Special Condition No. 4 requiring approval of a final landscaping plan addressing provisions for their maintenance, irrigation, replacement, and upkeep.

In addition, to ensure that the sundry amenities are not incompatible with the character of the surrounding area, the Commission includes within the criteria of Special Condition No. 8 requirements that the applicant, prior to permit issuance, submit, for the review and approval of the Executive Director, a lighting, signage, fencing, barriers, and seating plan detailing the physical appearance for these proposed improvements subject to specified design limitations and materials criteria.

The Commission thus finds that, as conditioned, the proposed project will: (a) include adequate measures to insure that the scenic and visual qualities of coastal areas are considered and protected; (b) insure that permitted development is sited and designed to protect views to and along the ocean and scenic coastal areas; and (c) minimize the alteration of natural land forms.

G. State Waters.

The project site entails areas which were submerged, intertidal and/or overflow lands at the time of California's statehood in 1850. Notwithstanding that most of the site is currently not subject to tidal inundation, the site remains subject to public trust review by the State Lands Commission. To assure that no aspect of the project would be inconsistent with the public trust limitations as may continue to be applied to the site, the Commission attaches Special Condition No. 9. Special Condition No. 9 requires the

applicant, prior to issuance of the permit to submit for the review and approval of the Executive Director, evidence that the State Lands Commission has reviewed the approved development proposal and determined what is any permits or other grants of authority may be required before the project work may commence.

H. Other Agency Approvals.

The project requires discretionary approval of a design review by the City of Crescent City. As the project entails work within the stream banks of Elk Creek, a “blue-line” watercourse, pursuant to Section 1600 et seq. of the California Fish and Game Code, execution of a streambed alteration agreement within the California Department of Fish and Game is also required. As the project entails work within the right-of-way of Highway 101, an encroachment permit must be secured from the California Department of Transportation (CDOT). Additionally, portions of the proposed project also require review and authorization by the U.S. Army Corps of Engineers. Pursuant to the Federal Coastal Zone Management Act, any permit issued by a federal agency for activities that affect the coastal zone must be consistent with the coastal zone management program for that state. Under agreements between the Coastal Commission and the U.S. Army Corps of Engineers, the Corps will not issue a permit until the Coastal Commission approves a federal consistency certification for the project or approves a permit. To ensure that the project ultimately approved by the City, CDFG, CDOT, and the Corps is the same as the project authorized herein, the Commission attaches Special Condition Nos. 10, 11, 12 and 13, which require the City to submit to the Executive Director evidence of these agencies’ approval of the project prior to the issuance of the permit and prior to the commencement of construction, respectively. The conditions require that any project changes resulting from these other agency approvals not be incorporated into the project until the applicant obtains any necessary amendments to this coastal development permit.

I. California Environmental Quality Act.

Section 13906 of the Commission’s administrative regulation requires Coastal Commission approval of Coastal Development Permit applications to be supported by a finding showing the application, as modified by any conditions of approval, is consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are any feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. Those findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As discussed above, the proposed project has been conditioned to be consistent with the policies of the Coastal Act. As specifically

discussed in these above findings, which are hereby incorporated by reference, mitigation measures that will minimize or avoid all significant adverse environmental impacts have been required. As conditioned, there are no other feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impacts, which the activity may have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act and to conform to CEQA.

EXHIBITS:

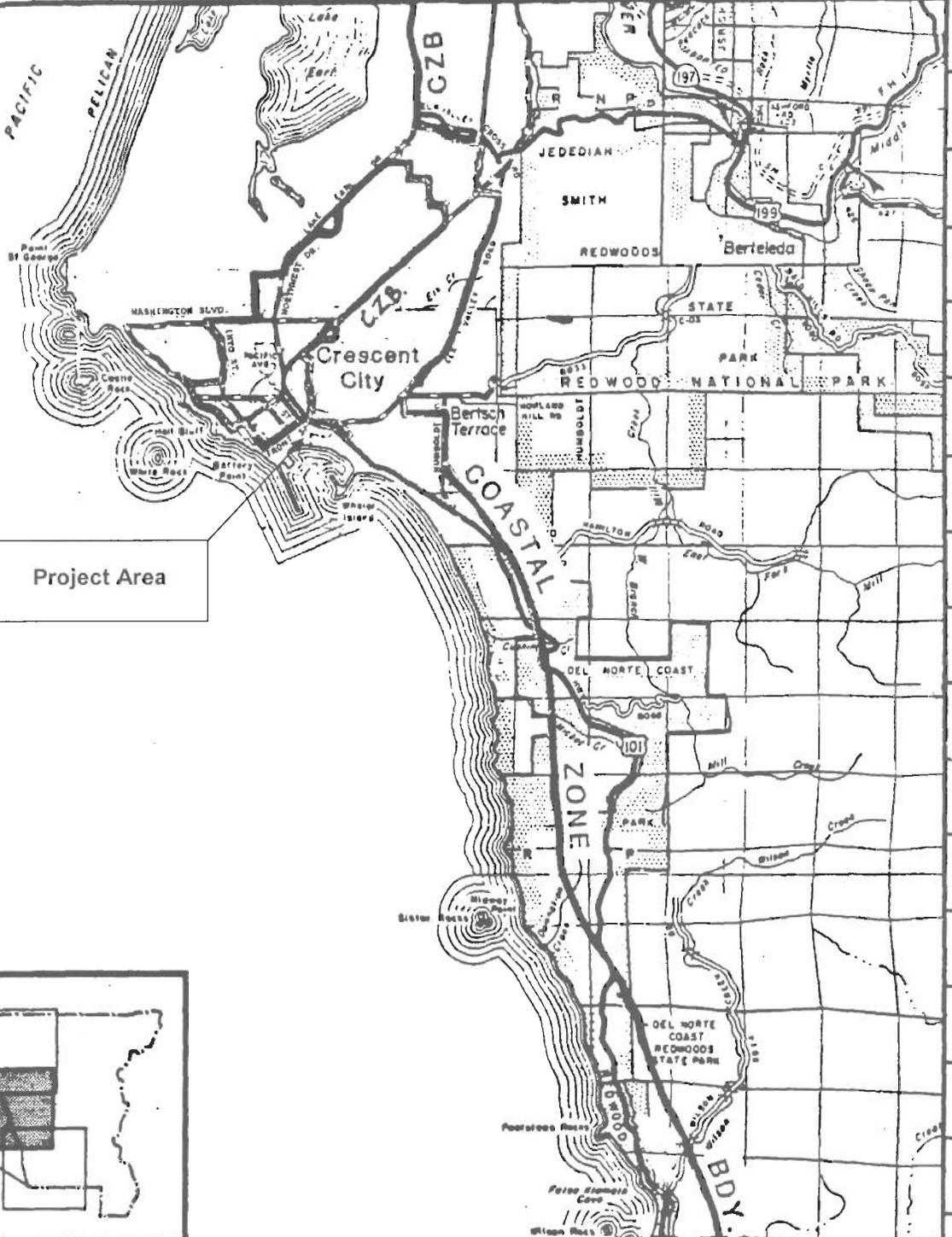
1. Regional Location Map
2. Vicinity Map
3. Site Aerial Photograph - Plan View
4. Site Aerial Photograph – Oblique View
5. *Coastwalk* California Coastal Trail – “Del Norte Co. Section 9” Map
6. Project Site Plans
7. Excerpts, Biological Constraints Analysis and Wetland Delineation
8. Excerpts, CDOT Highway Design and Traffic Manuals Standards
9. Geotechnical Evaluations
10. Excerpts, *Crescent City Harbor Trail Plan*

APPENDIX A

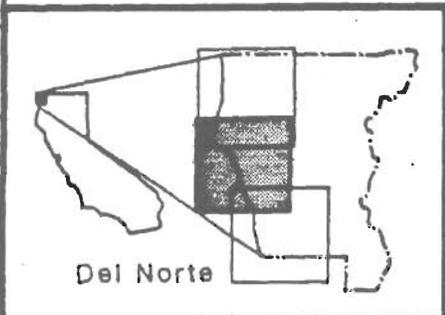
STANDARD CONDITIONS

1. Notice of Receipt and Acknowledgement. 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 amount 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 of 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.

A B C D E F G H I J K L M N O



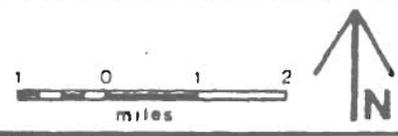
Project Area



Del Norte



LOCATION MAP



County of Del Norte

EXHIBIT NO. 1
APPLICATION NO.
 1-07-005
 CITY OF CRESCENT CITY
 REGIONAL LOCATION MAP

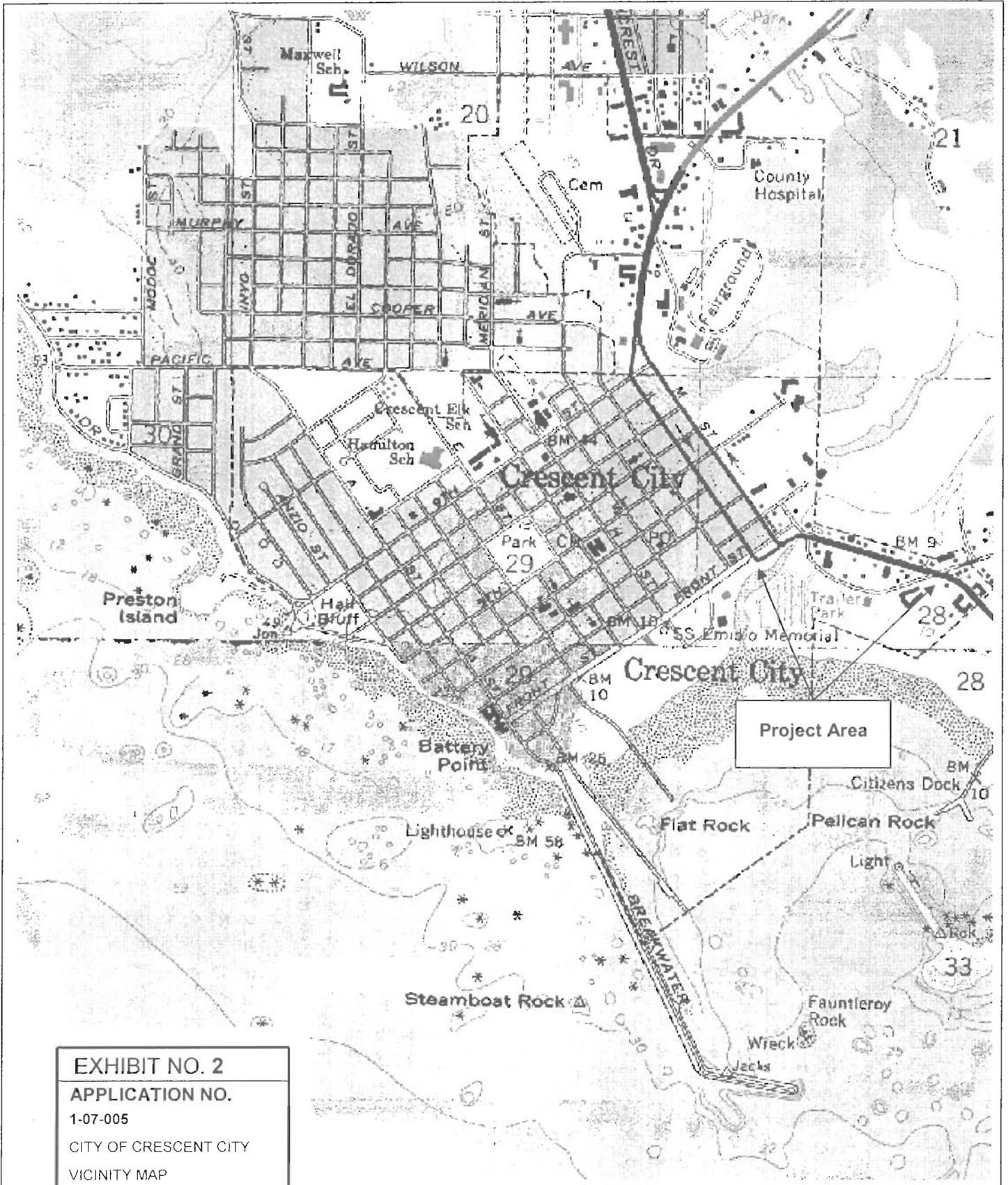


EXHIBIT NO. 2
APPLICATION NO.
 1-07-005
 CITY OF CRESCENT CITY
 VICINITY MAP



Project Area

EXHIBIT NO. 3
APPLICATION NO.
1-07-005
CITY OF CRESCENT CITY
SITE AERIAL PHOTOGRAPH
- PLAN VIEW

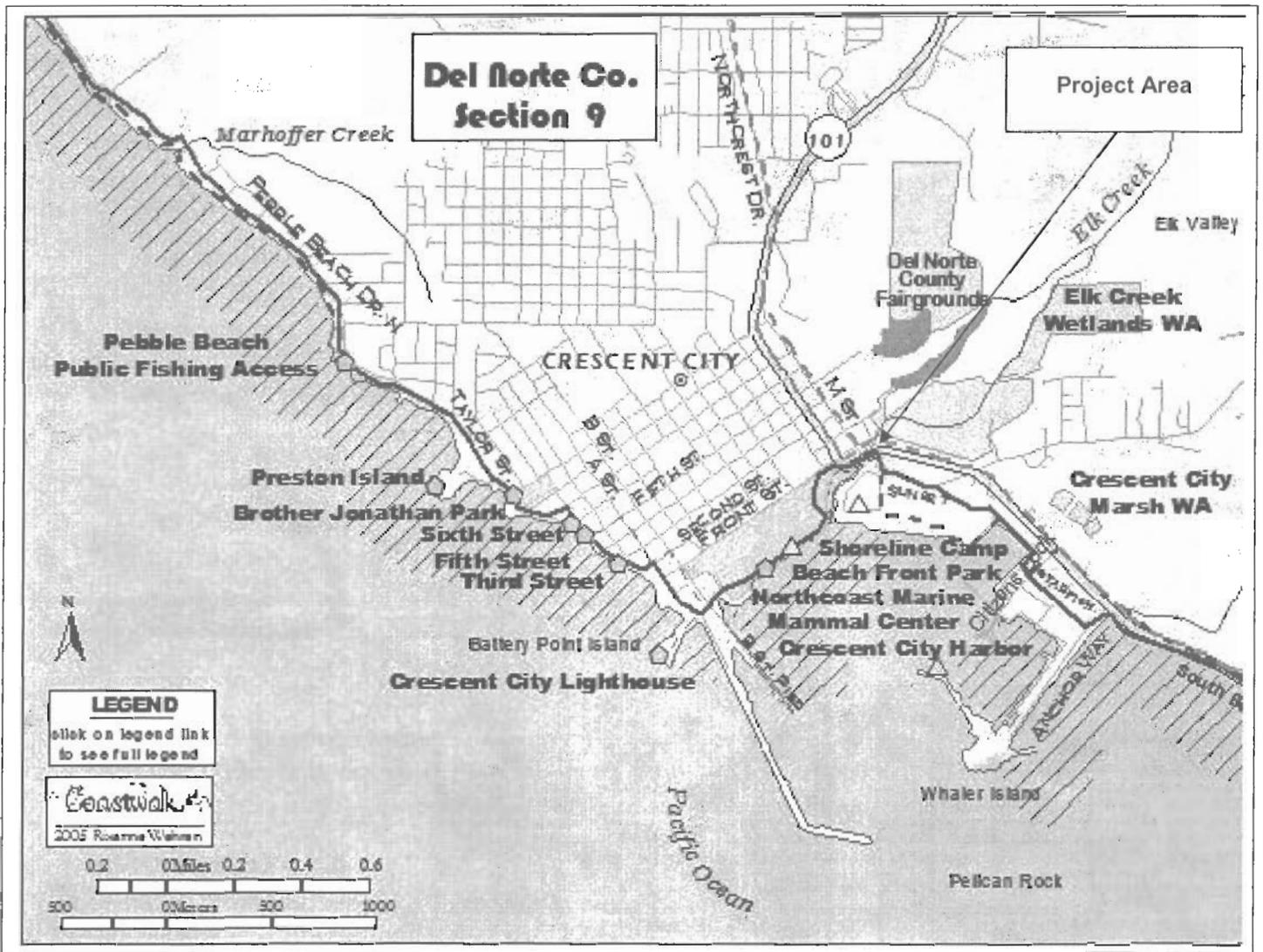


Project Area

EXHIBIT NO. 4
APPLICATION NO.
1-07-005
CITY OF CRESCENT CITY
SITE AERIAL PHOTOGRAPH
- OBLIQUE VIEW

rielle Adelman, California Coastal Records Project, www.californiacoastline.org

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SECTION LEGEND

- California Coastal Trail
- CA Pacific Bike Route
- Coastal Commission access points
- Access point
- Access point w/ campground
- Local landmarks
- Towns
- Cities
- Trail information points
- Streams
- County boundary
- Roads
- Freeways
- State and County Highways
- Local roads
- City streets
- Conservation lands
- Federal
- State
- Local
- Tribes/ NGO/ other
- Lakes
- Ocean and coastline
- Accessible shoreline

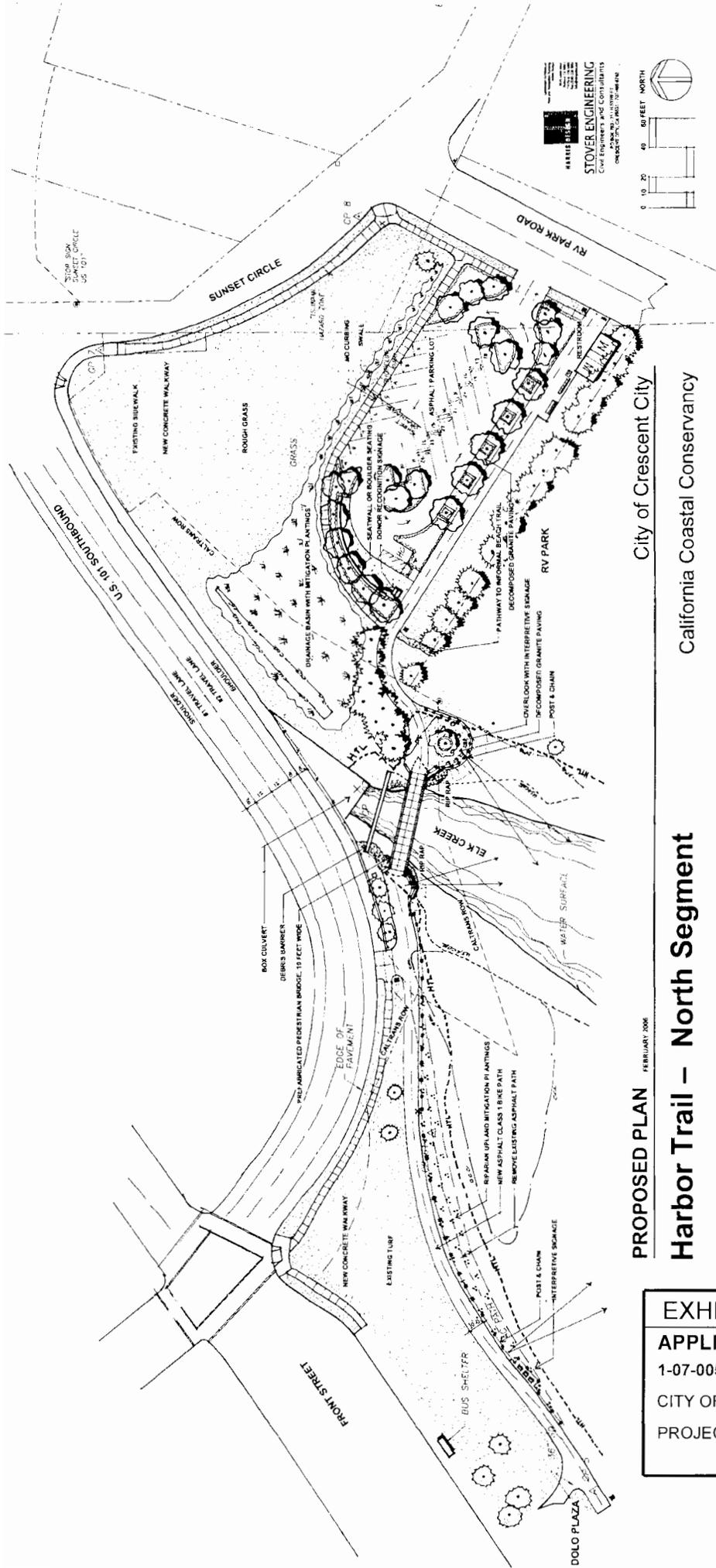
Coastwalk R. Wehr
UTM 10 & 11, NAD 83 Scale 1:30,000
All locations are approximate. These maps are not intended for navigation nor to indicate legally established property boundaries.

EXHIBIT NO. 5

APPLICATION NO.
1-07-005

CITY OF CRESCENT CITY

COASTWALK CALIFORNIA
COASTAL TRAIL - "DEL NORTE
CO. SECTION 9" MAP




STOVER ENGINEERING
 Civil Engineers and Consultants
 1000 S. 10th Street, Suite 100
 Crescent City, CA 95531
 (707) 428-1111
 www.stovereng.com

0 10 20 40 60 FEET NORTH


City of Crescent City

California Coastal Conservancy

PROPOSED PLAN FEBRUARY 2006

Harbor Trail – North Segment

<p>EXHIBIT NO. 6</p> <p>APPLICATION NO.</p> <p>1-07-005</p> <p>CITY OF CRESCENT CITY</p> <p>PROJECT SITE PLANS (1 of 4)</p>

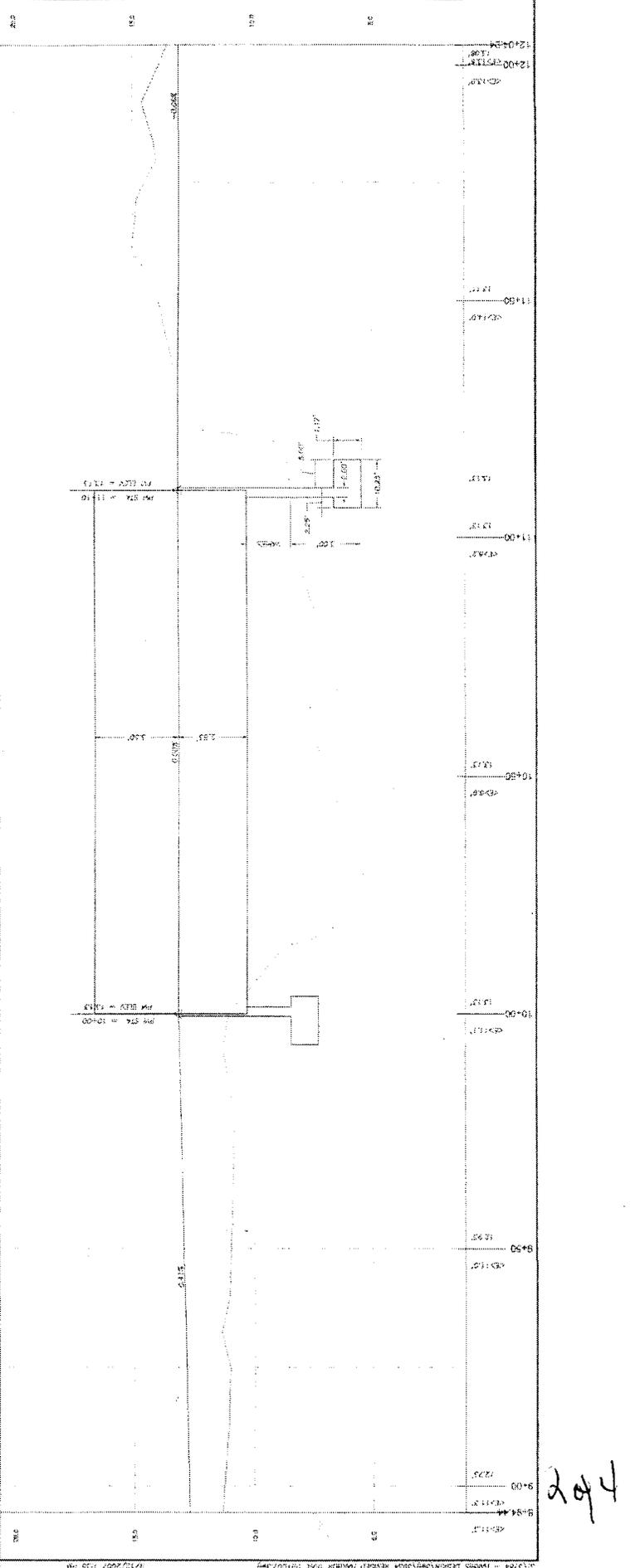
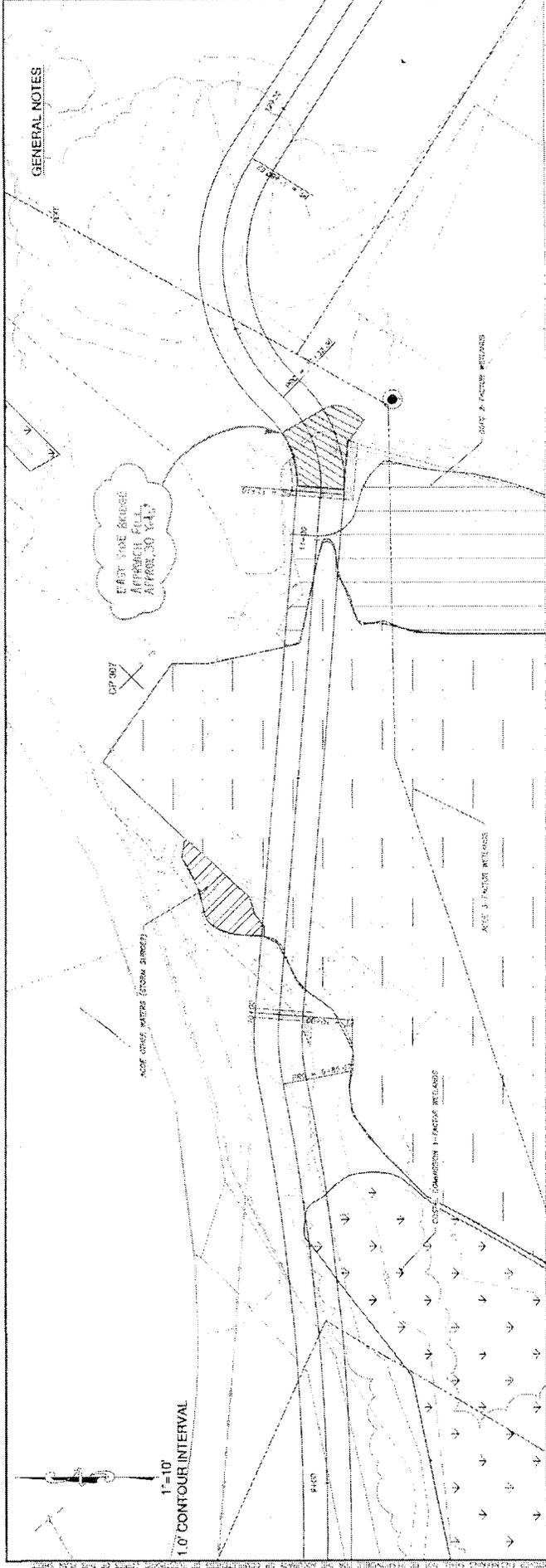
NO.	DATE	REVISION



STOVER ENGINEERING
Civil Engineers and Consultants
PO BOX 789 - 711 H STREET
CRESCENT CITY, CA 95531 - 707-465-8742

CITY OF CRESCENT CITY
HARBOR TRAIL PROJECT
CRESCENT CITY, CA
PEDESTRIAL BRIDGE PLAN

JOB NO. 3934
SCALE: H: 1"=50'
V: 1"=20'
DATE: 6/18/07
SHEET 1 OF 2



Handwritten signature or initials.

**CITY OF CRESCENT CITY
HARBOR TRAIL NORTH SEGMENT
MITIGATION MONITORING & REPORTING PROGRAM**

I. MITIGATION MEASURES, TIMING, AND RESPONSIBLE AGENCIES

MM #	MITIGATION MEASURE	TIMING	RESPONSIBLE AGENCY
IV. 1.	Undesired ornamental cultivars and/or hybrids of evening primrose will be removed as possible during construction and after a sufficient growing cycle has occurred to allow for plant identification.	During & post-construction	City of Crescent City Public Works, Planning Depts.
IV. 2.	The post and chain fencing currently in use along other bike/pedestrian paths will be used as fencing in all sensitive areas to prevent access and maintain aesthetics.	During construction	City of Crescent City Public Works Dept.
IV. 3.	Botanically sensitive areas will be marked to discourage damage and educate visitors.	During construction	City of Crescent City Public Works, Planning Depts.
IV. 4.	Wetland setbacks will be maintained per agency requirements. Any reduction in wetland setbacks will be reviewed and approved by the appropriate agency before any changes are implemented.	During construction	City of Crescent City Public Works, Planning Depts.
IV. 5.	Protective measures will be put into place during construction to prevent or minimize wetland contamination due to in-fill material, pedestrian and vehicle traffic, disturbance of wetland vegetation and/or runoff of pollutants.	During & post-construction	City of Crescent City Public Works, Planning Depts.
IV. 6.	Existing native trees will be retained wherever possible. Any native trees removed during construction will be replaced at a 2:1 ratio. Replacement trees will be located adjacent to the trailhead.	During & post-construction	City of Crescent City Public Works, Planning Depts.
IV. 7.	Where possible, invasive exotic species of vegetation will be removed.	During & post-construction	City of Crescent City Public Works Dept.
IV. 8.	The city's leash law will assist in limiting disturbance by dogs along the trail.	Post-construction	City of Crescent City Police Department
VIII. 1.	Silt fences or barriers will be used to retain disturbed soils and prevent soils from entering Elk Creek. The fences or barriers will remain in place until ground cover vegetation is completely re-established.	During & post-construction	City of Crescent City Public Works Dept.
VIII. 2.	Bridge construction will be done during the dry season (April-October) to allow for better erosion control.	During construction	City of Crescent City Public Works Dept.
VIII. 3.	Equipment staging area will be on the south side of Elk Creek on a paved or hardened surface.	During construction	City of Crescent City Public Works Dept.
VIII. 4.	Equipment refueling will be done only in upland areas. Equipment will be	During construction	City of Crescent City

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MM #	MITIGATION MEASURE	TIMING	RESPONSIBLE AGENCY
	properly maintained and reasonably clean of grease and oil prior to entering construction area. Hazardous materials spill response equipment will be kept on site at all times.		Public Works Dept.
VIII. 5.	A storm water retention pond will be located between the trailhead parking lot and Highway 101 to serve the parking lot and Sunset Circle, if needed. The approximate size of the pond will be 30 ft. x 100 ft., with the final size determined after the site is completely surveyed.	During construction	City of Crescent City Public Works Dept.
XIV. 1.	Any construction impacts not reduced to less-than-significant levels by other project mitigation measures or not anticipated will be mitigated by the use of appropriate Best Management Practices.	During construction	City of Crescent City Public Works Dept.
XV. 1.	Sunset Circle will be improved to a 24-32 foot wide street with curb, gutter and sidewalk on the northwest side and curb and gutter on the southeast side from the highway thru the new RV park access way.	During construction	City of Crescent City Public Works Dept.
XV. 2.	The RV park access will be realigned to one 40 foot paved entrance, with curbing, located south of the trail intersection.	During construction	City of Crescent City Public Works Dept.
XV. 3.	Sunset Circle will be posted as a "No Left Turn" intersection, directing parking lot exit and RV exits to the Highway 101/Huston / Elk Valley Road signalized intersection.	During construction	City of Crescent City Public Works Dept.

2. MITIGATION MEASURE MONITORING & REPORTING

Monitoring will be performed by City of Crescent City Planning and Public Works staff and will ensure implementation of the mitigation measures. Monitoring of each respective mitigation measure will be initiated according to the project phase listed in the table above under "Timing." Monitoring will consist of an initial compliance check as each mitigation measure is implemented, and will further include ongoing compliance checks as appropriate or necessary to ensure that the mitigation measures are successful. Respective staff noted under "Responsible Agency" above will document implementation of each mitigation measure and will provide a copy of such documentation to the City Planner for incorporation into a mitigation activity report. The City Planner will maintain the mitigation activity report in the project file, and will update the report to reflect the completion or modification of all mitigation measures. Upon project completion, the City Planner will provide a copy of the report to the approving body and agencies.



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Voice: 707/839-0900 • Fax: 707/839-0867 • www.madriverbio.com

Biological Constraints Analysis And Wetland Delineation

For City of Crescent City Harbor Trails Project

Submitted to: City of Crescent City
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Crescent City, CA 95531-4025
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Alice Berg, Fisheries Consultant
Email: aberg@cox.net

P.O. Box 8195
Eureka, CA 95502

Submitted: July 31, 2003

By: _____

A handwritten signature in black ink, appearing to be "AB", is written over a horizontal line.

EXHIBIT NO. 7

APPLICATION NO.

1-07-005

CITY OF CRESCENT CITY

EXCERPTS, BIOLOGICAL

CONSTRAINTS ANALYSIS &

WETLAND DELINEATION

(1 of 35)

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1.0 Summary

Between April and July 2003, Mad River Biologists and Alice and Berg and Associates conducted a wetland study and biological constraints analysis for the City of Crescent City Harbor Trail Project. The City of Crescent City (hereafter referred to as “the City”) is looking at the feasibility of developing a pedestrian and bike trail access system along the waterfront of Crescent City Harbor, which is described in Section 2.1 below. The project has been divided into eleven areas to identify proposed tasks and biological constraints. A summary of project locations and proposed actions is also presented in Section 2.1.

Field surveys were conducted concurrently for wetland delineations and rare plant surveys, and were seasonally appropriate for all potentially occurring rare plant species. Wetland delineations identified U.S. Army Corps of Engineers (ACOE) three-parameter wetlands, California Department of Fish and Game (CDFG) two-parameter wetlands, and Coastal Commission jurisdictional one-parameter wetlands. A summary of the delineation results is presented below. Floristic surveys located two special status plant species in the proposed project area. Wolf’s evening-primrose (*Oenothera wolfii*), a CNPS List 1B plant, was located in Areas 2, 5, and 11. Beach pea (*Lathyrus japonicus*), a CNPS List 2 plant, was located in Areas 2 and 5. Ornamental and hybrid evening-primrose plants were observed in Areas 3 and 6, and these plants should be removed in entirety to avoid genetic contamination with pure Wolf’s evening-primrose. Evening primrose plants located in Areas 7 and 9 could not be identified because they were mowed prior to consultation with USFWS. Refer to Section 4.3 for details.

Three species of California or Federal listed species of birds (Brown Pelican, Bald Eagle, and Peregrine Falcon) and fifteen birds on the California Species of Special Concern list occur in the near vicinity of the project site. In addition, the Northern Red-legged Frog, a California Species of Special Concern, is likely to occur in the vicinity of the project.

It is recommended that impacts to sensitive species, wetland areas, and environmentally sensitive habitat areas (ESHAs) be avoided wherever possible. This poses a challenge at some locations, particularly along the open beach areas, where pedestrian traffic already occurs. In wetland areas, buffers and setback areas should be consistent with agency recommendations in the appropriate general plan (setbacks from coastal wetland areas are typically 100 feet).

A summary of biological constraints analysis has been broken down by project area below.

Area Number	Biological Constraints
1	None.
2	<ul style="list-style-type: none"> • Estuarine Emergent Wetland along shore below levee for Elk Creek, near old interpretive sign by pedestrian trail • Palustrine Emergent Wetlands next to pedestrian trail (where willows are located), and along portions of northern bank of Elk Creek near proposed bridge abutment • Presence of Special status plant, beach pea (<i>Lathyrus japonicus</i>) southeast of pedestrian trail in open sand next to trail. • Presence of Special status plant, Wolf’s evening primrose (<i>Oenothera wolfii</i>) northeast of old interpretive sign, near levee for Elk Creek • Avoid impacts to beach pine (<i>Pinus contorta</i> ssp. <i>contorta</i>)

Area Number	Biological Constraints
3	<ul style="list-style-type: none"> • Avoid impacts to beach pine • Presence of ornamental and hybrid evening primrose strains that should be removed
4	<ul style="list-style-type: none"> • Palustrine Emergent Wetland along portions of southern bank of Elk Creek near proposed bridge abutment • Avoid impacts to beach pine
5	<ul style="list-style-type: none"> • Presence of 2 special status plants: Wolf's evening primrose (<i>Oenothera wolffii</i>) and beach pea in open sandy area east of berm
6	<ul style="list-style-type: none"> • Presence of degraded Palustrine Emergent Wetlands within project area (not delineated here due to change in project design) • Presence of ornamental and hybrid evening primrose strains that should be removed
7	<ul style="list-style-type: none"> • Presence of Palustrine Emergent Wetlands adjacent to dredge spoils area and extending northeast • Possible presence of special status plant, Wolf's evening primrose, and/ or possible ornamental & hybrid strains; need to halt mowing until flowers to i.d.
8	<ul style="list-style-type: none"> • None.
9	<ul style="list-style-type: none"> • Possible presence of special status plant, Wolf's evening primrose, or possible ornamental & hybrid strains; two individuals in actively mowed area; need to halt mowing until flowers to i.d.
10	None.
11	Presence of Special status plant, Wolf's evening primrose (<i>Oenothera wolffii</i>) on either side of vehicle access point, in open sand, and below railroad tie (on east side)

Areas with no biological constraints to development include the following:

- Area #1
- The open lawn in Area #2 along the north side of the pedestrian trail
- Area #3 (although removal of evening-primrose hybrids is encouraged, and removal of beach pine is discouraged)
- Area #8
- Area #9 (pending confirmation of i.d. of one evening-primrose plant)
- Area #10

2.0 Introduction

Mad River Biologists conducted a routine wetland delineation and biological constraints analysis for the City of Crescent City from April through June 2003, to identify site use restrictions in preparation of a proposed Harbor Trails development project. The project area occurs along the Crescent City Harbor from the Crescent City Visitor's Center, and extends south to Citizens Dock along Anchor

Way. The constraints analysis includes wetland delineations, rare plant surveys, and assessments of impacts to wildlife, fisheries, and botanical resources.

2.1 Proposed Action

In an effort to provide additional public coastal access, the City of Crescent City is proposing a Harbor Trails improvement and development project that will extend from the Visitor Center (located at the intersection of Front Street and L Street) and continue south past Citizen's Dock, to Anchor Way. The City intends to upgrade current portions of the pedestrian trail system by widening the pathway to accommodate bicycles and pedestrian traffic. As proposed, the trail will extend from the northwest boundary alongside Elk Creek, and include an access ramp from the top of the creek bank down to the beach. The City proposes to install a pedestrian access bridge across Elk Creek near Highway 101 that connects the current trail system and continues along a newly created trail area. The plan includes placing interpretive signs at key areas to guide individuals along the trail. The project has been divided into eleven project areas to target objectives specific to each location. These areas and proposed actions are summarized below in Table 1. A general illustration of project area locations is included as Figure 2.

Table 1. Summary of Proposed Activities in Crescent City Harbor Trails Project Area

Area Number	Location	Proposed Improvements
1	West bank of levee at creek near parking access:	Create stairs or ramp from trail to beach
2	Existing trail from dolo to Highway 101 bridge	Widen path to bridge, extend walkway from path to signal area at corner of Front Street & Highway 101
3	Elk Creek below Highway 101 and south side vacant land	Construct single span pedestrian/ bike bridge with potential trailhead/ parking on south side
4	South of creek along top of bank and bank/ beach	Create pedestrian access trail to beach.
5	SE end of RV Park driveway at transition to beach	Place pedestrian access signs/ pathway
6	Sunset Circle	Create bike lane or trail
7	Sunset Circle west to dredge spoils area, north of spoils access	Possible bike trail alternative
8	Vance Street and King Street Areas	Possible bike trail alternative
9	Harbor greenway adjacent to parking lot from King row to Citizens Dock Road.	Create bike trail
10	Northside Citizens Dock Road from Highway 101 to Starfish Way	Create bike trail
11	Harbor beach access north of big boat basin and south to sidewalk	Trailhead signage and pedestrian walkway to sidewalk area

2.2 Environmental Setting

The project area is located in Crescent City, in Del Norte County, California (T 16N, R 1W, sections 28 and 29 Humboldt Base & Meridian; Figure 1). The project area is bordered to the north and northeast by Highway 101, and to the south by Crescent City Harbor. The northwestern boundary occurs at Front Street, and the project area extends to the southeast to Anchor Way. Elk Creek drains into the ocean near the southwestern boundary.

Commercial development and roads surround the area, and vacant lots in the project area often show signs of past (greater than 5 years) fill activities that are likely related to adjacent land uses. Currently, a series of disjunct, paved and unpaved pedestrian and bike trail systems occur within the project area. In most areas, native plant species and community types are lacking due to past and current land use activities such as trail creation, past development, and lawn maintenance.

A plant species list compiled for the project area is included as Appendix B in this report. The identification of plant species is based on the current taxonomic treatment presented in *The Jepson Manual* (Hickman 1993). Published soil data was not available for the project area.

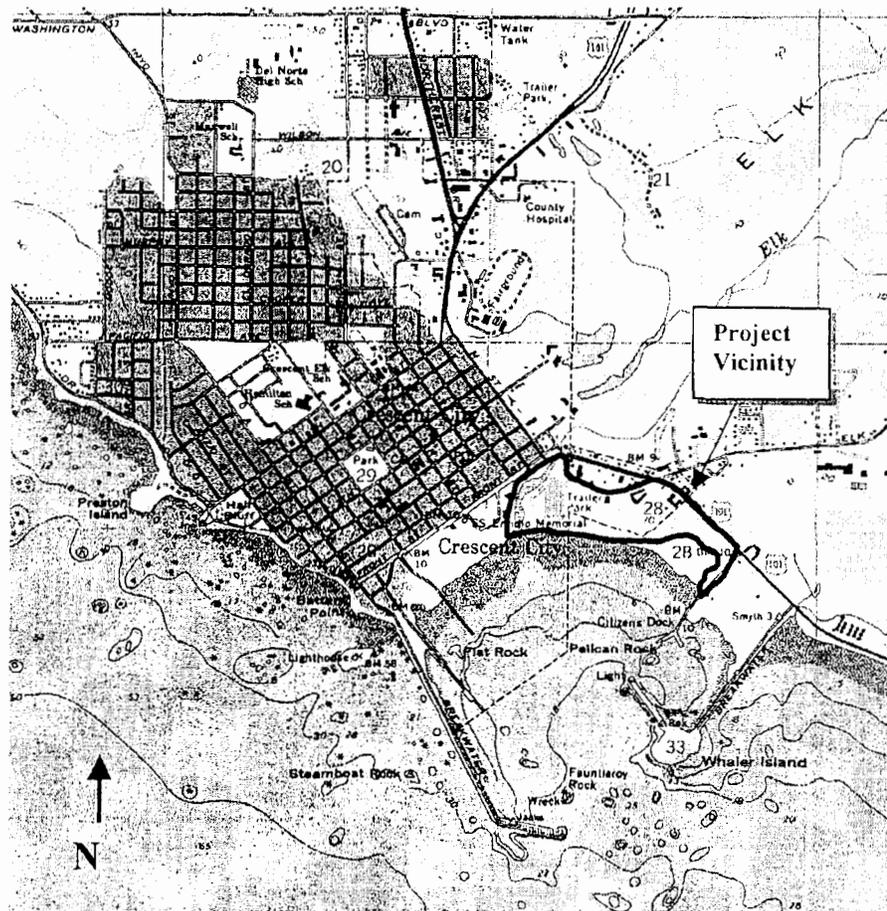


Figure 1. Harbor Trails Project Vicinity Map

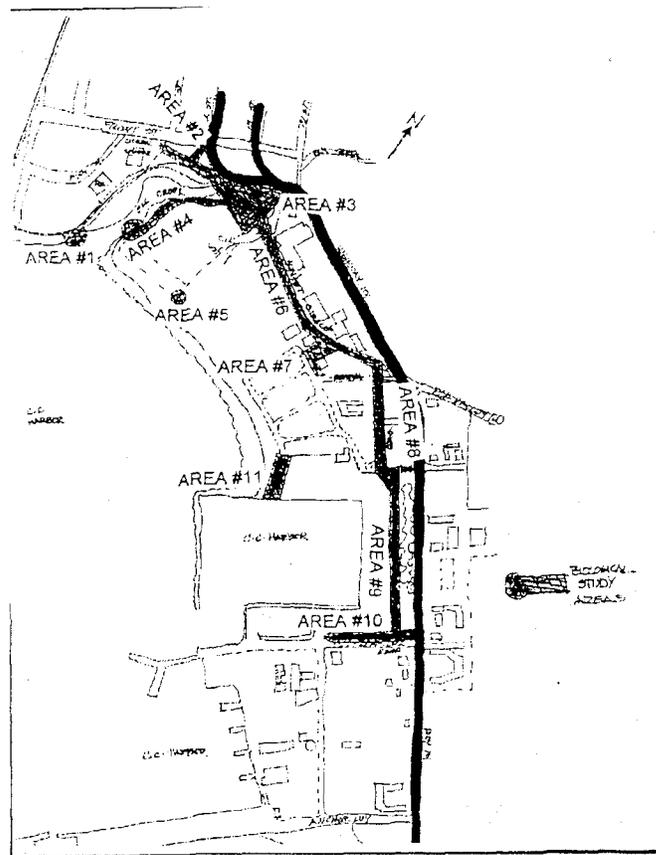


Figure 2. Harbor Trails Project Areas

Area #1 is located along the west bank of the levee at Elk Creek, at an elevation of fifteen feet. Large concrete blocks occur along both banks of the creek for bank stabilization against high storm events. Some fill extends into Area #1, where exotics such as hottentot fig (*Carpobrotus edulis*-NL), wild radish (*Raphanus sativus*-NL), common sowthistle (*Sonchus oleraceus*-NI*), wild oats (*Avena fatua*-NL), cheatgrass (*Bromus tectorum*-NL), and California fescue (*Festuca arundinacea*-FAC-) occur. The Visitor's Center is located north of Area #1 across an actively mowed lawn. A paved pedestrian and bike trail connects this area to Area #2. The trail is lined with beach pine (*Pinus contorta* ssp. *contorta*) and a few gum trees (*Eucalyptus* sp.).

Area #2 is bordered to the north by a large, actively mowed lawn next to a sidewalk that adjoins Highway 101. The levee of Elk Creek borders Area # 2 to the southeast, and is reduced between the old interpretive sign and an open sandy area near the creek outlet such that the beach is accessible from this stretch of area. Vehicles are occasionally driven across the lawn to access the beach in this area for driftwood collection. Open sand blows over a portion of the trail.

Mean higher high water (MHHW) data for the Elk Creek estuary is unavailable. However, evidence of driftwood lines suggests that the water has reached up to, and during storm events with high tides, over the banks of the channel. Anecdotal information indicates that on rare occasions (approximately once in ten years), a combination of high storms with 20-30 foot seas, 7-8 foot high tides, and an influx of woody debris in the channel have resulted in water and debris extending as far as the lawn near the cultural center, and the dolo near Front Street (pers. comm. James Waldvogel July 2003).

Saltgrass (*Distichlis spicata*-FACW), silverweed (*Potentilla anserina*-OBL), salt rush (*Juncus breweri*-FACW), and sand-dune sedge (*Carex pansa*-FACU) occur within the tidal shoreline of Area #2. This area occurs twenty feet from the current trail. The special-status plant Wolf's evening-primrose (NL) occurs along the bank near the old interpretive sign and continues sporadically in the open sand area. In the open sandy areas adjacent to the trail, another special status plant known as beach pea (*Lathyrus japonicus*-FACU+) occurs. A few planted beach pine occur along this trail in the mowed lawn area. A small patch of Arroyo willows (*Salix lasiolepis*-FACW) occur immediately southeast of the trail near the southeastern portion of Area #2.

Area #2 extends to the outlet of the creek, where access across the creek is currently limited to the sidewalk adjacent to the highway. Concrete fill serves as an abutment for a maintenance "bridge" across the creek. Exotics such as hottentot fig and wild radish have established around the fill. Outside the influence of fill and alongside the bank, silverweed, native dunegrass (*Leymus mollis*-NL), California aster (*Aster chilensis*-FAC), wild radish, and Arroyo willow saplings occur. Beach pine, common scouring rush (*Equisetum hyemale*-FACW), California bramble (*Rubus ursinus*-FACW*), sword fern (*Polystichum munitum*-NL), yellow bush lupine (*Lupinus arboreus*-NL), and orchard grass (*Dactylis glomerata*-FACU) occur along the northwestern abutment area.

Area #3 consists of a one-acre vacant lot with species such as little hop clover (*Trifolium dubium*-FACU), silky beach pea (*Lathyrus littoralis*-NL), salt rush, white clover (*Trifolium repens*-FACU+), and silver European hairgrass (*Aira caryophylla*-NL). Ornamental and hybrid evening-primrose plants occur extensively in the area nearest to Highway 101 in this lot. The City is considering the purchase of this parcel for use as a parking lot.

Area #4 borders the southern bank of Elk Creek. Alongside the eastern portion of the bank near the creek outlet, dominant species include dunegrass (NL), silverweed (OBL), salt rush (*Juncus breweri*-OBL), and creeping bent-grass (FACW). This area gradually transitions into open beach strand as it nears the mouth of Elk Creek estuary. A trailer/ R.V. park surrounds Area # 4 to the southeast. Hottentot fig and beach pine have been planted along the top of the bank extending into the edge of the trailer park.

Area #5 is located at the southeastern boundary of the trailer park, and consists of a small area of gravel driveway that connects to the open sandy beach. A concrete berm separates the driveway from the ocean and protects the RV park from extreme high tides. At the southern end, a gap in the berm provides beach access. The gravel driveway and berm are primarily vegetated with ruderal species such as sand-dune bluegrass (*Poa douglasii*-UPL), ripgut brome (NL), seaside plantain (*Plantago maritima*- FACW+), wild radish (NL), perennial ryegrass (*Lolium perenne*- NL), and orchard grass (*Dactylis glomerata*- NL). However, the special-status plant known as Wolf's evening primrose (*Oenothera wolfii*) was observed here (Refer to Section 4.3 for details). On the beach side of Area #5, the open sand supports European sea rocket (*Cakile maritima*-FACW), American sea rocket (*Cakile edentulata*- FACU), Arroyo willow (OBL), wild radish, native dunegrass (NL), and the two special status plants, Wolf's evening-primrose (NL) and beach pea (*Lathyrus japonicus*-FACU+). Refer to Section 4.3 for details.

Area #6 extends along the southwestern side of Sunset Circle to Huston Road. This area consists of an open field with predominantly disturbance-associated exotics such as little hop clover (FACU), bird's-foot trefoil (FAC), rough cat's-ear (*Hypochaeris radicata*- NL), wild radish (NL), common rush (OBL), sheep sorrel (FAC-), common yarrow (FACU), and ripgut brome (NL). Patches of degraded wetlands are interspersed in the area, especially near the eastern and western stretches of Area #6. These areas receive seasonal ponding: during a March 24, 2003 site visit (after a winter of consistent precipitation), much of this area demonstrated ponded and/ or saturated soils, which had dried up upon return in June. Ornamental evening-primrose and hybrids occur throughout this field as well. At the

southern portion of Area #6, a patch of willows (*Salix spp.*) occurs with slough sedge (*Carex obnupta*-OBL) near the junction of Sunset Circle and Huston Road. Willow saplings dot the field near the road where two storm drains are located at the junction.

Area #7 occurs between the antiques shop and the art studio located along Sunset Circle near its junction with Huston Street. It is bordered to the west by the levee and access road for the dredge spoils operation that is managed by the Harbor District. This open lot is predominantly comprised of rough cat's-ear (NL), English plantain (*Plantago lanceolata*-FAC-), white clover (FACU+), sweet vernal grass (FACU), scouring rush (FACW), pacific silverweed (OBL), and common rush (OBL). A substantial amount of possible Wolf's evening primrose also occurs here; although these were observed when in bloom, they were mowed prior to confirmation with the U.S. Fish and Wildlife (USFWS) Ecologist. A patch of willows occurs near the levee, and in this area scouring rush, common rush, and silverweed become more dominant. The willow thicket was previously mapped in 1991 by Karen Theiss and Associates. Upon return to the site in July, these willows had been cut down to ground level.

Area #8 includes an easement lot adjacent to and north of the Comfort Inn (formerly named Holiday Inn). This area is actively mowed, and is dominated by English plantain, red clover (*Trifolium sp.*), white clover, little hop clover, sweet vernal grass, and some field horsetail (*Equisetum arvense*- FAC). Field horsetail becomes more prevalent near the fenceline, as do scouring rush, sweet vernal grass, velvet grass, and a small willow (*Salix sp.*). This area continues along Vance Drive from the western border of the gravel driveway that bisects the area, and east to the field on the adjoining side of the driveway. This area is vegetated primarily with English plantain, white clover, cranesbill (*Geranium dissectum*- NL), and english daisy (*Bellis perennis*- NL). This area is also actively mowed. Wolf's evening-primrose (and/ or hybrid strains) occurs in a small area that is currently not mowed across the street from the thrift store.

Area #9 extends from the greenway adjacent to the parking lot at the Vance Street/ King Street intersection (next to the purple thrift store building) south to Citizen's Dock Road. This actively mowed area consists of upland ruderal species such as English plantain, little hop clover, sweet vernal grass, velvet grass, silver European hairgrass, yellow parentucellia, and soft brome. One individual vegetative evening-primrose was observed here. It is likely that it is an ornamental or hybrid to due the habitat associated with this area, however a positive identification would require avoidance of mowing operations until after flower set.

Area #10 runs perpendicular to Area #9. It extends along the greenway adjacent to Citizen's Dock Road, from Highway 101 west to the parking lot entrance at Starfish Way. This area is actively mowed, and is a highly degraded strip with various grasses that were dried up at the time of the July site visit. There is a significant amount of old fill material in several areas in this section, and it is apparent that this is a popular area for dog-walking, as evidenced by the large quantities of excrement present.

Area #11 occurs at the vehicle beach access point adjacent to the Citizen's Dock parking lot, and north of the big boat basin. This open sandy area includes predominantly exotic species such as wild oats, sea rocket, rough cat's-ear, perennial ryegrass, hottentot fig, and white sweetclover. Native dunegrass and some occurrences of the special-status Wolf's evening-primrose also occur sporadically in the area.

Recent (1998) engineering plan maps and communication with the City (pers. comm. Diane Mutchie July 2003) indicate that in 1999 a sewer line was replaced in the project area. The sewer line bisects portions of Area #1, #2 (in the grassy lawn area), #6 (alongside edge of Sunset Circle), and #8. In these areas, fill was placed six inches below the pipes, which were located three feet below the

surface. An additional six inches minimum of fill was placed on top of pipes, with compacted back fill placed up to the surface.

3.0 Methods

3.1 Floristic Surveys

Focused surveys were conducted in May, June, and July of 2003 by MRB Staff Biologist Tamara Gedik, who has extensive background in botany, advanced plant taxonomy, and previous experience conducting floristic surveys and wetland delineations. Surveys focused on areas of possible impact as identified by the City. Additionally, an intuitive meander approach expanded the survey area at times. On July 8, 2003, USFWS Plant Ecologist David Imper visited the project area to confirm presence of pure, ornamental, and hybrid evening-primrose occurrences.

The species list in Appendix B includes the scientific name, the common name, and the wetland indicator status taken from the most recent update of the *National List of Plant Species That Occur in Wetlands: 1988 National Summary* (Reed). All taxa encountered were identified to the highest taxonomic level necessary for a rare plant determination. Nomenclature used follows *The Jepson Manual* (Hickman, 1993).

Plant species addressed include regionally occurring Special Status plants identified by the California Department of Fish and Game. Special Status plant taxa are species, subspecies, or varieties that fall into one or more of the following categories, regardless of their legal or protection status:

- Officially listed by California or the Federal government as Endangered, Threatened, or Rare;
- A candidate for state or federal listing as Endangered, Threatened, or Rare;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- Taxa designated as a special status, sensitive, or declining species by other state or Federal agencies, or non-governmental organizations (NGO).
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, vernal pool, etc.); and
- Taxa considered by the California Native Plant Society to be "rare, threatened, or endangered in California" (Lists 1B and 2).

The California Native Plant Society Inventory includes five lists for categorizing plant species of concern. The plants on the CNPS list 1B and 2 are considered rare, endangered, and threatened plants pursuant to Section 15380 of the California Environmental Quality Act (CEQA). The plants on these lists meet the definitions under the Native Plant Protection Act and/or the California Endangered Species Act of the California Department of Fish and Game Code and are eligible for state listing.

The California Natural Diversity Database (CNDDDB) and the California Native Plant Society (CNPS) Inventory of Rare, Threatened and Endangered Plants were queried for the Smith River, Crescent City, Hiouchi, High Divide, Sister Rocks, and Childs Hill 7.5 min. USGS quadrangles in March 2003, prior to the field investigation. The database queries generated 45 regionally occurring Special Status species. Regionally occurring species are identified as species known to exist within the queried U.S.

Geological Survey 7.5 minute quadrangles. Appendix A summarizes the regulatory status and habitat requirements for the 45 Special Status species generated from the database queries. However, the quadrangles cover a broad range of habitats that are not necessarily present within the project area. Many of the species on this list have narrow habitat requirements for a specific soil type, host species, water regime or other microclimatic factor. Species restricted to forests or serpentinite soils are not expected to occur on the property due to the absence of suitable habitat. Therefore, survey efforts were focused on those known, regionally occurring species for which suitable habitat was present within the project area. It was determined that suitable habitat occurs for 17 of the 45 regionally occurring species, and these species are indicated by an asterisk (*) in Appendix A.

3.2 Wetland Delineation

The wetland delineation was performed during April, June, and July, 2003 by Tamara Gedik, Staff Biologist with Mad River Biologists. The wetland delineation was conducted in accordance with the currently applicable U.S. Army Corps of Engineers (ACOE) 1987 Wetland Delineation Manual. The ACOE utilizes a three-parameter method for making wetland determinations. It is based on the presence of three wetland indicators: wetland hydrology (periodic inundation for a minimum of seven consecutive days during the growing season), a predominance of hydrophytic (water-loving) vegetation (plants adapted to anaerobic conditions resulting from a prolonged inundation with water) and hydric soils (soils that become saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth of hydrophytic vegetation). Because the project area occurs within the coastal zone, additional wetlands were mapped utilizing the one-parameter method in accordance with Coastal Commission jurisdiction.

Soil pits were dug in portions of each project area to assess site conditions for the presence of wetlands. In areas where initial pit data suggested a wetland determination, data transects running perpendicular through wetland boundaries were created. Soil pits were dug along these transects within wetland, upland and transition zones. At each soil pit, hydrology, vegetation, and soils were examined, and data was recorded on site report forms (Appendix E). Wooden stakes marked with date, pit number, and surveyor initials were placed in each soil pit, and pink flagging (marked with the same information) was tied around the top of each stake to aid visibility. Soil pit data results are summarized in Table 3. All wetland boundaries were mapped on a 1976 county-issued topographic map at a scale of 1" = 100' (Appendix F). A compiled plant species list for the project area is included as Appendix B. The list includes the wetland status indicator for each species, taken from the most recent update of the *National List of Plant Species That Occur in Wetlands: 1988 National Summary* (Reed), as defined below:

OBL = Obligate Wetland. Occur in wetlands under natural conditions at an estimated probability > 99%.

FACW = Facultative Wetland. Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

FAC = Facultative. Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU = Facultative Upland. Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).

UPL = Obligate Upland. Occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

NL = Not Listed, generally considered upland.

NI = Not Indicated. Recorded for those species for which insufficient information was available to determine an indicator status.

***** = Tentative assignment due to limited information.

3.3 Wildlife Surveys

Wildlife use of the site was assessed based on the observed and described habitats at the site. While formal surveys were not conducted, there is a wealth of knowledge regarding bird use of the Crescent City Harbor and its vicinity.

Wildlife species addressed in this document include regionally occurring Special Status animals identified by the California Department of Fish and Game and are listed in Appendix C. Special Status animal taxa are species, subspecies, or varieties that fall into one or more of the following categories, regardless of their legal or protection status:

- Officially listed by California or the Federal government as Endangered, Threatened, or Rare;
- A candidate for state or federal listing as Endangered, Threatened, or Rare;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- Taxa designated as a special status, sensitive, or declining species by other state or Federal agencies, or non-governmental organizations (NGO).
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, vernal pool, etc.).

Results

4.1 Habitat Types and Plant Communities

Some habitat and plant communities in the management area are recognized as sensitive by various resource agencies. For example, the California Coastal Commission recognizes several "environmentally sensitive habitat areas" (ESHAs). Sensitive habitat status can be the result of rarity of a community type, value of a community's role in the ecosystem, threats to limited habitats caused by disturbance or degradation from human activities or developments, or protection by state or federal agencies for resources such as wetlands (see below) or rare plants (see below). Agency consultation should occur prior to any planning activity that might affect these areas. A summary of community types occurring in the project area, including those designated sensitive, is included in Table 2

It is important to note that vegetation communities can occur in more than one habitat type. Vegetation communities present in the project area are described below, and have been mapped and are included in Appendix F. Wetland communities are described in Section 4.4.

Ruderal Vegetation

Because of the developed and disturbed condition of much of the surrounding environment in the project area, native habitats and plant communities are not common, and are thus not described in great detail. Areas #1 through #11 are predominantly considered upland ruderal vegetation communities. Ruderal vegetation is characterized by weedy non-native, herbaceous species that tend to favor disturbance. These areas include roadsides, industrial areas and other areas altered by human disturbance that remain sparsely vegetated. The Iceplant series is a vegetation community type that is

recognized within this habitat (Sawyer & Keeler-Wolf 1995), and is present in Areas #1, #2, and #4. Much of the iceplant occurring in these areas was previously planted as part of the landscaping efforts.

Northern Coastal Scrub

The term Northern Coastal Scrub was first described by Holland (1986) as a community of low shrubs, usually 0.5 to 2 meters tall, usually dense but with scattered grassy openings, and generally occurring on windy, exposed upland coastal sites. Sawyer & Keeler-Wolf (1995) consider coastal scrub habitat as a collection of vegetation series that are determined at each site by dominant cover. Area # 2 contains a small patch of Northern coastal scrub in the form of Arroyo Willow Series (Sawyer & Keeler-Wolf 1995). An additional patch of Willow series (*Salix sp.*) occurs in Area #6 at the corner of Huston Road and Sunset Circle, and in Area #7 at the base of the dredge spoils levee behind the art studio.

Beach Strand

Beach strand (also known as littoral strip) is located on the immediate beach where abiotic factors, rather than stabilizing vegetation, influence the landscape. High winds, waves and cyclic tidal inundation severely restrict vegetative growth in the beach strand zone. Drift accumulates here, shorebirds nest, and new dunes form if the beach is accreting. Pioneer plant species such as sea rocket (*Cakile maritima*) and native dunegrass (*Leymus mollis*) are often found in the beach strand. This vegetation establishes in the summer and fall, and then is frequently removed by winter storm activity. This cycle repeats itself annually. A small area of beach strand occurs in Areas # 2, #5, and # 11, and adjacent to Area #4.

Dune Mat

“Dune mat” is an informal term used to describe a habitat type that is characterized by a somewhat mobile sandy substrate supporting low growing herbaceous and shrubby perennials (Pickart 1998). Overall plant species diversity in this habitat type is typically relatively high. Areas #2, #5, and #11 include small areas of degraded dune mat and open sand.

Beach pine series

In its natural habitat, beach pine (*Pinus contorta* ssp. *contorta*) occurs in seasonally saturated coastal dune hollows and in open dune environments. Forested dunes dominated by beach pine are unique habitats that are considered rare and worthy of protection by the California Department of Fish and Game. The state ranking of this habitat series is S2.1, meaning there are less than 20 viable occurrences and/or 10,000 acres of this habitat type statewide, and it is considered very threatened (Sawyer & Keeler-Wolf, 1995). The Department of Fish and Game recommends avoidance of these habitats when possible, and depending on the quantity and/or quality of the habitat, to mitigate for them when avoidance is not possible. The California Coastal Act (sec. 30240) recognizes dune habitats as Ecologically Sensitive Habitat Areas (ESHAs) that shall be protected against significant disruption, and limits development design adjacent to such areas to prevent impacts that would significantly degrade ESHA sites.

Beach pine occurring in Areas # 2, #3, and #4 were planted as ornamentals in the area. While these areas do not support the sensitive natural habitat community typified by this species, avoidance of impacts to beach pine in the project area are recommended for aesthetics as well.

Table 2. Plant Communities in the Project Area

Formation	Plant Community	Location	Sensitive Natural Community
Upland	Ruderal Vegetation	Portions of Areas #1-11	
Beach strand	Native Dunegrass Series	Portions of Areas #2, 5, & 11, and adjacent to Area #4	X
Dune mat	Sand-verbena- beach bursage series (degraded)	Portions of Areas # 2, 5, & 11	X
Northern coastal scrub	Willow series	Portions of Areas #2, 6, and 7	X
	Beach pine series (planted)	Portions of Areas # 2, 3, and 4	See text
Palustrine Emergent Persistent Wetland (PEM1)	Willow series	Portion of Areas # 2 & 7; Portion of Area #6 near Huston St./ Sunset Circle	X
	Carex series	Portion of Area #4; Portions of Area # 6 along Sunset Circle	X
Estuarine Intertidal Emergent Wetland (E2EM1)	Carex series	Portion of Area #2 along estuary shore	X

4.2 Wildlife

Wildlife Species considered in this document are listed in Appendix C. Five California and/or Federal Threatened and Endangered Species occur in or near the project area, the Brown Pelican, Bald Eagle, Peregrine Falcon, Marbled Murrelet and Bank Swallow.

Brown Pelican *Pelecanus occidentalis*

Federal Status: Endangered, 1970

State Status: Endangered, 1971; Fully Protected

The Brown Pelican is a large familiar waterbird of temperate and subtropical North American marine and estuarine waters. Adults average slightly more than four feet in length, have a six-and-a-half-foot wingspan and weigh about eight pounds. They are social birds throughout the year, though lone individuals are regularly encountered.

Brown Pelicans forage by spotting prey fishes from the air and plunge-diving to capture them. Their capture attempts may result in the bird entirely submerging, if only briefly. The pelican's pouch serves as a fishnet during plunge-dives; upon surfacing, the bird points the bill downward to drain water from the pouch, and then raises it to swallow fish.

Large numbers in California during summer, fall, and early winter belie the actually small breeding population within the state. Many birds migrate northward, most likely from the Mexican population, after breeding in spring. As many as 20,000 pelicans now pass into, as well as beyond, California at present (D. Jacques, pers. comm.). These birds feed and molt in California, Oregon, and Washington before returning to Mexico by early winter. In some winters, small numbers persist in and about the larger estuaries into January.

Brown Pelicans are common along the north coast, including Crescent City Harbor from April through November. At times, numerous pelicans can be found roosting and bathing at the mouth of Elk Creek. Since the Brown Pelican does not nest in our area, the only management concern for this species is minimizing disturbance at resting areas (i.e., the mouth of Elk Creek). Specific recommendations for management will depend on project design details.

Bald Eagle *Haliaeetus leucocephalus*

Federal Status: Endangered (1967, revised 1978), Threatened (1995), Proposed for delisting (1999).
State Status: Endangered (1971, revised 1980)

The Bald Eagle is found throughout North America and occurs widely in California. Concentrations of Bald Eagles are found where their preferred food is concentrated, i.e. in major waterfowl wintering areas and along major salmon streams and rivers with adjacent snags for perching. Nesting takes place in large stick nests, usually high in a tree, living or dead. Eggs can be laid as early as January, incubation is 30-45 days, and the young take their first flight approximately 2 and 1/2 months after hatching. Their food consists largely of fish, either caught themselves or stolen from Ospreys. Bald Eagles also feed upon a wide variety of small mammals, aquatic birds, and even carrion.

Bald Eagles regularly winter in the Lake Earl Wildlife Management area north of Crescent City Harbor, and the occasional individual visits the harbor during the winter. No nearby nesting sites are known. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

Peregrine Falcon *Falco peregrinus*

Federal Status: Endangered, 1970; Delisted, 1999
State Status: Endangered, 1971 (Fully Protected)

The Peregrine Falcon is a medium-sized falcon found throughout North America. Locally, the peregrine is an uncommon migrant and winter resident and rare summer breeder. Breeding in northern California takes place from early March to late August, but pair formation and courtship apparently begin as early as January, depending upon weather and availability of bird prey. Peregrine Falcons eat chiefly birds, ranging from the size of warblers to that of medium-sized waterfowl. As they specialize in hunting from a stoop or by tail-chase, expanses of open or semi-open landscape are important to them during foraging. Although not strictly tied to aquatic habitats, they rely upon populations of flocking birds such as shorebirds and ducks during the colder months, therefore favoring shorelines and shallows. During a roughly thirty-year period from the 1940s to the 1970s, populations in North America declined precipitously due to pesticide residues, nest disturbances (including the illegal removing of chicks for falconry) and habitat destruction. The Peregrine Falcon was considered "fairly common for a hawk" in 1944 when Joseph Grinnell and Alden Miller wrote their classic work on the birds of California. In subsequent years this species declined drastically, with listing under the ESA taking place in 1970. At that time, only several pairs still nested in California. Largely as a result of captive propagation and reintroduction efforts by The Peregrine Fund, Inc., and associated groups, a slow but steady increase in the nesting population in Northern California has taken place. Recovery of the species led to its removal from the endangered species list in August 1999, however, its status remains in a 5-year review period.

Preferred nesting sites include inaccessible cliffs on rocky outcrops and in river gorges.

Locally, the Peregrine Falcon is an uncommon winter resident and rare summer breeder. Peregrines are regularly seen in winter around Crescent City Harbor, but probably do not use the project site except for occasional winter foraging. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

Marbled Murrelet *Brachyramphus marmoratus*

Federal Status: Threatened, 1992

State Status: Endangered, 1992

Murrelets are coastal birds that nest in mature mixed conifer habitat up to 50 miles inland from the coast (USFWS 1997). Marbled Murrelets feed on small fish and invertebrates in nearshore marine waters, and nest inland primarily in older, large-limbed trees. Generally, the habitat characteristics associated with murrelet nesting are large trees with large lateral branches, extensive dwarf-mistletoe infestation, witches-brooms and a mature understory that extends into the canopy. Such characteristics usually do not develop until trees are 150 to 175 years of age. The Marbled Murrelet is threatened by the loss and modification of nesting habitat (older forests) primarily due to commercial timber harvesting. It is also threatened from mortality associated with the effects of oil spills.

Locally, Marbled Murrelets occasionally forage in and just outside the waters of Crescent City Harbor. Some murrelets undoubtedly fly over the project site while commuting to inland breeding sites. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

Bank Swallow *Riparia riparia*

Federal Status: None

State Status: Threatened, 1989

The Bank Swallow is a scarce and local summer visitor to California. Although it is more widespread during migration, nesting localities are restricted to a few places, especially along riparian habitats. Bank Swallows excavate their own nesting holes in a dirt or sand bank. Nests are typically, but not always, in a colony and near water. Nesting requirements include vertical banks with soft-textured soil suitable for burrow excavation.

Only two colonies of Bank Swallows are known in northwestern California – one near the mouth of the Smith River and the other (maybe not extant) at the Del Norte County Waste Disposal Site south of Lake Earl. Bank Swallows could rarely forage over the open waters near the assessed site. No suitable nesting sites were noted at the project site. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

California Species of Special Concern

Double-crested Cormorant *Phalacrocorax auritus*

The Double-crested Cormorant is a large, heavy-bodied dark cormorant widespread in North America. Adults are brownish-black or blackish, with bright orange-yellow throat pouches and ephemeral head plumes which are most highly developed during the breeding season. Much unlike other cormorant species, the Double-crested Cormorant makes extensive use of freshwater environments. On offshore islands of California, Double-crested Cormorants may nest alongside Brandt's Cormorants, but prefer the shoulders of hillsides, higher slopes, and the summits of islands.

Double-crested Cormorants feed by diving from the surface, and prey upon shallow-water fishes. These cormorants are gregarious and, although solitary foraging is common, group feeding is frequently observed and takes place throughout the year.

Double-crested Cormorants are common year-round in Crescent City Harbor, and a few nest on offshore rocks of Del Norte county. This species roosts commonly on the rocks in the harbor and

occasionally on the beaches, especially near creek mouths. Because Double-crested Cormorants would likely not roost specifically within the project area, there are no management concerns for this species.

Osprey *Pandion haliaetus*

The Osprey is a well-known fish-eating bird found throughout the world. Locally it is a common nesting bird along all the major rivers, bays and lakes. Once considered in danger of extinction in North America, it has made an impressive comeback since the decline in use of DDT.

Ospreys are common summer visitors to the Crescent City Harbor vicinity, with nesting known in some of the adjacent forest habitats. Osprey occasionally feed in the adjacent bay waters and fly over the project site. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

Northern Harrier *Circus cyaneus*

The Northern Harrier is a medium-sized hawk found throughout North America in open habitats. It feeds on small birds and mammals which it hunts by flying slowly over low vegetation and listening for the sound of its prey. Breeding populations in California have declined, presumably due to destruction and degradation of wetland and grassland habitats.

Northern Harriers are fairly common visitors to the open lands around Crescent City Harbor, especially during the winter. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

Sharp-shinned Hawk *Accipiter striatus*

The Sharp-shinned Hawk is found throughout North America. It is found in a wide variety of forested and scrub habitats where it preys primarily on small birds. Populations in North America have declined due to pesticide residues, habitat destruction, and the general decline of the hawks' major prey, songbirds.

Locally, the Sharp-shinned Hawk is an uncommon winter resident and rare summer breeder. Sharp-shinned Hawks occasionally hunt for small birds in the project vicinity, but would require more extensive forest habitat for nesting. Protection and enhancement of the willow/pine habitats at the project site would be positive for this species.

Cooper's Hawk *Accipiter cooperi*

The Cooper's Hawk is found throughout North America. It is found in a wide variety of forested and scrub habitats where it preys primarily on songbirds. Populations in North America have declined due to pesticide residues, habitat destruction, and the general decline of its major prey, songbirds.

Locally, the Cooper's Hawk is an uncommon winter resident and rare summer breeder. Cooper's Hawks occasionally hunt for small birds in the project vicinity, but would require more extensive forest habitat for nesting. Protection and enhancement of the willow/pine habitats at the project site would be positive for this species.

Merlin *Falco columbianus*

The Merlin is found throughout North America in a wide variety of open habitats where it preys primarily on shorebirds and songbirds. Populations in North America have declined due to pesticide residues and habitat destruction.

Merlins are occasionally seen in winter around Crescent City Harbor and occasionally are seen hunting shorebirds along the bay shores. Management recommendations consist of protecting riparian habitats and songbird and shorebird populations in general. Protection and enhancement of the willow/pine habitats at the project site would be positive for this species.

Vaux's Swift *Chaetura vauxi*

The Vaux's Swift is a small, insect-eating, summer resident bird of the coastal forests of Northwestern California. It feeds high in the air, often above the canopy of the forests and over meadows, water, and many other habitats. It roosts and nests in hollow trees and snags, especially those that have been burned. Vaux's Swifts are known to use chimneys for nesting, and likely do so in nearby suburban areas. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

Purple Martin *Progne subis*

The Purple Martin is a large swallow, uncommon to rare and locally distributed in northern California. It feeds on insects caught on the wing and nests in cavities (usually old woodpecker holes) in tall trees, often near water.

Purple Martin populations have declined in California, largely due to loss of riparian habitat, removal of snags, and competition for nest cavities from Eurasian Starlings and House Sparrows. Purple Martins rarely nest in forested habitats of Del Norte County and occasionally feed along the Crescent City Harbor, especially during migration periods. Activities related to the construction and use of the proposed harbor trail are not likely to affect local populations.

Black-capped Chickadee *Parus atricapillus*

The Black-capped Chickadee is possibly the most abundant and best-known chickadee in North America. In California it is found almost exclusively in willow/cottonwood habitats along the immediate north coast south to the vicinity of Ferndale, as well as a locally inland along the larger streams and rivers.

The Black-capped Chickadee is a Species of Special Concern in California due to its restricted range in the state.

The Black-capped Chickadee is a common species in the willow habitats of extreme northwestern California and so its presence at the project site is expected. Management recommendations center around maintaining healthy stands of willows and other riparian vegetation.

California Yellow Warbler *Dendroica petechia*

Found throughout North America, the Yellow Warbler has been declining as a breeding bird in California due to habitat destruction and brood parasitization by the Brown-headed Cowbird. Its breeding habitat is in riparian deciduous forests of almost any size.

Yellow Warblers are uncommon breeding birds of the coastal riparian habitats and are fairly common migrants during the spring and especially the fall.

Management recommendations consist of maintaining healthy riparian woodlands.

Amphibians

Northern Red-legged Frog *Rana aurora aurora*

The Northern Red-legged Frog is typically found in ponded areas along the Coast and Cascade Ranges from northern California to southern British Columbia. Here on the north coast of California it is widespread in ponds and along rivers where there is quiet water and emergent aquatic vegetation providing cover. When not breeding this species wanders widely in damp woods, including riparian and coniferous forests. The main reasons for concern in California are declining habitat and predation

by the introduced Bullfrog *Rana catesbiana*. The introduced Bullfrog has been observed in nearby marshes in Crescent City.

Red-legged Frogs occur in the Elk Creek drainage upstream from the project site and undoubtedly occasionally use the project site. Management recommendations center on the maintenance of healthy wetland habitats. If the introduced bullfrog is observed in these habitats at any time, action should be taken to remove them immediately.

4.3 Sensitive Flora

Two species of Special Status Plants (Wolf's evening-primrose and beach pea) were located within the project area during floristically appropriate surveys. California native species field survey forms were completed for all occurrences and are included as Attachment 2. Copies of rare plant data forms are also submitted to California Department of Fish and Game (CDFG) in Sacramento for inclusion in their database. Locations of special status plants have been mapped and are included in Appendix D. Occurrences of the special status plant known as pink sand-verbena (*Abronia umbellata* ssp. *breviflora*) had previously been observed in the vicinity (Theiss 1991), however, this species was not observed in the area during floristically appropriate surveys.

Wolf's evening primrose (*Oenothera wolffi*)

Wolf's evening-primrose was located in Areas #2, 5, 7, 9, and 11. Occurrences were confirmed with USFWS Plant Ecologist David Imper on July 8, 2003. Occurrences in **Area #2** were observed growing alongside the bank of Elk Creek estuary near the old interpretive sign. Occurrences continue sporadically on the coastal side of the pedestrian trail past the area where open sand blows across the trail, with a few vegetative plants occurring in the grassy area underneath the willows. In **Area #5**, most individuals occur in the open sand area east of the berm, although a couple of vegetative plants occur in the disturbed graveled area on the west side of the berm, where the trailer park ends. Plants observed in **Area #7** have not yet been confirmed as pure, because these occurrences were mowed prior to consultation with USFWS. Approximately 40 plants observed here previously were located adjacent to the road in the first twenty feet of the lot. One vegetative plant was observed in the greenway along **Area #9**, and was also not confirmed due to mowing prior to flowering. Occurrences in **Area #11** were located in the open sand on either side of the vehicle access path, and continued on the northwestern side for approximately 50 feet.

Associates vary between the more open sandy areas and the cultivated lawn sites, but include dune grass, American and European sea rocket, wild radish, beach pea, dune tansy, sheep sorrel, scouring rush, rattlesnake grass, velvet grass, sweet vernal grass, wild oats, and rough cat's-ear.

Wolf's evening primrose is listed under state protection in Oregon as Threatened, and has been proposed for federal listing under the Endangered Species Act (Imper 1997). Currently in California, it is on the CNPS list 1B, which indicates that it is rare, threatened, or endangered in California and elsewhere. It is a member of the family Onagraceae. Its range extends from northwestern California to southwestern Oregon. Earliest accounts of Wolf's evening primrose are found near Crescent City, near Trinidad, and south of Cape Mendocino, with occurrences documented as early as 1923. Wolf's evening primrose has been described as biennial, whereby it produces a vegetative, basal rosette of leaves the first year, then flowers and dies the second year. However, under stressful environmental conditions it may act more like a perennial, taking several years before flowering. The rosette typically dies back (bolts) in April, then flowers in May or June. Flowers are pale yellow and less than 5 cm. across.

Habitat for Wolf's evening primrose includes moderately disturbed sites within one mile of the coast, primarily in northern foredune scrub, along primary foredunes near the beach strand, along coastal bluffs, and roadsides. It favors sites with moist, well-drained soil, minimal competition, and protection from northwestern exposure.

Removal of habitat as a result of road construction, coastal bluff stabilization, and housing development has threatened and removed historic occurrences of Wolf's evening primrose, particularly near Trinidad. Currently, the species' greatest threat is hybridization with a garden ornamental primrose (*O. glazioviana*) that has naturalized throughout the range of the native Wolf's evening primrose. These hybrids can be seen in **Areas #3 and 6**. Although both species look very similar, especially with increasing hybridization (Imper 1997), there are some characteristics useful in distinguishing the two species, such as flower size and color, degree of pubescence on sepals, degree of overlap in petals, and stem and foliage color.

Beach pea (*Lathyrus japonicus*)

Beach pea was located in Areas 2 and 5. In Area 2, beach pea was found growing in open sand next to the pedestrian trail southeast of a patch of willows. Forty-seven mats of this species were observed at this location, the largest of which covered an area of sixteen square feet. One additional plant was observed in the open sand area east of the berm in Area #5. Associates included dunegrass, perennial ryegrass, Arroyo willow, European sea rocket, wild radish, dunegrass, perennial ryegrass, and wild oats.

Beach pea is a CNPS List 2 member of the pea family (Fabaceae). It is a low-growing perennial species that spreads by rhizomes on open sandy beaches and grass-covered foredunes. Trailing stems can grow up to three feet long. Beach pea is characterized by six-to-eight smooth, fleshy leaflets that are usually subtended by a coiled or branched tendril, and three-to-eight blue or purple flowers in each inflorescence. Beach pea can be found in moderately disturbed areas, and its range extends from Alaska to northern California.

4.4 Wetlands Subject to Jurisdiction

Jurisdictional Wetlands

Wetland areas delineated on the map in Appendix F are considered "Waters of the United States" by the Federal government and are subject to regulation by the U. S. Army Corps of Engineers under section 404 of the Clean Water Act. On the State level, development within wetlands falls under the policy of the California Department of Fish and Game (CDFG). CDFG does not have permitting jurisdiction, but serves in an advisory capacity with regard to the fill and/or alteration of wetlands, and is generally a commenting agency for projects subjected to local, county and/or State environmental review processes. CDFG uses the same criteria, the presence of hydrophytic vegetation, soils and hydrology, as the Army Corps of Engineers for determining a wetland. The policy of CDFG is more restrictive in that an area generally needs to exhibit two of the three criteria (vegetation, soils, hydrology) in order to be classified as a wetland. Likewise, the California Coastal Commission has jurisdiction over most areas within the coastal zone. In some areas, jurisdiction defaults to the county planning department, in which case the Coastal Commission may review and serve in an advisory capacity for projects that are appealed. The Coastal Commission requires the presence of only one parameter (wetland soils, vegetation or hydrology) to be present in an area for it to be recognized as a wetland.

The City of Crescent City is within the permitting jurisdiction of CDFG and the California Coastal Commission. Recommended setbacks for all drainages and associated wetlands in the project area are discussed under Recommendations in Section 5 below.

For the project area, most areas designated as upland do not exhibit more than one wetland indicator, if any. In a few instances, where two indicators were present in an area designated as upland, one or both of the indicators (either hydrophytic vegetation or hydric soils) was considered only marginally indicative of a wetland based on a negative fac-neutral test or uncommon and faint mottling due to the presence of fill or side cast soils. These areas were designated as upland (transitional) rather than wetland (transitional). In some areas, conditions are so degraded due to presence of fill and rudimentary vegetation that presence of only one parameter was considered questionable for coastal commission jurisdictional wetland determination. In these circumstances, particularly if the results of one parameter were marginal, the site was designated as degraded upland.

Wetland habitats occurring in the project area are in the form of seasonal freshwater emergent and degraded wetlands. These habitats correspond to the Palustrine Emergent Persistent (PEM1) and category according to the U.S. Fish and Wildlife wetland classification system (Cowardin et. al. 1979). In addition, Area # 2 contains a small area of perennial Estuarine Intertidal Emergent wetlands (E2EM1). Palustrine refers to non-tidal, freshwater wetlands, and estuarine refers to tidal, brackish water wetlands. Degraded areas occur within some wetland boundaries where fill has been placed in the past. The delineation between upland and wetland habitats is depicted on a 1976 county topographic map (most current available for project area) in Appendix F, at a scale of 1"=100'. A detailed description of wetland and upland habitats and associated plant communities follows:

Estuarine Intertidal Emergent Wetlands (E2EM1)

Estuarine intertidal emergent wetlands are associated with deepwater tidal channels and adjacent tidal wetlands. These areas are usually partly obstructed by land but have open, partly obstructed, or occasional access to the ocean. In addition, these areas receive at least occasional freshwater runoff that dilutes the otherwise saline conditions. The estuarine intertidal wetland along the shore in the mouth of Elk Creek provides these conditions, and additional freshwater runoff occurs during storm events. The estuarine area in **Area #2** (Soil transect 2C) receives periodic tidal inundation during higher tides and storm events, and supports predominantly obligate and facultative-wetland vegetation.

Mean higher high water (MHHW) data for the Elk Creek estuary is unavailable. However, evidence of driftwood lines suggests that the water has reached up to, and during storm events with high tides, over the banks of the channel. Anecdotal information indicates that on rare occasions (approximately once in ten years), a combination of high storms with 20-30 foot seas, 7-8 foot high tides, and an influx of woody debris in the channel have resulted in water and debris extending as far as the lawn near the cultural center, and the dolo near Front Street (pers. comm. James Waldvogel July 2003). However, these occasional high storm events do not likely saturate or inundate these areas for a sufficient period (18 consecutive days) of the growing season to satisfy wetland requirements for hydrology. The one-parameter (hydrology) Coastal Commission boundaries of the estuarine area in Area #2 were therefore delineated at the driftwood lines above the concrete slope revetment.

Dominant species within the area include silverweed (OBL), saltgrass (*Distichlis spicata* -FACW), dune sedge (*Carex pansa* -FACU), and salt rush (*Juncus breweri*- FACW). The substrate is low-chroma sand (2.5 Y 2.5/1) with organic streaking. The wetland boundary is characterized by a clear change in species composition to predominantly upland plants, which coincides with the concrete block-reinforced banks of the channel.

Palustrine Emergent, Persistent Wetlands (PEM1)

Palustrine emergent wetlands are characterized by the presence of erect, rooted, herbaceous vegetation. Along the harbor, these wetlands (where they are not degraded) are persistent (support perennial vegetation that remains standing until at least the beginning of the next growing season), and likely remain saturated and/or inundated for long to very long periods during the growing season.

Different plant associations were documented within the emergent wetlands, which are also characterized by varying degrees of prolonged saturation or inundation (hydrology). Since no surface water or saturated soil conditions occurred in this region during the site visits, primary hydrologic evidence such as water marks or drift lines, and secondary hydrologic indicators were used to establish wetland hydrology. Oxidized root channels, a positive fac-neutral test, and a predominance of wetland vegetation combined with low chroma soils (10YR 3/1 or 3/2) established the wetland determinations in this area.

The wettest palustrine emergent wetland in the project area occurs along the bank of Elk Creek (where the dunegrass is growing). The wetland area along the northern bank in Area # 2 (Transects 5A and 13A) consists of native dunegrass (*Leymus mollis* NL), sheep sorrel (*Rumex crispus*- FACW-), and Arroyo willow (*Salix lasiolepis* -OBL) as dominant vegetation. Driftwood indicates that the high water mark inundates this area at least during large storm events, if not more frequently. Refer to the previous section (Estuarine intertidal emergent wetlands) for additional information on hydrology for this site. Soils are a low-chroma (10YR 2/1) sandy substrate with high organic streaking, which also suggests that the soils remain wet for extended periods of time.

Seasonally inundated, emergent wetlands (as per CDFG two-parameter determination) occur in portions of Areas #2, #4, #6, and #7. In **Area #2**, the wetland area occurs in open sand adjacent to the pedestrian trail (Soil Pit 3) and within influence of high tides and storm events. This is evidenced by the large amount of driftwood and undecomposed wood in the soil. Dominant species include wild radish (*Raphanus sativus*- NL), sea rocket (*Cakile maritime*- FACW), California aster (*Aster chilensis*- FAC), Arroyo willow (OBL), creeping bent-grass (*Agrostis stolonifera*-FACW), and California fescue (*Festuca arundinacea*- FAC-). The soil is low-chroma sand (10 YR 2/2) with organic streaking.

In **Area #4**, wetlands occur along the southeastern bank of Elk Creek (Transect 7C). Dominant vegetation includes dunegrass (NL), silverweed (OBL), salt rush (*Juncus breweri*- OBL), and creeping bent-grass (FACW). Soils are a dark, sandy loam (10YR 3/1) with organic streaking. As with Area #2, this area is influenced by high tides and storm events, which is evidenced by the high amount of driftwood and undecomposed wood in the soil.

Wetlands in the northeastern portion of **Area #6** were not delineated at this time due to a change in project design that will avoid impacts to these areas. These areas were ponded during an April site visit, and were dried upon return to the vicinity in July.

At **Area #7** the wetland occurs below the road berm that serves as access for dredge spoils, and extends approximately fifteen feet to the east. Upon request by the City, Wetlands in this area were not formally delineated at this time because this area is unlikely to be included in the current pedestrian trail plan. If alternative plans include a public trail in this area in the future, a complete delineation here will be required. This area (Soil Pit 10) is dominated by scouring rush (*Equisetum hyemale*- FACW), sweet vernal grass (*Anthoxanthum odoratum*- FACU), bird's-foot trefoil (*Lotus corniculatus*- FAC), common plantain (*Plantago lanceolata*- FAC-), velvet grass (*Holcus lanatus*- FAC), and soft-beak rush (*Juncus effusus*- OBL). The soil possesses strong evidence of oxidized root channels, and vegetation gives a positive fac-neutral test, which therefore makes a positive determination for presence of wetland hydrology. The soils demonstrate reducing conditions (evidenced by oxidized root channels), and a high amount of organic content in a low-chroma (2.5 Y 2.5/1) sandy-loam substrate that has mottles (Gley 1 3/10Y). Mottling in the soil usually results from the presence of periodic reducing soil conditions. Soils with bright mottles and/or low matrix chroma are indicative of a fluctuating water regime. A patch of willows (*Salix sp.*) located at the base of the berm had been cut down, and wetland vegetation had been mowed upon a return visit in July.

Degraded Wetland Areas

Wetlands in several portions of the project area can be described as partially “degraded,” meaning that small pockets of hydrophytic vegetation have become re-established in areas that had been previously filled. These areas tend to have soils with small rocks, wood, miscellaneous debris, or other evidence (such as inconsistent topography at a fine scale) of possible old fill. It is believed that most of the fill was placed between 10 to 20 years ago, and therefore represents the new “normal condition.”

Although wetland vegetation does occur, it does not make up the dominant plant community. Secondary hydrology indicators (oxidized root channels and a positive fac-neutral test) were used to establish wetland hydrology, since no primary indicators were present at the time of the investigation. These areas typically have only one wetland indicator or possibly two and are therefore considered wetlands under CDFG and/ or California Coastal Commission jurisdiction.

Small degraded wetlands are present in Areas #2 (Transects 5B and 13B), #3 (Pit 6), and #6 (Transect 11), and consist of exotic species that tend to favor disturbance such as rough cat’s ear (*Hypochaeris radicata*- NI), sweet vernal grass (FACU), perennial ryegrass (*Lolium perenne*-FAC), velvet grass (FAC), quack grass (*Briza maxima*) and bird-foot trefoil (FAC). These species are mixed with wetland species such as common rush (*Juncus effusus*-OBL), California aster (FAC), scouring rush (*Equisetum hyemale*- FACW), and field horsetail (*Equisetum arvense* -OBL). The vegetation is predominantly hydrophytic or facultative. Again, wetland hydrology was established by the presence of secondary indicators (positive fac-neutral test and oxidized root channels).

Area #3 consists of a variety of vegetation in an uneven vacant lot. Species include creeping bent-grass (*Agrostis stolonifera*-FACW), sand-dune bluegrass (*Poa douglassii*-UPL), white clover (FACU+), little hop clover (FACU*), salt rush (*Juncus breweri*- FACW*), seashore lupine (*Lupinus littoralis*- NL), common catchfly (*Silene gallica*- NL), and rough cat’s-ear (NI), among others. No primary or secondary hydrologic indicators are present, and soils are a low-chroma (10YR 2/1) sandy loam with mottling in some areas (Pit 4: 10YR 5/6, 5YR 4/6). The soils are a potential problem area because the low chroma is the only hydric soil indicator present. ACOE does not consider low-chroma colors to be a hydric indicator in sandy soils. There is also evidence of fill in this area due to the presence of rocks in the soil. Mottling present in the soils may be associated with this fill. Although nearby areas were ponded in April (Transect 9 in Area #6), ponding in Area #3 was never observed.

A small patch of willows, slough sedge (*Carex obnupta*- OBL) and soft-beaked rush (OBL) occur underneath ornamental white poplars (*Populus alba*- NL) near the junction of Sunset Circle and Huston Street in **Area #6**. This area (Transect 11) possesses low-chroma (2.5Y 3/1, 2.5Y 3/2) sand and sandy-loam soils and some mottling (7.5YR 3/3, 10YR 5/8). However, this area is considered a potential problem area because the low chroma is the only hydric soil indicator present. ACOE does not consider low-chroma colors to be a hydric indicator in sandy soils. Furthermore, evidence of fill is prevalent in these soils with some areas containing cobbles of one or two inches in size. In 1999, a sewer line was replaced in the vicinity, and it is possible that the line bisects this area.

Table Summary of Wetland Delineation Results
Asterisk () indicates degraded conditions*

Transect/ Test Pit	Soil Pit	Area	Hydrophytic Vegetation?	Wetland Hydrology?	Hydric Soils?	ACOE Determination	CDFG Determination	Coastal Commission Determination
1	N/A	1	No	No	No	Upland	Upland	Upland
2	A	2	No	Yes	No	Upland	Upland	Wetland
2	B	2	Yes	Yes	Yes	Wetland	Wetland	Wetland
3	N/A	2	Yes	Yes	Yes	Wetland	Wetland	Wetland
4	N/A	3	No	No	No	Upland	Upland	Upland
5	A	2	Yes	Yes	Yes	Wetland	Wetland	Wetland
5	B	2	Yes	No	Yes	Upland	*Wetland	*Wetland
5	C	2	No	No	No	Upland	Upland	Upland
6	N/A	3	No	No	Yes	Upland	Upland	*Wetland
7	A	4	No	No	No	Upland	Upland	Upland
7	B	4	Yes	Yes	Yes	Wetland	Wetland	Wetland
7	C	4	Yes	No	Yes	Upland	Wetland	Wetland
8	N/A	4	No	No	No	Upland	Upland	Upland
9	A	6	No	No	No	Upland	Upland	Upland
9	B	6	No	No	Yes	Upland (transitional)	Upland (transitional; may be seasonal wetland)	*Wetland
9	C	6	No	No	Yes	Upland	Upland (transitional; may be seasonal wetland)	*Wetland
10	N/A	7	Yes	Yes	Yes	Wetland	Wetland	Wetland
11	A	6	Yes	No	Yes (marginal)	Upland (transitional)	Transitional *Wetland	*Wetland
11	B	6	Yes	No	No	Upland	Transitional *Wetland	*Wetland
11	C	6	Yes	Yes	Yes	Wetland	*Wetland	*Wetland
12	N/A	8	No	No	No	Upland	Upland	Upland
13	A	2	Yes	Yes	Yes	Wetland	Wetland	Wetland
13	B	2	No	Yes	No	Upland (transitional)	Upland (transitional)	*Wetland
13	C	2	No	No	No	Upland	Upland	Upland

5.0 Recommendations

Wolf's evening-primrose is not listed by the State of California or the Federal Government; however it is a CNPS List 1B species. Plants on this list are considered rare, endangered, and threatened plants pursuant to Section 15370 of the California Environmental Quality Act (CEQA), and are Special Status Species. CEQA requires government agencies to consider environmental impacts of projects to Special Status Species, and to avoid or mitigate them where possible (Skinner & Pavlik 1994).

Beach pea is a CNPS List 2 species, which means that it is considered rare or endangered in California but more common elsewhere. Like Wolf's evening-primrose, beach pea is considered a Special Status Species by the State of California and is subject to consideration under CEQA.

Avoidance is recommended for all sensitive species located in the project area. Use of herbicides should be banned in areas with rare plant occurrences. In areas where ornamental cultivars and/or hybrids of evening-primrose occur, a removal program is recommended to discourage the naturalization of these strains, and encourage genetic purity of Wolf's evening primrose occurrences. Where Wolf's evening primrose occurs in actively mowed areas, coordination with the City is recommended to limit cutting to preferably the time between November and March, in order to allow flowering and seed set. Pedestrian trails near rare plant occurrences should be directed away from their habitat.

Fencing in Areas 2 and 5 could prevent beach access and reduce impacts caused by trampling. Fencing materials should be consistent with those currently utilized by the city in the vicinity (concrete post and chain) to maintain aesthetics. These fenced areas could be designated "botanical management areas" where exotic species removal could occur. Interpretive signage could be incorporated into the pedestrian trail system to explain the protection of these areas. Fencing should continue in Area #2 from the botanical management area, and extend along the bank in Area #2 to maintain continuity, discourage transient activity, minimize trampling in the estuarine wetland area, and discourage vehicle access.

Impacts to wetlands and adjacent setbacks and buffer areas occurring in the project area should be avoided wherever possible. The intertidal estuarine wetland in Area 2 should be avoided entirely due to its direct connectivity with the ocean. Disturbances to avoid in all wetland areas include placement of fill material, pedestrian and vehicle traffic, cutting of wetland vegetation, and/or runoff of pollutants. In areas where wetlands have become degraded, the establishment of a reduced setback is not expected to have a significant adverse affect on wetland habitats. The biggest issue in regard to accepting a reduced setback from the wetlands is increased runoff and pollutants caused by development. A reduction of the standard 100-foot wetland setback may be considered by permitting agencies if certain conditions are included within the project design and included in a mitigation plan prepared for the project as conditions of approval.

In Area #2, moving the location of the current pedestrian trail into the actively mowed lawn area and removing the current paved trail may achieve a greater wetland setback (refer to Appendix F). This option would likely enhance current conditions in the wetlands by reducing disturbance immediately adjacent to the area, and therefore would likely result in an increase in wildlife use.

Mitigation for impacts to wetland habitats may include creation of wetlands in upland areas. In highly degraded areas where fill has been placed, removal of fill and restoration of wetlands may be more successful, but overall wetland creation is the least desirable alternative because many upland-to-

wetland conversions are unsuccessful. Mitigation may also include planting of native vegetation in buffer areas to aid in increased protection of wetlands with reduced setbacks.

Although beach pine currently occurs in degraded areas where it was likely planted as an ornamental species, removal is nonetheless discouraged due to aesthetics. Furthermore, as nearby riparian vegetation becomes more mature and potentially enhanced, the beach pines may provide habitat for various bird species. It is further recommended that invasive exotic species such as hottentot fig, sea figs, and blue gum trees be removed whenever possible. White poplar trees occurring in Area #6 (near Sunset Circle and Huston St.) should be removed due to the invasive root system that has been known to penetrate septic lines. Many cities prohibit the planting of poplars for this reason. Septic lines do run underneath these poplar trees, and could therefore be at risk in the future.

Generally, the affect on wildlife species will depend on the eventual configuration of vegetation along the trail and the activities of people and dogs around the mouth of Elk Creek, where substantial numbers of birds roost. If native riparian vegetation is preserved and encouraged to expand along the harbor, wildlife will benefit. The potential need for management of people and dog activity near the mouth of Elk Creek should be considered as the trail and its interpretive components are developed.

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7.0 Fisheries

I. Environmental Setting

The Project includes construction of a new pedestrian/bike bridge across Elk Creek. Elk Creek is a perennial tributary of the Pacific Ocean flowing southwest from the western portion of the Siskiyou Mountains to the Crescent City Harbor (T17N R1W Sec. 34). Elk Creek headwaters originate in the forested uplands of Jedediah Smith Redwoods State Park. Elk Creek has a number of smaller tributaries flowing through upland forested habitats as well as meadows and seasonal wetlands. Most of the watershed is located within the jurisdiction of Del Norte County but the mouth and lower reach (bridge location) are in the incorporated area of Crescent City. The Elk Creek watershed has been extensively altered beginning with settlers clearing land for farming and dairies, as well as for industrial uses (a brickyard and barrel factory). In 1871, the Elk River Mill was built and in the 1880's a railroad was built to transport logs. The lower watershed was logged and Elk Creek was used as a log pond, and subsequently the channel was rerouted to its current location. However, the lower portion of the watershed, through Elk Valley and east of Highway 101 retains significant value as freshwater wetland habitat. Vegetation in the watershed ranges from wetlands and riparian zones along the creek to dense upland forests. Current land uses include grazing, residential development, forestry and some open space. In 1985 the Wildlife Conservation Board purchased 228 acres of wetland and riparian habitat along Elk Creek in Elk Valley east of Highway 101.

The proposed bridge location is downstream and adjacent to the existing Highway 101 bridge (within a CalTrans easement) that crosses Elk Creek in Crescent City. Elk Creek, in the vicinity of the proposed bridge site, flows through an urban setting and instream conditions and adjacent riparian zones have been altered by urban development and flood control including Highway 101, riprap on both banks extending from Highway 101 downstream to the mouth, and various developments in historic floodplain areas. Groundwater quality and quantity are influenced by storm water runoff from urban, agricultural development and some natural areas in the upper watershed including the Elk Creek Wildlife Area. The lower reach of Elk Creek (from Highway 101 to confluence with the harbor) is influenced by harbor hydrogeologic conditions characterized by bay muds, peat, silts, sands and gravels. Hydrology in the bridge vicinity is influenced by the Pacific Ocean, which contributes high amounts of annual rainfall to the Crescent City area.

Elk Creek water quality has been adversely affected by the McNamara & Peepe Sawmill, which operated in the lower watershed from the 1940's through December 1981. The mill impacted adjacent upland areas. Surface and ground waters were contaminated by heavy equipment maintenance, aboveground storage tanks, electrical transformers, and a used drum storage area. The sawmill chemically treated wood using products containing chlorinated phenolics, and the release of wood treatment chemicals occurred over time in areas beneath the dip tank and ultimately discharged into Elk Creek (RWQCB 1998). This area was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System on July 1, 1996.

Aquatic and riparian habitat in the lower reach of Elk Creek have been altered by urban development including highways, culverts, floodplain development, riprap and in-channel flood control structures. This reach is low gradient with stable streambanks composed of fine-grained cohesive depositional materials (sands and silts) that support dense-rooted vegetation. There are adjacent wetlands and

limited backwater areas off of the main channel, as well as a small (30-50 feet in width each side of the creek) well-vegetated seasonal floodplain on each side of the creek. The dominant instream substrate is silt and sand. Sediment transport in the lower reach is likely dominated by wash load or suspended sediment. Instream flows in Elk Creek have been altered due to floodplain and other development in the watershed, which have changed flow response to precipitation events. Instream habitat lacks complexity in the form of large wood or other structure. During summer months, flows in the lower reach are low and slack water shallow habitat is predominant. Adjacent riparian zones have been altered and constrained in extent by development along Elk Creek. Highway 101 crosses Elk Creek in the lower reach via an extensive concrete box culvert. Adult salmonids can pass through this long box culvert as evidenced by CDFG sampling upstream, which have recovered all four species of salmonids. Riprap was placed on the downstream side of the 101 bridge and riparian shrubs were planted adjacent to the riprap. The remaining seasonal floodplain and riparian zones downstream of Highway 101 are dominated by grasses, rushes and other wetland species. Just downstream of the 101 culvert is a weir that traps debris and prevents it from traveling downstream into the lower reaches. Thus, the lower reach lacks complexity in the form of large wood. There is an RV park on the left bank of Elk Creek in the lower reach and a city park that is adjacent to the creek on the right bank and extends from Highway 101 down to the confluence with the harbor. Rip-rap and debris has been placed along both the left and right banks through this entire reach. On May 22, 1960, a tsunami occurred in the Crescent City area and deposited large amounts of debris in this area. In addition, debris from collapsed buildings and sidewalks was dumped along the channel margins. Thus, this rip-rap and concrete debris is maintained as bank protection and to reduce flooding of adjacent properties. The mouth of Elk Creek becomes shallow (< 0.5 feet) in summer months and may go subsurface during periods of low tide and low surface flows.

II. Species Information

General life history information and biological requirements of SONCC coho salmon have been described in various documents (Shapovalov 1954; Hassler 1987; Sandercock 1991; Weitkamp et al. 1995) as well as NOAA Fisheries' final rule listing SONCC coho salmon (May 6, 1997; 62 FR 24588). Adult coho salmon typically enter rivers between September and February. Spawning occurs from November to January (Hassler 1987), but occasionally as late as February or March (Weitkamp et al. 1995). Coho salmon eggs incubate for 35-50 days between November and March. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Fry start emerging from the gravel two to three weeks after hatching and move into shallow areas with vegetative or other cover. As fry grow larger, they disperse up or downstream. In summer, coho salmon fry prefer pools or other slower velocity areas such as alcoves, with woody debris or overhanging vegetation. Juvenile coho salmon over-winter in slow water habitat with cover as well. Juveniles may rear in fresh water for up to 15 months then migrate to the ocean as smolts from March to June (Weitkamp et al. 1995). Coho salmon adults typically spend two years in the ocean before returning to their natal streams to spawn as three-year olds.

Chinook salmon mature between 2 and 6+ years of age. Fall-run Chinook salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of the rivers, and spawn within a few days or weeks of freshwater entry (Healey 1991). Post-emergent fry seek out shallow, nearshore areas with slow current and good cover, and begin feeding on small terrestrial and aquatic insects and aquatic crustaceans. The optimum temperature range for rearing Chinook salmon fry is 50°F to 55°F (Rich 1997, Scymour 1956) and for fingerlings

is 55°F to 60°F (Rich 1997). In preparation for their entry into a saline environment, juvenile salmon undergo physiological transformations known as smoltification that adapt them for their transition to salt water. The optimal thermal range for Chinook salmon during smoltification and seaward migration is 50°F to 55°F (Rich 1997). Chinook salmon spend between one and four years in the ocean before returning to their natal streams to spawn. Chinook salmon addressed in this document exhibit an ocean-type life history, and smolts out-migrate predominantly as subyearlings, generally during April through July. Chinook salmon spend between 2 and 5 years in the ocean (Healey 1991), before returning to freshwater to spawn. Some Chinook salmon return from the ocean to spawn one or more years before full-sized adults return.

Winter steelhead enter fresh water between November and April in the Pacific Northwest (Busby *et al.* 1996; Nickelson *et al.* 1992), migrate to spawning areas, and then spawn, generally in April and May (Barnhart 1986). Some adults, however, do not enter some coastal streams until spring, just before spawning (Meehan 1991). Steelhead require a minimum depth of 0.18 m and a maximum velocity of 2.44 m/s for active upstream migration (Smith 1973). Spawning and initial rearing of juvenile steelhead generally take place in small, moderate-gradient (generally 3-5%) tributary streams (Nickelson *et al.* 1992). A minimum depth of 0.18 m, water velocity of 0.30-0.91 m/s (Smith 1973), and clean substrate 0.6-10.2 cm (Nickelson *et al.* 1992) are required for spawning. Steelhead spawn in 3.9-9.4°C water (Bell 1986). Depending on water temperature, steelhead eggs may incubate for 1.5 to 4 months (August 9, 1996, 61 FR 41542) before hatching, generally between February and June (Bell 1986). After two to three weeks, in late spring, and following yolk sac absorption, alevins emerge from the gravel and begin actively feeding. After emerging from the gravel, fry usually inhabit shallow water along banks of perennial streams. Fry occupy stream margins (Nickelson *et al.* 1992). Summer rearing takes place primarily in the faster parts of pools, although young-of-the-year are abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Productive steelhead habitat is characterized by complexity, primarily in the form of large and small wood. Some older juveniles move downstream to rear in larger tributaries and mainstem rivers (Nickelson *et al.* 1992). Steelhead prefer water temperatures ranging from 12-15°C (Reeves *et al.* 1987). Juveniles live in freshwater from one to four years (usually two years in the California ESUs), then smolt and migrate to the ocean in March and April (Barnhart 1986). Winter steelhead populations generally smolt after two years in fresh water (Busby *et al.* 1996).

Historic land uses have impacted salmonid habitat in Elk Creek primarily through increasing sedimentation, which has degraded spawning gravels. CDFG has reported that lack of suitable spawning habitat is a limiting factor for coho salmon in Elk Creek. The lower reach of Elk Creek, west of Highway 101 in the vicinity of the project, provides migration habitat for salmonids as well as holding habitat for juveniles outmigrating to the Pacific Ocean. However, due to floodplain developments and flood control measures (levees and riprap) that have constrained wetland and riparian habitat, and due to lack of transport of large wood into this reach from the upper watershed, habitat complexity and instream cover are lacking. The primary habitat types through this reach are shallow runs with some backwater habitats.

III. Effects of the Project

Construction of the Harbor Trail Project has a low potential to effect Pacific salmonids except where the trail intersects habitat for these species. Construction of the Harbor Trail Project will include installation of a single span manufactured pedestrian/bike bridge across Elk Creek immediately

adjacent and downstream of the existing Highway 101 bridge. The bridge would be 10-12 feet wide and abutments would be placed outside of the seasonal floodplain and channel on upland terraces such that the bridge would completely span the channel and associated seasonal floodplains. Two approaches/abutments will be constructed-one on each side of Elk Creek. Construction of the abutments will require removal of riprap to create space for the abutment. Three pilings would be driven at the bridge approaches and concrete wing walls will be poured to create the approaches and to secure each end of the bridge. Existing riprap extends from the lower banks of Elk Creek up to the top of banks near an existing sidewalk. Thus, the abutments will be placed near the top of the upper banks and will require removal of some riprap to create a work area measuring 10' X 14'. The abutment on the north side of Elk Creek will connect with the existing sidewalk and the abutment on the south side will connect with a new section of the Harbor Trail, which will be constructed in upland developed areas adjacent to the RV park.

For purposes of this analysis, relevant indicators of habitat quality were used to assess potential effects of the project on Pacific salmonids and their habitat including water quality, seasonal floodplain conditions, habitat elements, channel conditions and riparian function. Potential effects are assessed in the context of existing conditions of these parameters.

Water Quality

Construction activities adjacent to streams can impact water quality parameters through ground disturbance and vegetation removal. Ground disturbance can result in bare soils and increased potential for erosion of sediment off-site. Increased sedimentation is of particular concern for spawning habitat, which does not occur in the lower reach of Elk Creek, however, sediment degrades rearing habitat by pool filling and thus should be minimized to the maximum extent. Construction of the bridge abutments will require removal of existing rip-rap from two areas, one on each side of the proposed bridge, measuring 10' X 14' in size. Equipment will stage on paved areas above the creek and remove the riprap. Extensive riprap below the work area will continue to protect banks as intended (refer to discussion below). As equipment grabs the rock riprap it may disturb soils underneath. Silt fences will be installed on the downslope side of the area to be cleared of riprap to trap any soils that may be disturbed. This activity will occur at the top of banks with extensive riprap below. Thus, increases in sediment or turbidity are not anticipated as the proposed abutment areas are near the top of banks away from the wetted channel and if any soils are disturbed, the silt fence will prevent sediment from moving into Elk Creek.

The project will not result in changes to water temperatures as stream shade will not be altered. The bridge itself will provide a limited area of shade to waters below but would not measurably affect stream temperatures. The riparian zone, through the lower reach of Elk Creek, does not have a developed riparian shrub or conifer component that would provide stream shade but rather is comprised of grasses and low-growing wetland plants. As mentioned before, a few alders and willows were planted near the Highway 101 culvert, but these will not be removed or disturbed.

Chemical contamination of surface and ground waters can be associated with use of heavy equipment near streams. Best Management Practices (BMPs) will be implemented to minimize the potential for contamination to the maximum extent including cleaning heavy equipment prior to use and requiring equipment to be refueled in upland paved facilities.

Habitat Elements and Channel Conditions

The preferred Project alternative will not alter instream habitat elements including pool frequency, off-channel habitat, substrate composition or habitat access as no structures are being placed in the high or low-flow wetted channel or on associated seasonal floodplains. Floodplain function in the lower reach of Elk Creek has been constrained by adjacent roads and developments as well as flood control structures (riprap and levees). However, existing seasonal floodplain conditions will not be further degraded by the project as the bridge will fully span the small seasonal floodplain along Elk Creek and will avoid the need to place structures in seasonal floodplain areas. Sediment can result from ground disturbing activities such as construction of the bridge abutments, and may result in degradation of pool habitat. The potential for introducing sediment to Elk Creek will be minimized through use of silt fences. Channel width to depth ratios and instream flow characteristics will not be altered as the bridge abutments will be placed near the top of banks and will not constrain high or low flow channel conditions or dynamics. The abutments will be placed on areas that were previously disturbed during construction of Highway 101, and which are currently covered by riprap. Thus, construction of the abutments will not disturb natural banks but will replace existing riprap with poured concrete abutments (that will also serve as approaches for bikes and pedestrians). Bank stability will not be altered as the abutment locations are at the top of banks near existing sidewalks and roads and streambanks below the proposed abutments are covered with rip-rap, which will continue to provide bank slope protection as intended.

Placement of the proposed bridge may increase predation on young salmonids if the bridge is used by birds as a perch. There is an existing weir and the Highway 101 bridge that spans the creek in this area but it is unknown to what extent birds use these structures. Additional perch areas over the creek are of concern because the lower reach of Elk Creek lacks instream or overhead cover for salmonids migrating through the area. Adult salmonids would migrate when flows are higher and would likely move through this reach quickly due to lack of holding habitat and cover, and are less susceptible to predators. However, juveniles are vulnerable to predation as they emigrate to the ocean during spring and summer months when flows are lower. During this time, instream cover is critical. Thus, since the lower reach lacks boulders and large wood that could be used as cover, installation of the bridge could give predators more opportunity to capture juvenile salmonids.

A second alternative would be to place bridge piers in the channel. If bridge piers were placed in the active channel, a hydraulic analysis would need to be performed to assess potential changes in velocity associated with the piers, and any associated impacts on upstream migration of juvenile and adult salmonids. Since the channel is relatively small and confined, addition of a bridge pier (s) could alter migratory conditions, depending on the extent and location of the pier (s) relative to the active channel. In addition, the analysis would need to assess potential localized bank erosion and channel scour that could be caused by in-channel piers, and associated effects to salmonid habitat.

A third alternative would be to place a low water crossing for bikes and pedestrians. If the low water bridge were seasonal (installed and used only during summer low flows and removed before the onset of winter flows), and completely spanned the channel, it may result in minimal impacts to channel bed and banks. The impacts of this design would be outside of the channel and associated with the bridge footings and installation and removal activities on the seasonal floodplain. However, if the bridge were permanent and could be overtopped by higher flows, a hydraulic analysis would need to be

performed to assess potential impacts on salmonid habitat and potential barrier to juvenile and adult migration.

IV. Recommended Mitigation Measures

Water Quality Protection

1. Install silt fences downslope of the abutment construction work area to retain disturbed soils and to prevent soils from entering Elk Creek.
2. Avoid removing any woody riparian vegetation along Elk Creek to protect existing riparian function.
3. Implement the bridge construction project during the dry season. If at any time during implementation, significant rains are forecast, initiate shutdown of operations and ensure that erosion control measures are implemented.
4. Identify stable ingress and egress points of access for heavy equipment that minimize encroachment onto natural bank areas near the proposed bridge site. All equipment staging should be on paved or hardened surfaces at the top of banks.
5. Prevent pollutants such as fuels, lubricants, bitumen's, and other harmful materials from being discharged into or near the creek by refueling only in upland areas, by properly maintaining equipment prior to construction, and by washing equipment. All heavy equipment shall be reasonably clean of grease and oil prior to entering the project area. All lube and hydraulic oil leaks shall be identified and fixed prior to equipment entering the construction area. All visible deposits of petroleum products (oil, grease, etc.) that may dislodge and enter watercourses shall be removed prior to operations. No storage of fuel will occur in riparian or stream zones. Refueling of equipment will only occur during daylight hours. Oil absorbent booms or pads will be kept on site at all times during implementation.

Habitat Enhancement

1. To mitigate for increased predator perch areas (the new bridge), install instream cover for juvenile salmonids in the lower reach of Elk Creek. Large wood pieces, preferably large old growth stumps, of sufficient size to withstand winter flows should be placed downstream of the bridge to increase instream cover and to create small holding pools for salmonids. Guidelines for placement of large wood are contained in the California Salmonid Stream Habitat Restoration Manual (CDFG 1998) and design will need to be coordinated with flood control agencies.

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Topic 1003 - Design Criteria

1003.1 Class I Bikeways

Class I bikeways (bike paths) are facilities with exclusive right of way, with cross flows by motorists minimized. Section 890.4 of the Streets and Highways Code describes Class I bikeways as serving "the exclusive use of bicycles and pedestrians". However, experience has shown that if significant pedestrian use is anticipated, separate facilities for pedestrians are necessary to minimize conflicts. Dual use by pedestrians and bicycles is undesirable, and the two should be separated wherever possible.

Sidewalk facilities are not considered Class I facilities because they are primarily intended to serve pedestrians, generally cannot meet the design standards for Class I bikeways, and do not minimize motorist cross flows. See Index 1003.3 for discussion relative to sidewalk bikeways.

By State law, motorized bicycles ("mopeds") are prohibited on bike paths unless authorized by ordinance or approval of the agency having jurisdiction over the path. Likewise, all motor vehicles are prohibited from bike paths. These prohibitions can be strengthened by signing.

(1) *Widths.* **The minimum paved width for a two-way bike path shall be 8 feet. The minimum paved width for a one-way bike path shall be 5 feet. A minimum 2-foot wide graded area shall be provided adjacent to the pavement (see Figure 1003.1A).** A 3-foot graded area is recommended to provide clearance from poles, trees, walls, fences, guardrails, or other lateral obstructions. A wider graded area can also serve as a jogging path. Where the paved width is wider than the minimum required, the graded area may be reduced accordingly; however, the graded area is a desirable feature regardless of the paved width. Development of a one-way bike path should be undertaken only after careful consideration due to the problems of enforcing one-way operation and the difficulties in maintaining a path of restricted width.

Where heavy bicycle volumes are anticipated and/or significant pedestrian traffic is expected, the paved width of a two-way path should be

greater than 8-feet, preferably 12 feet or more. Another important factor to consider in determining the appropriate width is that bicyclists will tend to ride side by side on bike paths, necessitating more width for safe use.

Experience has shown that paved paths less than 12 feet wide sometimes break up along the edge as a result of loads from maintenance vehicles.

Where equestrians are expected, a separate facility should be provided.

(2) *Clearance to Obstructions.* **A minimum 2-foot horizontal clearance to obstructions shall be provided adjacent to the pavement (see Figure 1003.1A).** A 3-foot clearance is recommended. Where the paved width is wider than the minimum required, the clearance may be reduced accordingly; however, an adequate clearance is desirable regardless of the paved width. If a wide path is paved contiguous with a continuous fixed object (e.g., block wall), a 4-inch white edge line, 2 feet from the fixed object, is recommended to minimize the likelihood of a bicyclist hitting it. **The clear width on structures between railings shall be not less than 8 feet.** It is desirable that the clear width of structures be equal to the minimum clear width of the path (i.e., 12 feet).

The vertical clearance to obstructions across the clear width of the path shall be a minimum of 8 feet. Where practical, a vertical clearance of 10 feet is desirable.

(3) *Signing and Delineation.* For application and placement of signs, see the Manual on Uniform Traffic Control Devices (MUTCD), Section 9B.01 and the MUTCD and California Supplement Section 9B.01 and Figure 9B-101. For pavement marking guidance, see the MUTCD, Section 9C.03.

(4) *Intersections with Highways.* Intersections are a prime consideration in bike path design. If alternate locations for a bike path are available, the one with the most favorable intersection conditions should be selected.

EXHIBIT NO. 8

APPLICATION NO.

1-07-005

CITY OF CRESCENT CITY

EXCERPTS, CDOT HIGHWAY

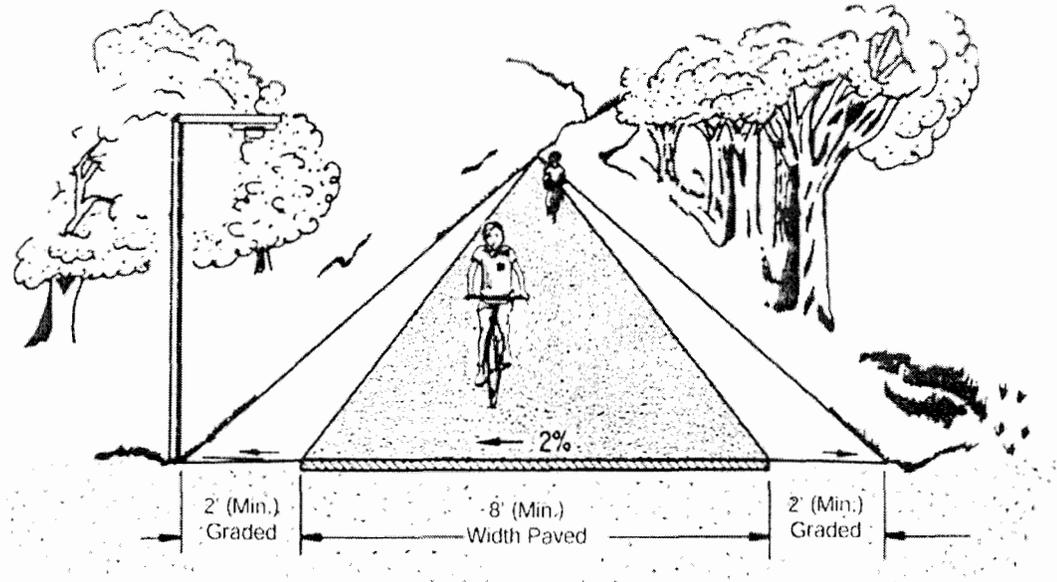
DESIGN AND TRAFFIC

MANUALS STANDARDS

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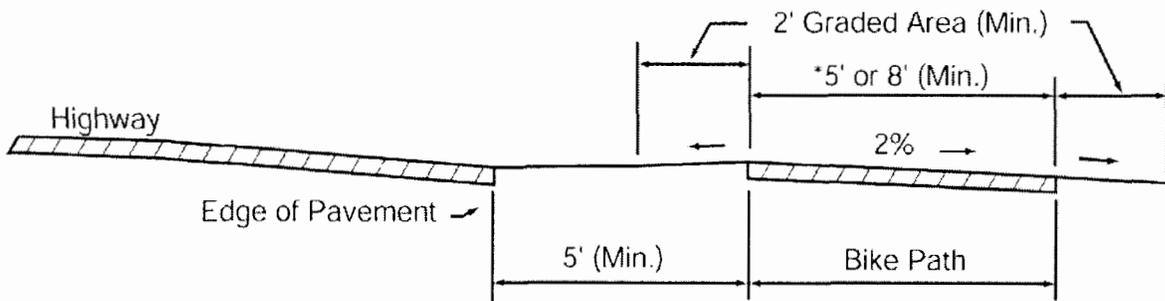
Figure 1003.1A

Two-Way Bike Path on Separate Right of Way



Note: For sign clearances, see MUTCD, Figure 9B-1.

Figure 1003.1B
Typical Cross Section of Bike
Path Along Highway



NOTE: See Index 1003.1(5)

*One - Way: 5' Minimum Width
Two - Way: 8' Minimum Width

Where motor vehicle cross traffic and bicycle traffic is heavy, grade separations are desirable to eliminate intersection conflicts. Where grade separations are not feasible, assignment of right of way by traffic signals should be considered. Where traffic is not heavy, stop or yield signs for bicyclists may suffice.

Bicycle path intersections and approaches should be on relatively flat grades. Stopping sight distances at intersections should be checked and adequate warning should be given to permit bicyclists to stop before reaching the intersection, especially on downgrades.

When crossing an arterial street, the crossing should either occur at the pedestrian crossing, where motorists can be expected to stop, or at a location completely out of the influence of any intersection to permit adequate opportunity for bicyclists to see turning vehicles. When crossing at midblock locations, right of way should be assigned by devices such as yield signs, stop signs, or traffic signals which can be activated by bicyclists. Even when crossing within or adjacent to the pedestrian crossing, stop or yield signs for bicyclists should be placed to minimize potential for conflict resulting from turning autos. Where bike path stop or yield signs are visible to approaching motor vehicle traffic, they should be shielded to avoid confusion. In some cases, Bike Xing signs may be placed in advance of the crossing to alert motorists. Ramps should be installed in the curbs, to preserve the utility of the bike path. Ramps should be the same width as the bicycle paths. Curb cuts and ramps should provide a smooth transition between the bicycle paths and the roadway.

(5) *Separation Between Bike Paths and Highways.*

A wide separation is recommended between bike paths and adjacent highways (see Figure 1003.1B). **Bike paths closer than 5 feet from the edge of the shoulder shall include a physical barrier to prevent bicyclists from encroaching onto the highway. Bike paths within the clear recovery zone of freeways shall include a physical barrier separation.** Suitable barriers could include chain link fences or dense shrubs. Low barriers (e.g., dikes, raised traffic bars) next to a highway are not

recommended because bicyclists could fall over them and into oncoming automobile traffic. In instances where there is danger of motorists encroaching into the bike path, a positive barrier (e.g., concrete barrier, steel guardrail) should be provided. See Index 1003.6 for criteria relative to bike paths carried over highway bridges.

Bike paths immediately adjacent to streets and highways are not recommended. They should not be considered a substitute for the street, because many bicyclists will find it less convenient to ride on these types of facilities as compared with the streets, particularly for utility trips.

(6) *Bike Paths in the Median of Highways.* As a general rule, bike paths in the median of highways are not recommended because they require movements contrary to normal rules of the road. Specific problems with such facilities include:

- (a) Bicyclist right turns from the center of roadways are unnatural for bicyclists and confusing to motorists.
- (b) Proper bicyclist movements through intersections with signals are unclear.
- (c) Left-turning motorists must cross one direction of motor vehicle traffic and two directions of bicycle traffic, which increases conflicts.
- (d) Where intersections are infrequent, bicyclists will enter or exit bike paths at midblock.
- (e) Where medians are landscaped, visual relationships between bicyclists and motorists at intersections are impaired.

For the above reasons, bike paths in the median of highways should be considered only when the above problems can be avoided. **Bike paths shall not be designed in the medians of freeways or expressways.**

(7) *Design Speed.* The proper design speed for a bike path is dependent on the expected type of use and on the terrain. **The minimum design speed for bike paths shall be 25 miles per hour except as noted in Table 1003.1.**

Table 1003.1

Bike Path Design Speeds

Type of Facility	Design Speed (mph)
Bike Paths with Mopeds Prohibited	25
Bike Paths with Mopeds Permitted	30
Bike Paths on Long Downgrades (steeper than 4%, and longer than 500')	30

Installation of "speed bumps" or other similar surface obstructions, intended to cause bicyclists to slow down in advance of intersections or other geometric constraints, shall not be used. These devices cannot compensate for improper design.

(8) *Horizontal Alignment and Superelevation.* The minimum radius of curvature negotiable by a bicycle is a function of the superelevation rate of the bicycle path surface, the coefficient of friction between the bicycle tires and the bicycle path surface, and the speed of the bicycle.

For most bicycle path applications the superelevation rate will vary from a minimum of 2 percent (the minimum necessary to encourage adequate drainage) to a maximum of approximately 5 percent (beyond which maneuvering difficulties by slow bicyclists and adult tricyclists might be expected). A straight 2 percent cross slope is recommended on tangent sections. The minimum superelevation rate of 2 percent will be adequate for most conditions and will simplify construction. Superelevation rates steeper than 5 percent should be avoided on bike paths expected to have adult tricycle traffic.

The coefficient of friction depends upon speed; surface type, roughness, and condition; tire type and condition; and whether the surface is wet or dry. Friction factors used for design should be selected based upon the point at which centrifugal force causes the bicyclist to

recognize a feeling of discomfort and instinctively act to avoid higher speed. Extrapolating from values used in highway design, design friction factors for paved bicycle paths can be assumed to vary from 0.31 at 12 miles per hour to 0.21 at 30 miles per hour. Although there is no data available for unpaved surfaces, it is suggested that friction factors be reduced by 50 percent to allow a sufficient margin of safety.

The minimum radius of curvature can be selected from Figure 1003.1C. When curve radii smaller than those shown in Figure 1003.1C must be used on bicycle paths because of right of way, topographical or other considerations, standard curve warning signs and supplemental pavement markings should be installed. The negative effects of nonstandard curves can also be partially offset by widening the pavement through the curves.

(9) *Stopping Sight Distance.* To provide bicyclists with an opportunity to see and react to the unexpected, a bicycle path should be designed with adequate stopping sight distances. The distance required to bring a bicycle to a full controlled stop is a function of the bicyclist's perception and brake reaction time, the initial speed of the bicycle, the coefficient of friction between the tires and the pavement, and the braking ability of the bicycle.

Figures 1003.1D and 1003.1E indicate the minimum stopping sight distances for various design speeds and grades. For two-way bike paths, the descending direction, that is, where "G" is negative, will control the design.

(10) *Length of Crest Vertical Curves.* Figure 1003.1F indicates the minimum lengths of crest vertical curves for varying design speeds.

(11) *Lateral Clearance on Horizontal Curves.* Figure 1003.1G indicates the minimum clearances to line of sight obstructions for horizontal curves. The required lateral clearance is obtained by entering Figure 1003.1G with the stopping sight distance from Figures 1003.1D and 1003.1E, the proposed horizontal curve radius.

Figure 1003.1C

Curve Radii & Superelevations

$$R = \frac{V^2}{15(0.01e + f)}$$

where,

R = Minimum radius of curvature (ft)

V = Design Speed (mph)

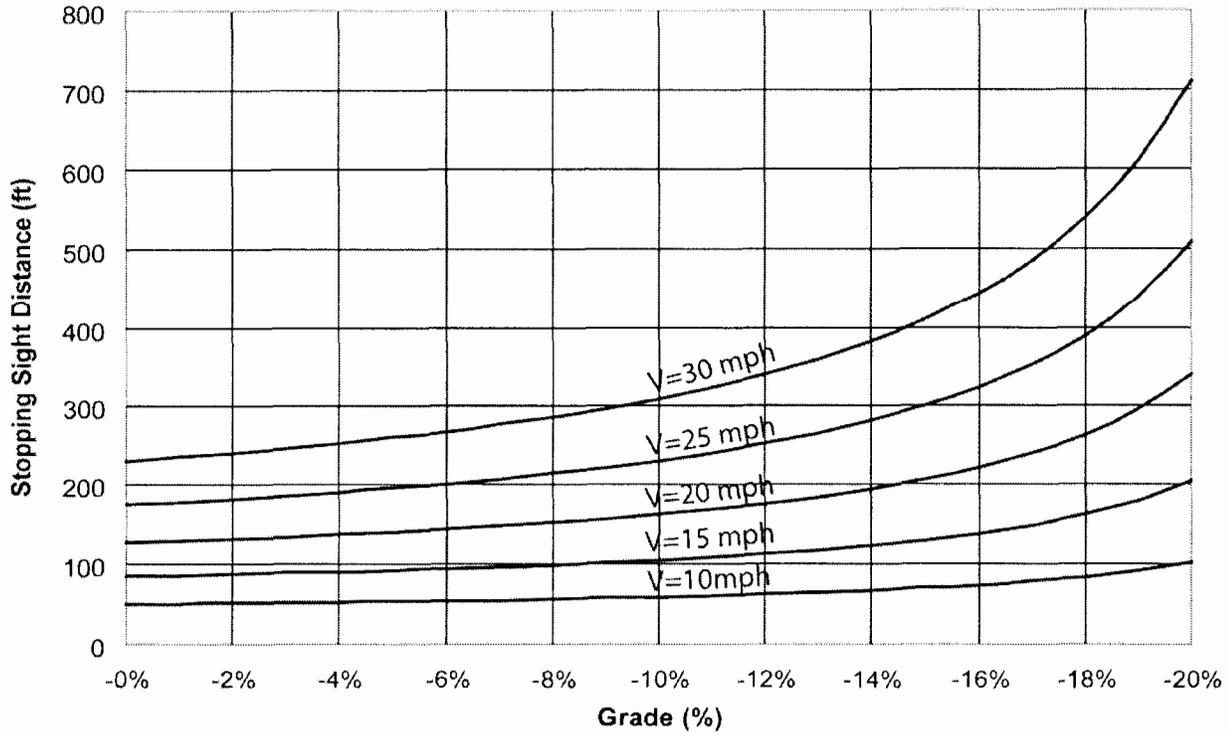
e = Rate of bikeway superelevation, percent

f = Coefficient of friction

Design Speed-V (mph)	Friction Factor-f	Superelevation-e (%)	Minimum Radius-R (ft)
15	0.31	2	46
20	0.28	2	89
25	0.25	2	155
30	0.21	2	261
15	0.31	3	45
20	0.28	3	86
25	0.25	3	149
30	0.21	3	250
15	0.31	4	43
20	0.28	4	84
25	0.25	4	144
30	0.21	4	240
15	0.31	5	42
20	0.28	5	81
25	0.25	5	139
30	0.21	5	231

Figure 1003.1D

Stopping Sight Distance – Descending Grade

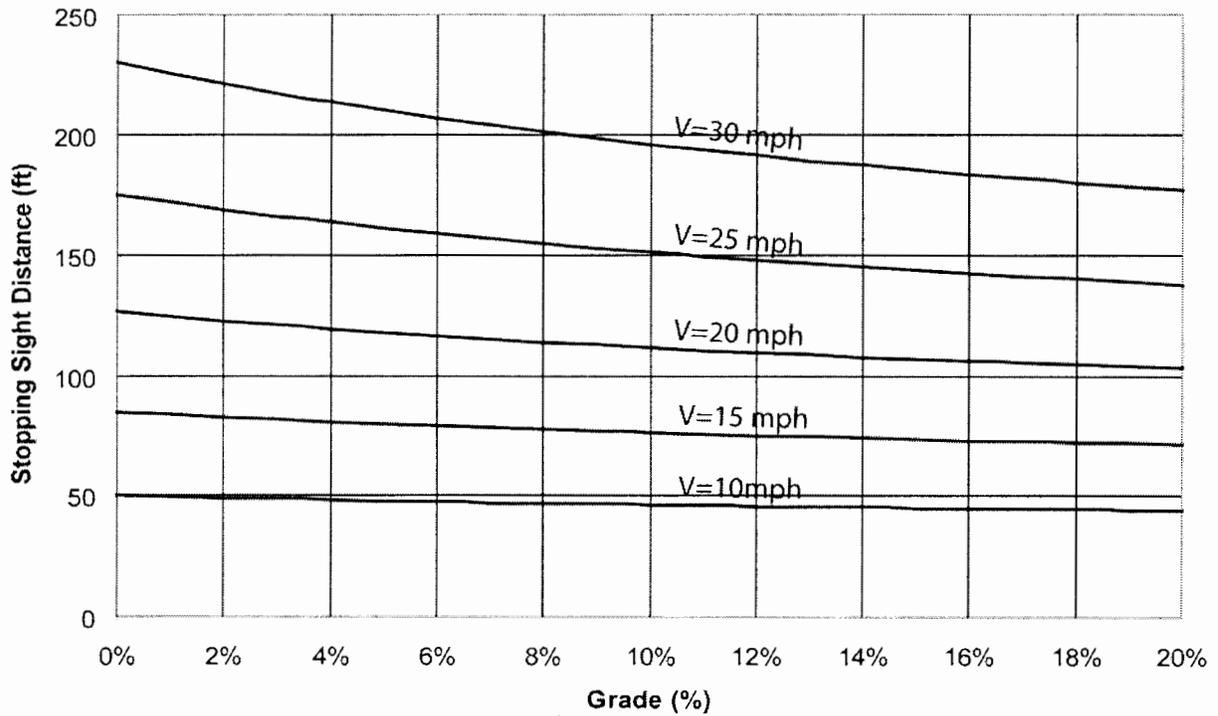


$$S = \frac{V^2}{30(f - G)} + 3.67V$$

- Where : S = Stopping sight distance (ft)
 V = Velocity (mph)
 f = Coefficient of friction (use 0.25)
 G = Grade (ft/ft) rise/run

Figure 1003.1E

Stopping Sight Distance – Ascending Grade



$$S = \frac{V^2}{30(f + G)} + 3.67V$$

- Where :
- S = Stopping sight distance (ft)
 - V = Velocity (mph)
 - f = Coefficient of friction (use 0.25)
 - G = Grade (ft/ft) rise/run

Bicyclists frequently ride abreast of each other on bicycle paths, and on narrow bicycle paths, bicyclists have a tendency to ride near the middle of the path. For these reasons, and because of the serious consequences of a head on bicycle accident, lateral clearances on horizontal curves should be calculated based on the sum of the stopping sight distances for bicyclists traveling in opposite directions around the curve. Where this is not possible or feasible, consideration should be given to widening the path through the curve, installing a yellow center line, installing a curve warning sign, or some combination of these alternatives.

- (12) *Grades.* Bike paths generally attract less skilled bicyclists, so it is important to avoid steep grades in their design. Bicyclists not physically conditioned will be unable to negotiate long, steep uphill grades. Since novice bicyclists often ride poorly maintained bicycles, long downgrades can cause problems. For these reasons, bike paths with long, steep grades will generally receive very little use. The maximum grade rate recommended for bike paths is 5 percent. It is desirable that sustained grades be limited to 2 percent if a wide range of riders is to be accommodated. Steeper grades can be tolerated for short segments (e.g., up to about 500 feet). Where steeper grades are necessitated, the design speed should be increased and additional width should be provided for maneuverability.
- (13) *Pavement Structure.* The pavement structure of a bike path should be designed in the same manner as a highway, with consideration given to the quality of the basement soil and the anticipated loads the bikeway will experience. It is important to construct and maintain a smooth riding surface with skid resistant qualities. Principal loads will normally be from maintenance and emergency vehicles. Expansive soil should be given special consideration and will probably require a special pavement structure. A minimum pavement thickness of 2 inches of Hot Mix Asphalt (HMA) is recommended. HMA (as described in Department of Transportation Standard Specifications), with ½ inch maximum aggregate and medium grading is recommended. Consideration should be given

to increasing the asphalt content to provide increased pavement life. Consideration should also be given to sterilization of basement soil to preclude possible weed growth through the pavement.

At unpaved highway or driveway crossings of bicycle paths, the highway or driveway should be paved a minimum of 10 feet on each side of the crossing to reduce the amount of gravel being scattered along the path by motor vehicles. The pavement structure at the crossing should be adequate to sustain the expected loading at that location.

- (14) *Drainage.* For proper drainage, the surface of a bike path should have a cross slope of 2 percent. Sloping in one direction usually simplifies longitudinal drainage design and surface construction, and accordingly is the preferred practice. Ordinarily, surface drainage from the path will be adequately dissipated as it flows down the gently sloping shoulder. However, when a bike path is constructed on the side of a hill, a drainage ditch of suitable dimensions may be necessary on the uphill side to intercept the hillside drainage. Where necessary, catch basins with drains should be provided to carry intercepted water across the path. Such ditches should be designed in such a way that no undue obstacle is presented to bicyclists.

Culverts or bridges are necessary where a bike path crosses a drainage channel.

- (15) *Barrier Posts.* It may be necessary to install barrier posts at entrances to bike paths to prevent motor vehicles from entering. For barrier post placement, visibility marking, and pavement markings, see the MUTCD and California Supplement, Section 9C.101.

Generally, barrier configurations that preclude entry by motorcycles present safety and convenience problems for bicyclists. Such devices should be used only where extreme problems are encountered.

Figure 1003.1F

**Minimum Length of Crest Vertical Curve (L)
Based on Stopping Sight Distance (S)**

$$L = 2S - \frac{1456}{A} \quad \text{when } S > L$$

$$L = \frac{AS^2}{1456} \quad \text{when } S < L$$

Double line represents $S = L$

L = Minimum length of vertical curve – feet

A = Algebraic grade difference - %

S = Stopping sight distance – feet

Refer to Figure 1003.1D to determine “S”, for a given design speed “V”

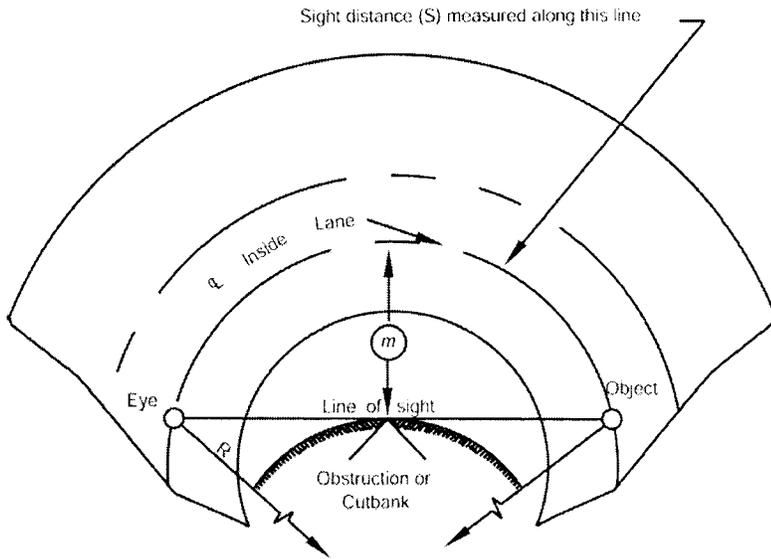
Height of cyclist eye = 4½ feet

Height of object = 4 inches

A (%)	S = Stopping Sight Distance (ft)													
	30	50	70	90	110	130	150	170	190	210	230	250	270	290
3												15	55	95
4									16	56	96	136	176	216
5							9	49	89	129	169	209	249	289
6		S > L				17	57	97	137	177	217	258	300	347
7				12	52	92	132	172	212	254	300	350	404	
8				38	78	118	158	198	242	291	343	401	462	
9			18	58	98	138	179	223	273	327	386	451	520	
10			34	74	114	155	198	248	303	363	429	501	578	
11			8	48	88	128	170	218	273	333	400	472	551	635
12			19	59	99	139	185	238	298	363	436	515	601	693
13			28	68	108	151	201	258	322	394	472	558	651	751
14			36	76	116	163	216	278	347	424	509	601	701	809
15		3	43	83	125	174	232	298	372	454	545	644	751	866
16		9	49	89	133	186	247	318	397	485	581	687	801	924
17		14	54	95	141	197	263	337	421	515	618	730	851	982
18		19	59	100	150	209	278	357	446	545	654	773	901	1040
19		23	63	106	158	221	294	377	471	575	690	816	951	1097
20		27	67	111	166	232	309	397	496	606	727	859	1001	1155
21		31	71	117	175	244	325	417	521	636	763	901	1051	1213
22		34	74	122	183	255	340	437	545	666	799	944	1102	1271
23		37	77	128	191	267	355	457	570	697	836	987	1152	1329
24		39	81	134	199	279	371	476	595	727	872	1030	1202	1386
25	2	42	84	139	208	290	386	496	620	757	908	1073	1252	1444

S < L

Figure 1003.1G
Minimum Lateral Clearance (m) on Horizontal Curves



S = Sight distance in feet.
R = Radius of ℓ of lane in feet.
m = Distance from ℓ of lane in feet.
See Figure 1003.1D to determine "S" for a given design speed "V".

Angle is expressed in degrees

$$m = R \left[1 - \cos \left(\frac{28.65S}{R} \right) \right]$$

$$S = \frac{R}{28.65} \left[\cos^{-1} \left(\frac{R - m}{R} \right) \right]$$

Formula applies only when S is equal to or less than length of curve.

Line of sight is 28" above ℓ inside lane at point of obstruction.

R (ft)	S = Stopping Sight Distance (ft)														
	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
25	2.0	7.6	15.9												
50	1.0	3.9	8.7	15.2	23.0	31.9	41.5								
75	0.7	2.7	5.9	10.4	16.1	22.8	30.4	38.8	47.8	57.4	67.2				
95	0.5	2.1	4.7	8.3	12.9	18.3	24.7	31.8	39.5	48.0	56.9	66.3	75.9	85.8	
125	0.4	1.6	3.6	6.3	9.9	14.1	19.1	24.7	31.0	37.9	45.4	53.3	61.7	70.6	79.7
155	0.3	1.3	2.9	5.1	8.0	11.5	15.5	20.2	25.4	31.2	37.4	44.2	51.4	59.1	67.1
175	0.3	1.1	2.6	4.6	7.1	10.2	13.8	18.0	22.6	27.8	33.5	39.6	46.1	53.1	60.5
200	0.3	1.0	2.2	4.0	6.2	8.9	12.1	15.8	19.9	24.5	29.5	34.9	40.8	47.0	53.7
225	0.2	0.9	2.0	3.5	5.5	8.0	10.8	14.1	17.8	21.9	26.4	31.3	36.5	42.2	48.2
250	0.2	0.8	1.8	3.2	5.0	7.2	9.7	12.7	16.0	19.7	23.8	28.3	33.1	38.2	43.7
275	0.2	0.7	1.6	2.9	4.5	6.5	8.9	11.6	14.6	18.0	21.7	25.8	30.2	34.9	39.9
300	0.2	0.7	1.5	2.7	4.2	6.0	8.1	10.6	13.4	16.5	19.9	23.7	27.7	32.1	36.7
350	0.1	0.6	1.3	2.3	3.6	5.1	7.0	9.1	11.5	14.2	17.1	20.4	23.9	27.6	31.7
390	0.1	0.5	1.2	2.1	3.2	4.6	6.3	8.2	10.3	12.8	15.4	18.3	21.5	24.9	28.5
500	0.1	0.4	0.9	1.6	2.5	3.6	4.9	6.4	8.1	10.0	12.1	14.3	16.8	19.5	22.3
565		0.4	0.8	1.4	2.2	3.2	4.3	5.7	7.2	8.8	10.7	12.7	14.9	17.3	19.8
600		0.3	0.8	1.3	2.1	3.0	4.1	5.3	6.7	8.3	10.1	12.0	14.0	16.3	18.7
700		0.3	0.6	1.1	1.8	2.6	3.5	4.6	5.8	7.1	8.6	10.3	12.0	14.0	16.0
800		0.3	0.6	1.0	1.6	2.2	3.1	4.0	5.1	6.2	7.6	9.0	10.5	12.2	14.4
900		0.2	0.5	0.9	1.4	2.0	2.7	3.6	4.5	5.6	6.7	8.0	9.4	10.9	12.5
1000		0.2	0.5	0.8	1.3	1.8	2.4	3.2	4.0	5.0	6.0	7.2	8.4	9.8	11.2

(16) *Lighting.* Fixed-source lighting reduces conflicts along paths and at intersections. In addition, lighting allows the bicyclist to see the bicycle path direction, surface conditions, and obstacles. Lighting for bicycle paths is important and should be considered where riding at night is expected, such as bicycle paths serving college students or commuters, and at highway intersections. Lighting should also be considered through underpasses or tunnels, and when nighttime security could be a problem.

Depending on the location, average maintained horizontal illumination levels of 5 lux to 22 lux should be considered. Where special security problems exist, higher illumination levels may be considered. Light standards (poles) should meet the recommended horizontal and vertical clearances. Luminaires and standards should be at a scale appropriate for a pedestrian or bicycle path.

1003.2 Class II Bikeways

Class II bikeways (bike lanes) for preferential use by bicycles are established within the paved area of highways. Bike lane pavement markings are intended to promote an orderly flow of traffic, by establishing specific lines of demarcation between areas reserved for bicycles and lanes to be occupied by motor vehicles. This effect is supported by bike lane signs and pavement markings. Bike lane pavement markings can increase bicyclists' confidence that motorists will not stray into their path of travel if they remain within the bike lane. Likewise, with more certainty as to where bicyclists will be, passing motorists are less apt to swerve toward opposing traffic in making certain they will not hit bicyclists.

Class II bike lanes shall be one-way facilities.

Two-way bike lanes (or bike paths that are contiguous to the roadway) are not permitted, as such facilities have proved unsatisfactory and promote riding against the flow of motor vehicle traffic.

(1) *Widths.* Typical Class II bikeway configurations are illustrated in Figure 1003.2A and are described below:

(a) Figure 1003.2A-(1) depicts bike lanes on an urban type curbed street where parking stalls (or continuous parking stripes) are

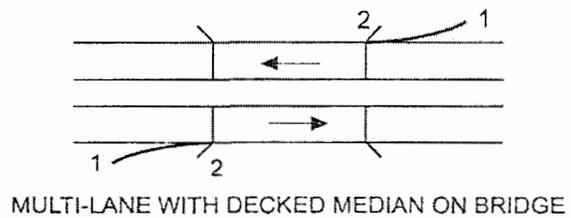
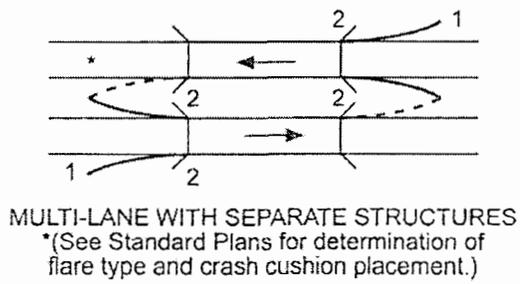
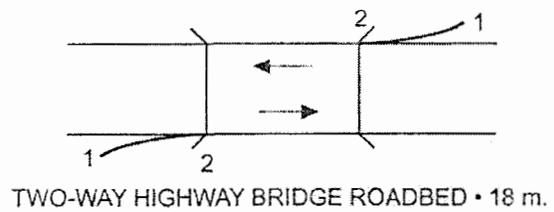
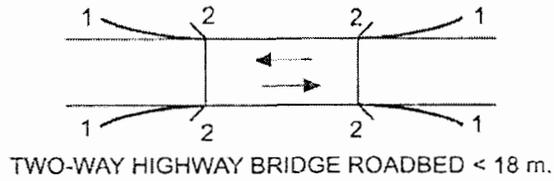
marked. Bike lanes are located between the parking area and the traffic lanes. **As indicated, 5 feet shall be the minimum width of bike lane where parking stalls are marked.** If parking volume is substantial or turnover high, an additional 1 foot to 2-foot of width is desirable.

Bike lanes shall not be placed between the parking area and the curb. Such facilities increase the conflict between bicyclists and opening car doors and reduce visibility at intersections. Also, they prevent bicyclists from leaving the bike lane to turn left and cannot be effectively maintained.

(b) Figure 1003.2A-(2) depicts bike lanes on an urban-type curbed street, where parking is permitted, but without parking stripe or stall marking. Bike lanes are established in conjunction with the parking areas. **As indicated, 11 feet or 12 feet (depending on the type of curb) shall be the minimum width of the bike lane where parking is permitted.** This type of lane is satisfactory where parking is not extensive and where turnover of parked cars is infrequent. However, if parking is substantial, turnover of parked cars is high, truck traffic is substantial, or if vehicle speeds exceed 35 miles per hour, additional width is recommended.

(c) Figure 1003.2A-(3) depicts bike lanes along the outer portions of an urban type curbed street, where parking is prohibited. This is generally the most desirable configuration for bike lanes, as it eliminates potential conflicts resulting from auto parking (e.g., opening car doors). **As indicated, if no gutter exists, the minimum bike lane width shall be 4 feet. With a normal 2-foot gutter, the minimum bike lane width shall be 5 feet.** The intent is to provide a minimum 4 feet wide bike lane, but with at least 3 feet between the traffic lane and the longitudinal joint at the concrete gutter, since the gutter reduces the effective width of the bike lane for two reasons. First, the longitudinal joint may not always be smooth, and may be difficult

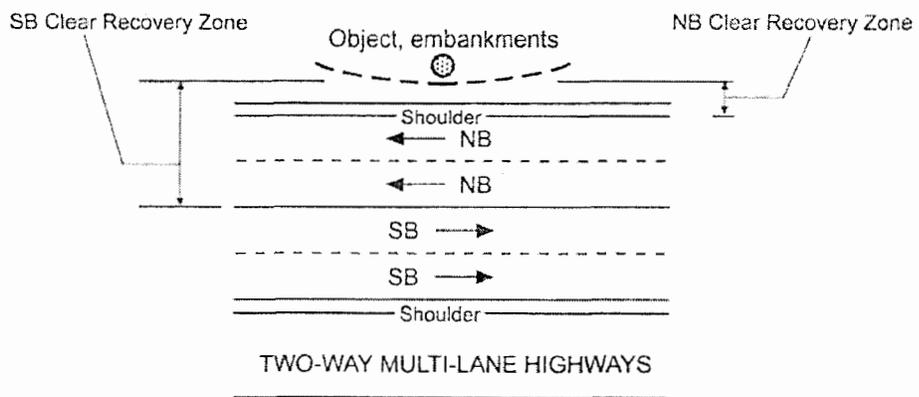
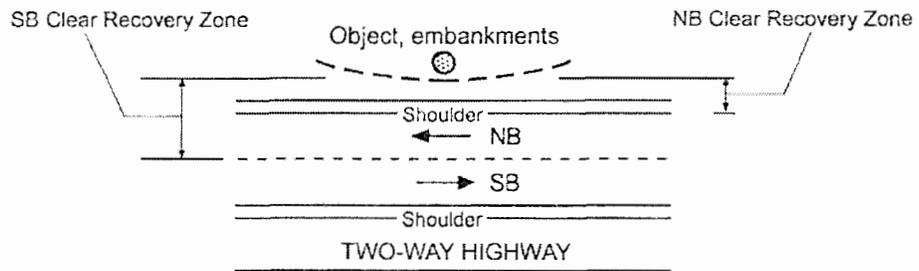
Figure 7-2a
GUARDRAIL AT STRUCTURE APPROACHES



LEGEND:

- 1. End Treatment - See Standard Plans
- 2. Positive Anchorage to Structure

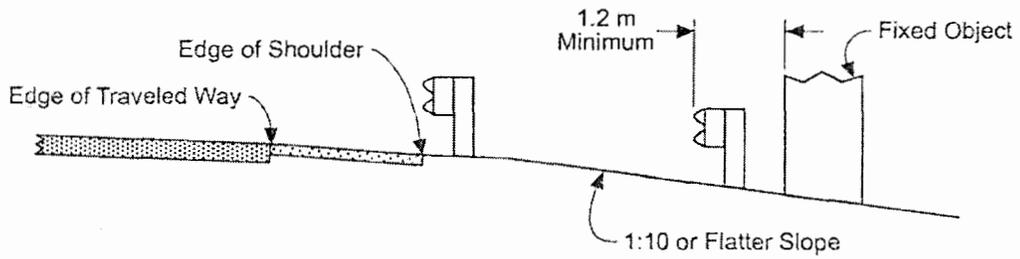
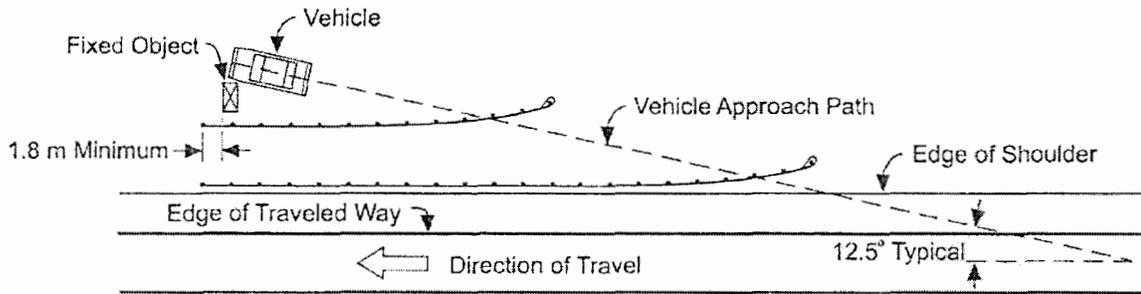
**Figure 7-2b
CLEAR RECOVERY ZONES**



NOTE:

1. Object, embankment within the clear recovery zone should be shielded with the appropriate end treatment.
2. For additional information, please contact your District Traffic Safety Systems Coordinator, Headquarters' Traffic operations Liaison or Headquarters' Office of Traffic Safety Program and Research.

Figure 7-3
POSITION OF GUARDRAIL AT FIXED OBJECTS





LACO ASSOCIATES

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RONALD C. CHANEY, Ph.D • CE 29027/GE 00934

May 8, 2006

Stover Engineering
711 H Street
Crescent City, California 95531

COPY

EXHIBIT NO. 9
APPLICATION NO. 1-07-005
CITY OF CRESCENT CITY
GEOTECHNICAL EVALUATIONS (1 of 10)

Attention: Mr. Ward Stover

Subject: Preliminary Geotechnical Investigation Report of Findings
Harbor Trail Pedestrian Bridge, Crescent City, California

Dear Mr. Stover:

LACO ASSOCIATES (LACO) presents results of our preliminary geotechnical investigation for the proposed new pedestrian bridge across Elk Creek in Crescent City, California. Our investigation focused on soil properties pertaining to the general design parameters of the proposed footbridge. Within this report, we provide a discussion of the suitability of the site for the proposed structure, any geologic hazards that might impact the proposed structure, and appropriate design criteria that should be incorporated into the final design of the structure. We have attached a location map and a site plan map (Figures 1 and 2, respectively) indicating the location of the proposed bridge and the locations of our geotechnical borings. We have also attached soil profile logs (Figures 3 and 4).

FIELD INVESTIGATION

On April 11, 2006, a LACO geologist conducted a field investigation at the site of the proposed pedestrian bridge. To assess the subsurface conditions at the location of both bridge abutments, we installed and logged two geotechnical test borings (GB-1 and GB-2) with a rotary powered hollow-stem auger drilling rig. Access restrictions did not allow for the installation of our borings within the exact locations of the abutments, so a shallow hand-augered boring was installed within the footprint of the east abutment to verify lateral continuity of soils. As part of the drilling operation, we conducted standard penetration testing (SPT) and collected soil samples. Borings were installed to total depths of 20 feet below ground surface (bgs) and 15 feet bgs for GB-1 and GB-2, respectively. Within both borings, heaving sands prevented advancement beyond those total depths.

IN-SITU SOIL CONDITIONS

Native soils underlying the site, as observed in our borings, consist of poorly graded sand (SP) with a distinct layer of large woody debris at approximately 5 to 7 feet bgs. Thin interlayered gravel beds were observed between 10 and 15 feet bgs.

Groundwater was encountered at approximately 5 to 6 feet bgs. Groundwater is locally controlled by the elevation of Elk Creek. The poorly graded sandy soils adjacent to Elk Creek are well drained, and we therefore expect that groundwater elevation will remain at, or slightly above, the elevation of the surface waters in the creek. Within the locations of the abutments, the groundwater is within 1 to 2 feet of the ground surface.

SPT tests were conducted beginning at approximately 5 feet bgs. Results indicate sandy soils are medium dense to dense with a loose interval at 10 feet bgs within GB-1.

GEOLOGIC HAZARDS

There are a number of geologic hazards that could potentially affect the project site. These include: (1) tsunami, (2) strong earthquake shaking, (3) liquefaction, (4) fluvial erosion, and (5) flooding. Below, we discuss how each of these hazards might affect the bridge, and provide recommendations for minimizing such affects where appropriate.

Tsunami Inundation

Hazards from tsunami inundation are considered to be significant for the Crescent City area based on the historical record (Geology For Planning, Crescent City and Sister Rocks Quadrangles; CDMG, 1981). The project site is situated within an area inundated during the 1964 tsunami, which saw run-up heights of greater than 6 meters. Significant scour occurred within the vicinity of the proposed bridge as water was funneled into and out of the mouth of the Elk Creek drainage. We do not have any specific design recommendations for mitigating the tsunami hazard other than to mention that the deeper the foundation is embedded, the less likely that scour will undermine the structure.

Strong Earthquake Ground Shaking

The Northern California coastal area is a seismically active region, and earthquakes that cause ground shaking will occur in the future. The site is located in California Building Code (CBC) Seismic Zone 4. Peak ground accelerations (PGA) of approximately 0.3 to 0.4g (30 to 40 percent of the gravitational acceleration), or more, may be expected to occur on this site as a result of the regional design basis earthquake [Petersen *et al*, 1999; California Geologic Survey (CGS) Probabilistic Seismic Hazards Mapping Ground Motion, 2006]. A copy of the CGS Ground Motion page is included as Attachment 1. Design and construction in accordance with this data and Chapter 16 of the 2001 edition of the CBC should help to reduce, but may not eliminate completely, the seismic hazards (risks to human life and property) at this site.

Liquefaction

Shallow groundwater and poorly graded, cohesionless soils (sands and silts) underlying the project area are conditions conducive to liquefaction during a moderate to strong earthquake. Liquefaction of soils adjacent to or underlying the abutments could result in

settlement or lateral movement of the structure. Numerous accounts of this type of deformation have been observed in the Crescent City area as a result of seismically-induced liquefaction (CDMG, 1981). Mitigation of this hazard would require the design/construction of deep piers or piles to transfer loads to deeper/denser soils (greater than 20 feet bgs). Despite the poorly graded nature and persistent saturated condition of the sands underlying the site, it is our opinion that the age and density of the sediments indicate a moderate to low potential for liquefaction to occur at this site. Risks at this site related to potential liquefaction are structural in nature and generally not life-threatening, and we therefore do not make any specific recommendations to this regard.

Fluvial Erosion

The proposed locations for the bridge abutments are situated on the lateral margins of Elk Creek, and therefore will be subjected to erosive forces of flowing water. To prevent undercutting of the abutments by water flows we recommend that the abutments be embedded at least 5 feet below the thalweg of Elk Creek.

Flooding

Published planning maps for the Crescent City area (CDMG, 1981) indicate that the project site is located within a region that would be inundated by the 100-year flood. It might be prudent to construct the bridge span above the anticipated flood elevation to avoid damage from large floating debris that is often incorporated in floodwaters. In general, we do not anticipate flooding will significantly jeopardize the structure, and therefore do not have any other recommendations.

DISCUSSION AND CONCLUSIONS

Based upon the results of our field investigation and literature review, it is our opinion that the existing site conditions are compatible with the proposed bridge design and location. There are numerous geologic hazards that have the potential to affect the project site, although most of them are either unavoidable or do not pose great risk.

The soils underlying the site consist of medium dense to dense sands with minor silty and gravelly layers. We recommend embedment into the native materials to approximately 5 feet below the active channel. We estimate this depth to correspond to an elevation of approximately 3 to 5 feet below mean sea level, although we did not conduct a survey of the channel elevation to verify this. De-watering of excavations to this depth will be a necessary component of construction of the abutments. We classify the native soils underlying this site as a stiff soil profile, and assign an allowable bearing capacity of 1,500 pounds per square foot for soils at the recommended bearing depth. After review of the project site, surrounding terrain, and soil profile, we feel that no further soil mechanics analyses are required.

LIMITATIONS

This report has been prepared for the exclusive use of Stover Engineering, their contractors, and appropriate public authorities for specific application to the proposed project. LACO has endeavored to comply with generally accepted geotechnical engineering practice common to the local area. LACO makes no other warranty, express or implied.

The analyses and recommendations contained in this report are based on data obtained from limited subsurface exploration. The methods used indicate subsurface conditions only at specific locations where observations were obtained, only at the time they were obtained, and only to the depths penetrated. Such observations cannot always be relied on to accurately reflect stratigraphic variations that commonly exist between sampling locations, nor do they necessarily represent conditions at any other time.

Please contact the project geologist, Jason Buck, at (707) 443-5054 if you have any questions or need additional information.

Sincerely,
LACO ASSOCIATES

Signature on File

David N. Lindberg
C.E.G.1895, Exp. 2/29/08



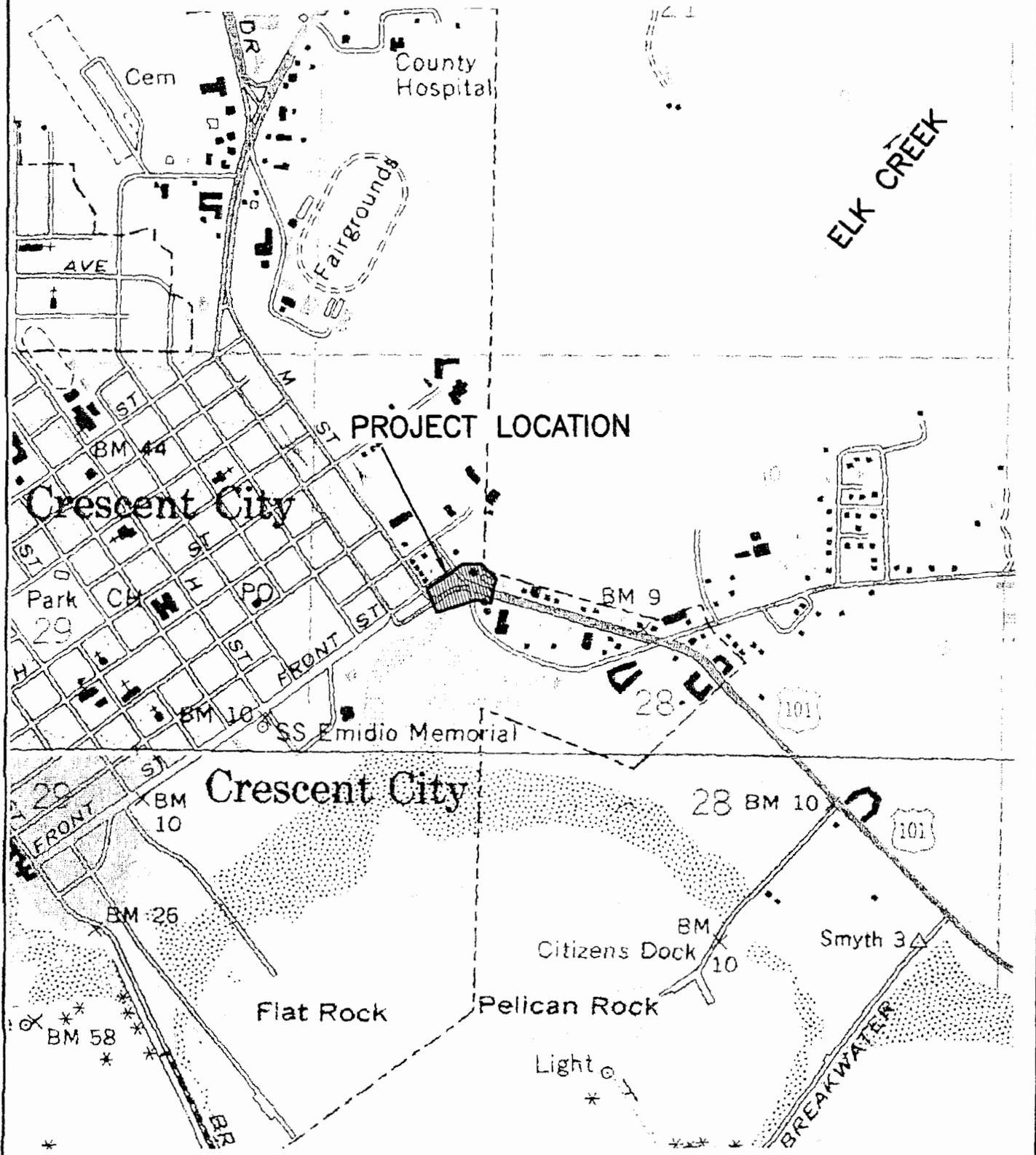
Attachments

JPB:jg



LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-5054

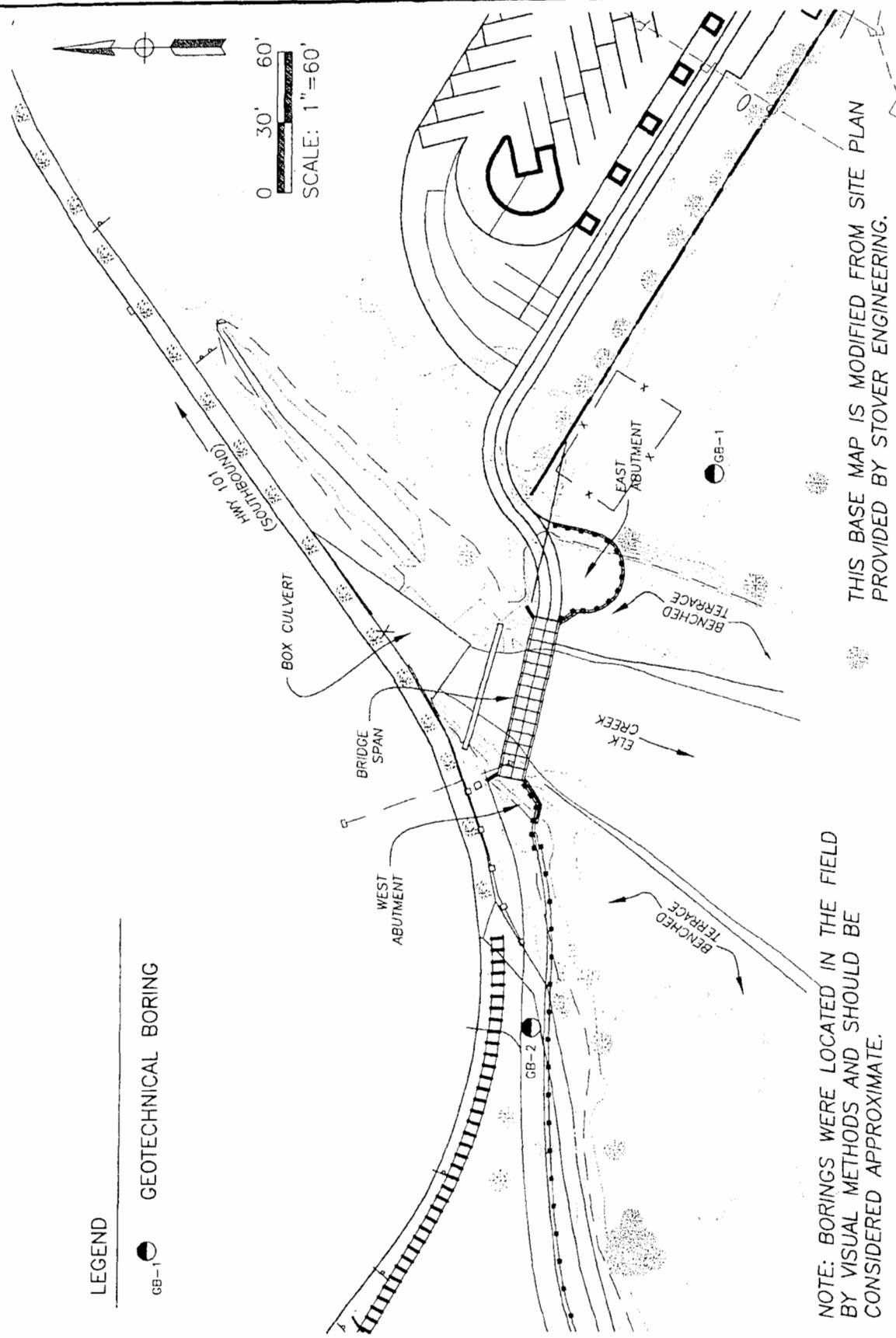
PROJECT	PRELIMINARY GEOTECHNICAL INVESTIGATION	BY	RJM	FIGURE	1
CLIENT	STOVER ENGINEERING	DATE	4/27/06		
LOCATION	PROPOSED ELK RIVER PEDESTRIAN BRIDGE	CHECK	DB	JOB NO.	6267.00
	LOCATION MAP	SCALE	1"=1000'		



May 04, 2006-3:47pm
T:\CADFILES\6200\6267 Stover CC Harbor Trail\dwg\6267-GEO INVEST-april-06\ 6267 Fig1.dwg

LEGEND

● GB-1 GEOTECHNICAL BORING



NOTE: BORINGS WERE LOCATED IN THE FIELD BY VISUAL METHODS AND SHOULD BE CONSIDERED APPROXIMATE.

THIS BASE MAP IS MODIFIED FROM SITE PLAN PROVIDED BY STOVER ENGINEERING.

PROJECT	PRELIMINARY GEOTECHNICAL INVESTIGATION	BY	RJM	FIGURE	2
CLIENT	STOVER ENGINEERING	DATE	4/27/06	CHECK	
LOCATION	PROPOSED ELK RIVER PEDESTRIAN BRIDGE	SCALE	1" = 60'	JOB NO.	6267.00
SITE PLAN MAP					



LACO ASSOCIATES
CONSULTING ENGINEERS
21 W 4TH ST. EUREKA, CA 95501 (707)443-3054

GEOTECHNICAL BORING LOG

Boring No. GB-1

PROJECT: HARBOR TRAIL PEDESTRIAN BRIDGE
 BORING LOCATION: EAST SIDE OF ELK CREEK
 DRILLING METHOD: ROTARY AUGER
 DRILLER: LACO ASSOCIATES
 DEPTH TO WATER: INITIAL ∇ : 5
 SITE GEOLOGY: UPLIFTED MARINE TERRACE SURFACE

PROJECT NO.: 6267.00
 DATE: 4/11/06
 ELEVATION: 12 FEET MSL
 LOGGED BY: **JPB**

COMPLETION ∇ : 5

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	Water Content %	Dry Density pcf	STANDARD PENETRATION TEST		
						DEPTH	N	CURVE
								10 30 50
12 - 0		FILL	Sandy Gravel imported for parking area.					
9 - 3		SP	POORLY GRADED SAND; Greenish Gray, wet, loose to medium dense.					
6 - 6						5-6.5	13	•
3 - 9			Layer of large woody debris approximately 1 to 1.5 feet thick.			7.5-9	11	•
0 - 12		SP	POORLY GRADED SAND; Dark Gray, saturated, loose, fine to medium sands, thin gravel layers encountered below 10 feet bgs (based on drilling observations)			10-11.5	4	•
-3 - 15						15-16.5	34	•
-6 - 18								
-9 - 21			HALT at 20 feet bgs due to heaving sands.					

Surface elevation at the location of GB-1 is approximately 4 feet higher than the surface elevation within the vicinity of the proposed East Buttress.

GEOTECHNICAL BORING LOG

Boring No. GB-2

PROJECT: HARBOR TRAIL PEDESTRIAN BRIDGE
 BORING LOCATION: WEST SIDE OF ELK CREEK
 DRILLING METHOD: ROTARY AUGER
 DRILLER: LACO ASSOCIATES
 DEPTH TO WATER: INITIAL ∇ : 7 COMPLETION ∇ : 6
 SITE GEOLOGY: UPLIFTED MARINE TERRACE SURFACE

PROJECT NO.: 6267.00
 DATE: 4/11/06
 ELEVATION: 11 FEET MSL
 LOGGED BY: JPB

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	Water Content %	Dry Density pcf	STANDARD PENETRATION TEST		
						DEPTH	N	CURVE
								10 30 50
0		SM	SILTY SAND; Dark Brown, wet, loose, organic rich topsoil.					
9		SM	SILTY SAND; Dark Gray, wet, loose to medium dense.					
3								
6			Layer of large woody debris approximately 1 foot thick.			5-6.5	25	
6	10/6 14/6 11/6	SP	POORLY GRADED SAND; Dark Gray, wet to saturated, medium dense to dense, minor gravels (<5%) and minor shelly debris.					
3	11/6 23/6 34/6					7.5-9	57	
9								
0	7/6 11/6 17/6		Rocky debris within sample barrel.			10-11.5	28	
12								
-3	2/6 4/6 16/6		Rock fragments within sample barrel and shoe with abundant shelly debris. Heaving sands upon withdrawal of sample.			12.5-14	20	
15			HALT at 15 feet bgs due to heaving sands.					
-6								
18								
-9								
21								

Surface elevation at the location of GB-2 is approximately 3 feet higher than the surface elevation within the vicinity of the proposed West Buttress.

Attachment 1

Probabilistic Seismic Hazards Mapping Ground Motion Page

User Selected Site

Longitude	-124.19
Latitude	41.75

Ground Motions for User Selected Site

Ground motions (10% probability of being exceeded in 50 years) are expressed as a fraction of the acceleration due to gravity (g). Three values of ground motion are shown, peak ground acceleration (Pga), spectral acceleration (Sa) at short (0.2 second) and moderately long (1.0 second) periods. Ground motion values are also modified by the local site soil conditions. Each ground motion value is shown for 3 different site conditions: firm rock (conditions on the boundary between site categories B and C as defined by the building code), soft rock (site category C) and alluvium (site category D).

Ground Motion	Firm Rock	Soft Rock	Alluvium
Pga	0.293	0.312	0.346
Sa 0.2 sec	0.682	0.733	0.825
Sa 1.0 sec	0.275	0.345	0.428

NEHRP Soil Corrections were used to calculate Soft Rock and Alluvium. *Ground Motion values were interpolated from a grid (0.05 degree spacing) of calculated values. Interpolated ground motion may not equal values calculated for a specific site, therefore these values are not intended for design or analysis.*

City of Crescent City Coastal Trail

The City Coastal Trail concept provides bicycle and pedestrian access from city limits-to-city limits along the coast. It is divided into three connecting segments: Pebble Beach Trail, Lighthouse Trail and Harbor Trail. This proposal is the last of the segments to be developed. The concept herein involves the Crescent City Harbor District and crosses the City boundary to connect to bike route concepts in unincorporated Del Norte County.

Harbor Trail

The Harbor Trail connects the existing Cultural Center trailhead at Front and K Streets south across Elk Creek to the Crescent City Harbor and eventually the south beach areas. Beginning as a multipurpose bike and pedestrian trail it divides into a beach-oriented pedestrian route and separate bike route after crossing Elk Creek. The two routes converge on the south side of the harbor boat basin to connect to future facilities on Starfish Way. Due to the size, complexity and costs of the concept the following description divides the project into two segments- north and south, as well as identifying a separate beach access at Beachfront Park.

Beachfront Park Beach Access

Figure 2

Provides stair or ramp access from the levee to the beach. Original location at the mouth of Elk Creek is moved further west due to biological concerns. Adjacent to existing parking the access permits new access in an area where there is none. Further study of the alternative area will be required before project development.

Harbor Trail - North Segment Bike and Pedestrian Routes

Figures 3 & 3A

Begins at the existing Cultural Center/Dolo plaza. The bicycle route ends at the Highway 101/Huston St/Elk Valley Rd intersection where it connects, by existing signalized crosswalk to the Elk Valley Road Class 3/Class 2 bike system due to begin construction in 2004.

- Remove existing asphalt path between dolo and highway and place concrete post and chain fence in its place as protective mitigation for protected plant species.
- Construct multipurpose Class 1 trail from dolo to Highway 101 closer to Front Street, with walkway connection from signal at Front and Highway 101 (L St) intersection with trailheads. Include related benches, interpretive signs, directional posts and a Beachfront Park Recreation Area sign.
- Construct 10-12 ft wide single span bike/pedestrian bridge across Elk Creek downstream from the Highway 101 crossing with minimal disturbance to riparian vegetation. As mitigation for disturbed habitat develop and implement a riparian habitat restoration project in adjacent Elk Creek area. Replace any Beach Pine removed at a 2:1 ratio in adjacent trailhead area.
- Acquire and develop APN 118-380-32 as park trailhead including extension of Class 1 trail to Sunset Circle, provision of public parking lot and restrooms. Provide trailhead information center with map, interpretive panels and funding acknowledgements.
- Provide connection of Class 1 trail to Class 3 bike route on Sunset Circle with crosswalk and signage.
- Provide pedestrian pathway connection to RV Park driveway for trail pedestrian route to beach with directional posts. Improve existing footpath to creek/beach across ice plant covered rubble and also provide markers at bend and end of park driveway (see Figure 9).
- As a mitigation for increased traffic improve Sunset Circle to a 24- 32 ft street with curb, gutter and sidewalk on northwest side and curb and gutter on southeast side from Highway 101 thru the new RV Park access way. Realign the RV Park access to one 40 ft paved with curb entrance south of the trail intersection. Reclaim the northerly driveway with landscaping and relocate the RV Park sign. Also, post Sunset Circle as a "No Left Turn" intersection, directing parking lot and RV exits to the Highway 101/Huston/Elk Valley Rd signalized intersection.
- As a mitigation for potential storm water runoff from parking lot and street, provide a drainage retention area as shown.

Figure 4

- Post Sunset Circle from Class 1 trail intersection to Highway 101/Huston St intersection as a Class 3 Bike Route.

South Segment - Bicycle Route

Three alternative routes have been identified between Sunset Circle and the City Limits at the undeveloped King St right-of-way. South of King Street a Class 1 trail is proposed to the end point at the intersection of Citizens Dock and Starfish.

Figure 5 - Alternative A

- Acquisition of trail right of way on parcels 118-390-18, 33 and 28.
- Construction of a Class 1 trail to the west of the commercial development area. This includes use of Harbor District owned land at the foot of the dredge spoils area levee which is currently mowed by the Comfort Inn (formerly Holiday Inn). Trail development would also occur in undeveloped City right of way for Huston, Walton, Vance and King Streets.
- Fencing and landscaping to provide privacy near residential and/or hotel uses is noted. Trailheads at Sunset, Huston, Vance and the King Street crossings would be necessary for safety and to restrict vehicle traffic use. A locking gate where the Huston right of way provides access to the dredge spoils area would limit traffic to Harbor use only.
- The improvement of Vance St to a 32 ft street with curb, gutter, sidewalk and on-street parking on the north and curb, gutter, no parking and a landscape buffer for the trail is illustrated. Business driveways would be as necessary but should be limited in the trail area.
- The specific design of the secondary entrance to the harbor parking area would be determined in the final design development however a Class 1 trail crossing is indicated by this alternative. This Alternative would be the most preferred for trail safety and use. Use of Harbor district lands from Walton to King would also be preferred however wetlands in this area limit such development unless the dredge spoils area is used, raising conflicts with that activity.

City of Crescent City - Harbor Trail Project Description

August 2003

EXHIBIT NO. 10

APPLICATION NO.

1-07-005

CITY OF CRESCENT CITY

EXCERPTS, CRESCENT CITY
HARBOR TRAIL PLAN (1 of 14)

Figure 6 - Alternative B

- Acquisition of trail right of way across parcels 118-390-33 & 21
 - Construction of a Class 1 trail from the southeast side of Huston St and Sunset Circle thru the Comfort Inn parking lot to Vance Street, then onward within the Vance Street right of way to the King Street right of way where a turn to connect to the Harbor would be made.
 - The crossing of the Comfort Inn parking lot would require some parking lot redesign including a new driveway entrance closer to Highway 101. The existing driveways for the existing porte cochere entrance would not be effected. Four or five parking lot spaces would be relocated to the end of Walton St as shown.
 - Landscaping for separation from existing or future uses, parking lot and streets would be necessary. Trailheads at Huston, parking lot crossings, Walton and King are noted.
 - Vance Street improvements and the crossing of King Street would be as in Alternative A.
- This Alternative is the most direct connection between Sunset Circle and the Harbor and is the route of a former bike path. However care in design of the crossing of the Comfort Inn parking lot area is necessary due to safety considerations.

Figure 7 - Alternative C

- Acquisition of trail right of way from APNs 118-390-21 & 32
- Construction of a Class 1 trail from Huston to Walton Streets utilizing new right of way and Highway 101 right of way, in lieu of public sidewalk. This would include a 5 ft landscape area between the curb and trail.
- Development of curb, gutter and sidewalk on the south side of Huston from the Highway to Vance/Sunset Circle and a new driveway entrance for the Wayside Market, with landscaping is shown.
- Development of Class 2 Bike Lanes on Walton and Vance Streets to the King Street right of way with a King Street crossing as in Alternative A.
- Vance Street would be improved with curb, gutter and sidewalk on both sides with driveways as needed.
- Crosswalks for use by pedestrians and bike lanes as shown.

This Alternative reflects the route now used by bicyclists, providing a more developed, safer route. Extension of the Class 1 trail between Walton and King Street along the Highway might be considered, based upon additional surveying and biological study however driveway conflicts with the existing hotel would exist. Connection to King could then be made from the Highway along the undeveloped right of way.

Harbor Basin Bike Trail

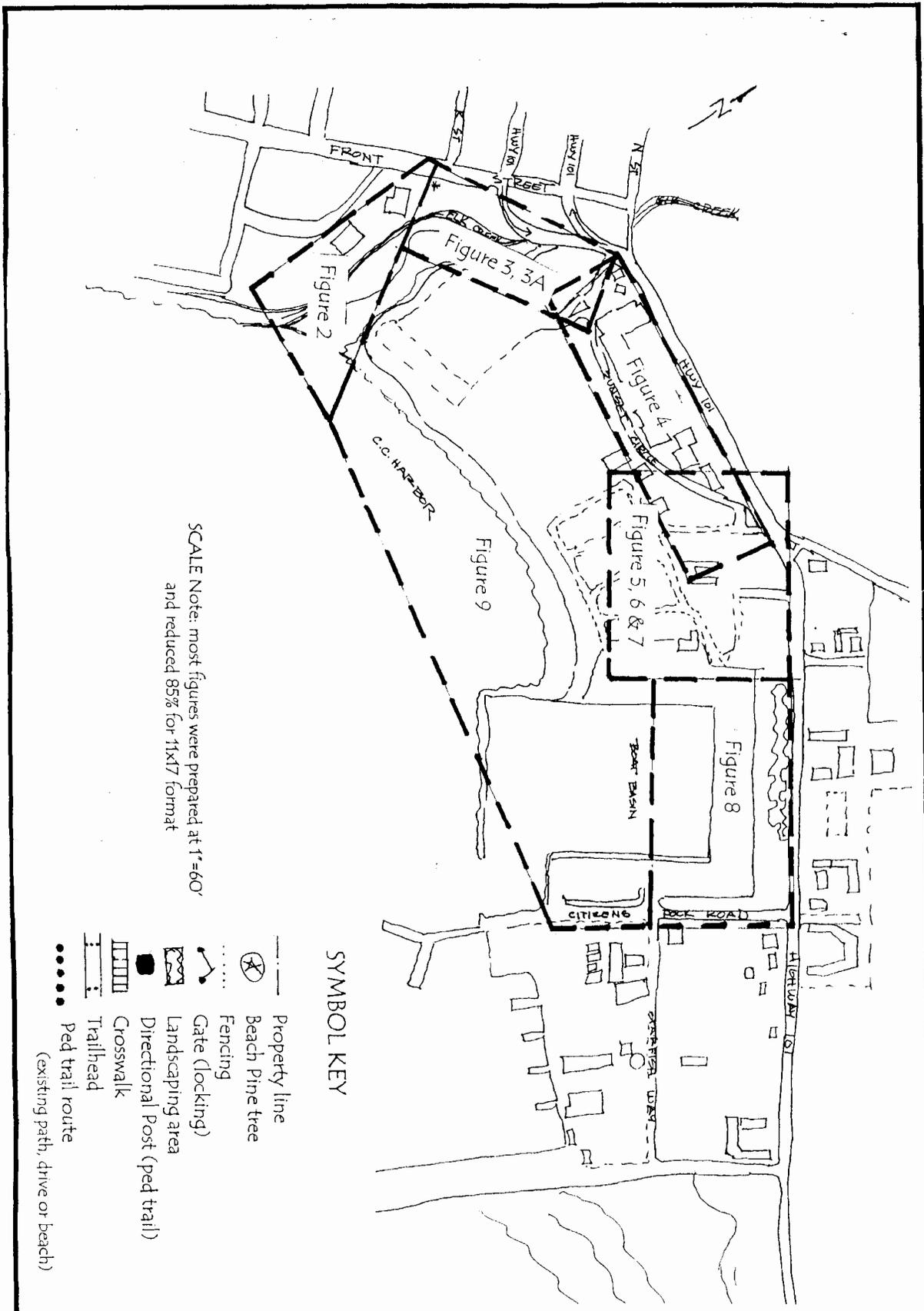
Figure 8

- Construct Class 1 Trail thru undeveloped open space between the Harbor boat basin and Highway 101, approximately 20-30 feet from edge of parking area. Place post and beam/chain fencing along parking lot side of trail. Connect the Vance and King Street area to the Citizens Dock Road/ Starfish Way intersection.
- Provide for a future plaza style connection for the Harbor Xing Bike Trail which will connect east across Highway 101 to the future Magruder Bike Trail serving the east side of the highway.
- Construct a public access parking lot in the King Street right of way with access from Vance St. This would provide for trail use without conflict with the commercial boat basin parking and net drying use areas.

Harbor Basin Pedestrian Trail

Figure 9

- Continue the pedestrian trail by marking existing beach and walkway routes from the RV Park around the harbor boat basin.
- Provide pedestrian directional post marker at existing beach access adjacent to the Harbor District outdoor museum/garden at the boat basin parking lot. Also install a locking gate at the head of the drive to limit traffic onto the beach to Harbor District traffic. City Code currently prohibits vehicles on the beach and this location is one of two access points.
 - Utilize museum/garden path and place directional markers to the sidewalk around the boat basin. Provide a marked crossing of the parking lot at the basin entrance leading pedestrians towards Starfish and Citizens Dock Rd. A side trail to the Fisherman's Memorial could be added.
 - Develop a pedestrian walkway along the side of the boat basin entrance to provide a safe grade-change connection between the parking lot and Citizens Dock Road. Provide a crosswalk to connect to future improvements on Starfish Way.



SCALE Note: most figures were prepared at 1"=60'
and reduced 85% for 11x17 format

SYMBOL KEY

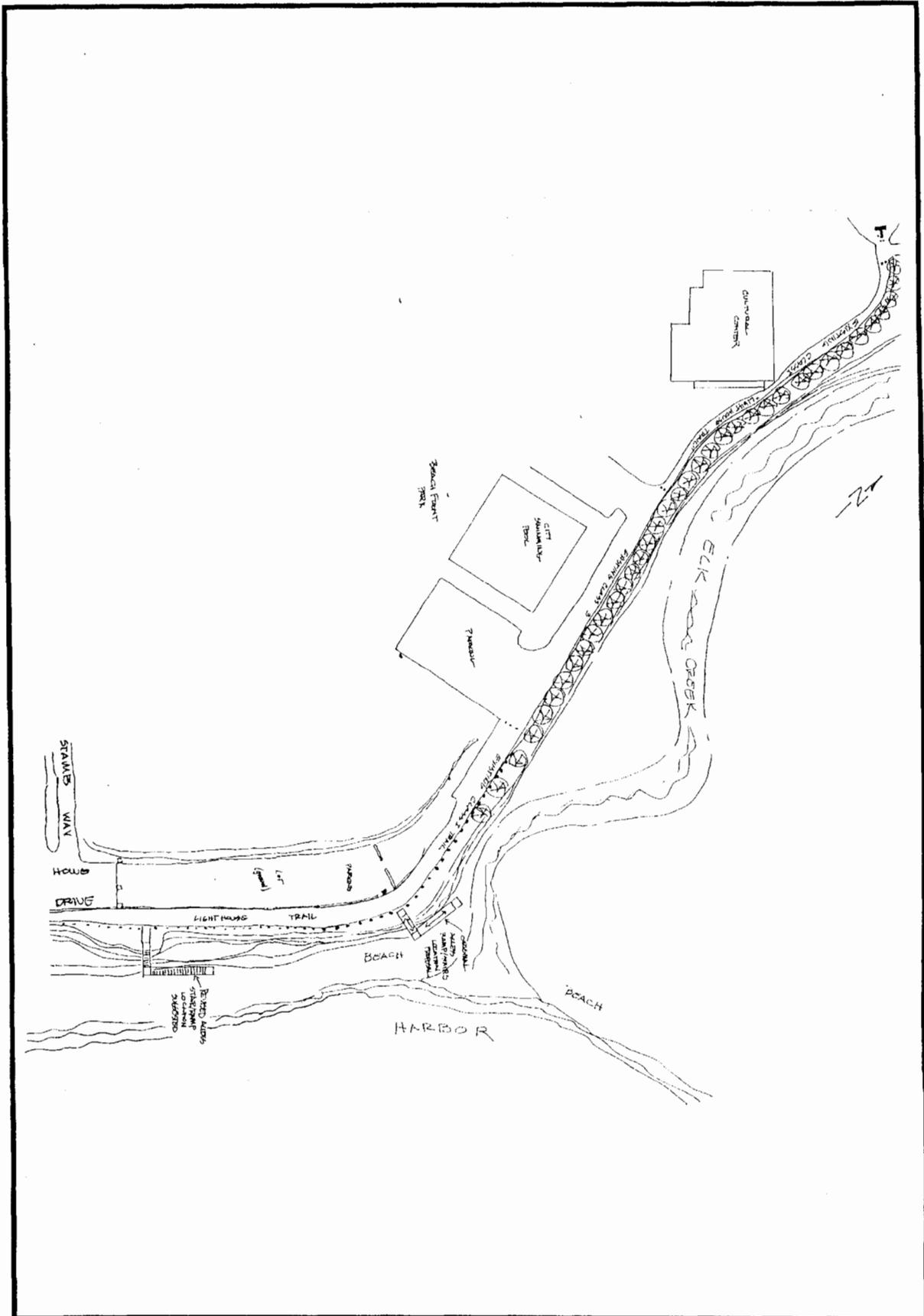
- Property line
- Beach Pine tree
- Fencing
- Gate (locking)
- Landscaping area
- Directional Post (ped trail)
- Crosswalk
- Trailhead
- Ped trail route
(existing path, drive or beach)

City of Crescent City - Harbor Trail Project

August 2003

Project Location

Figure 1

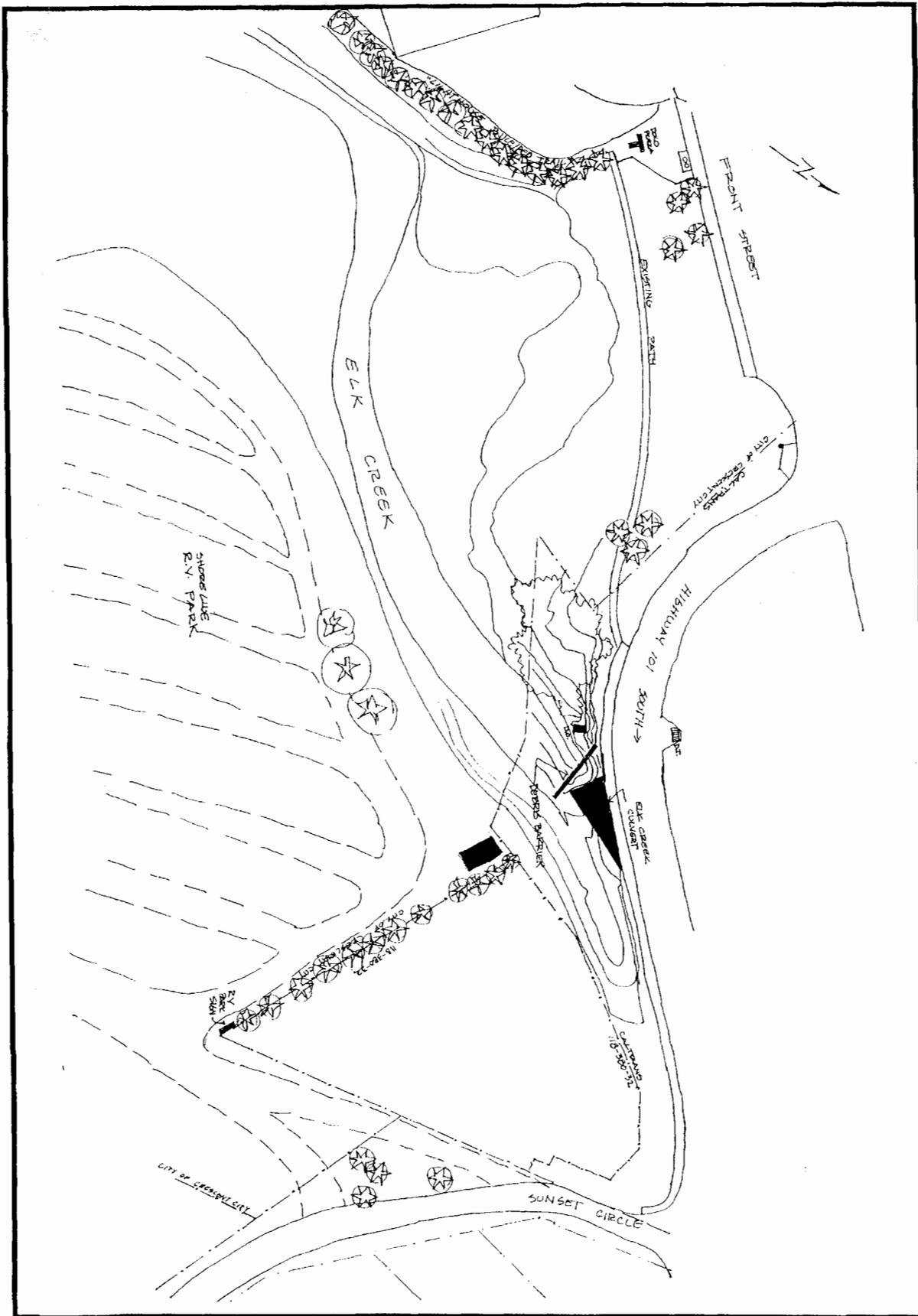


City of Crescent City - Harbor Trail Project

August 2003

Beachfront Park Beach Access

Figure 2

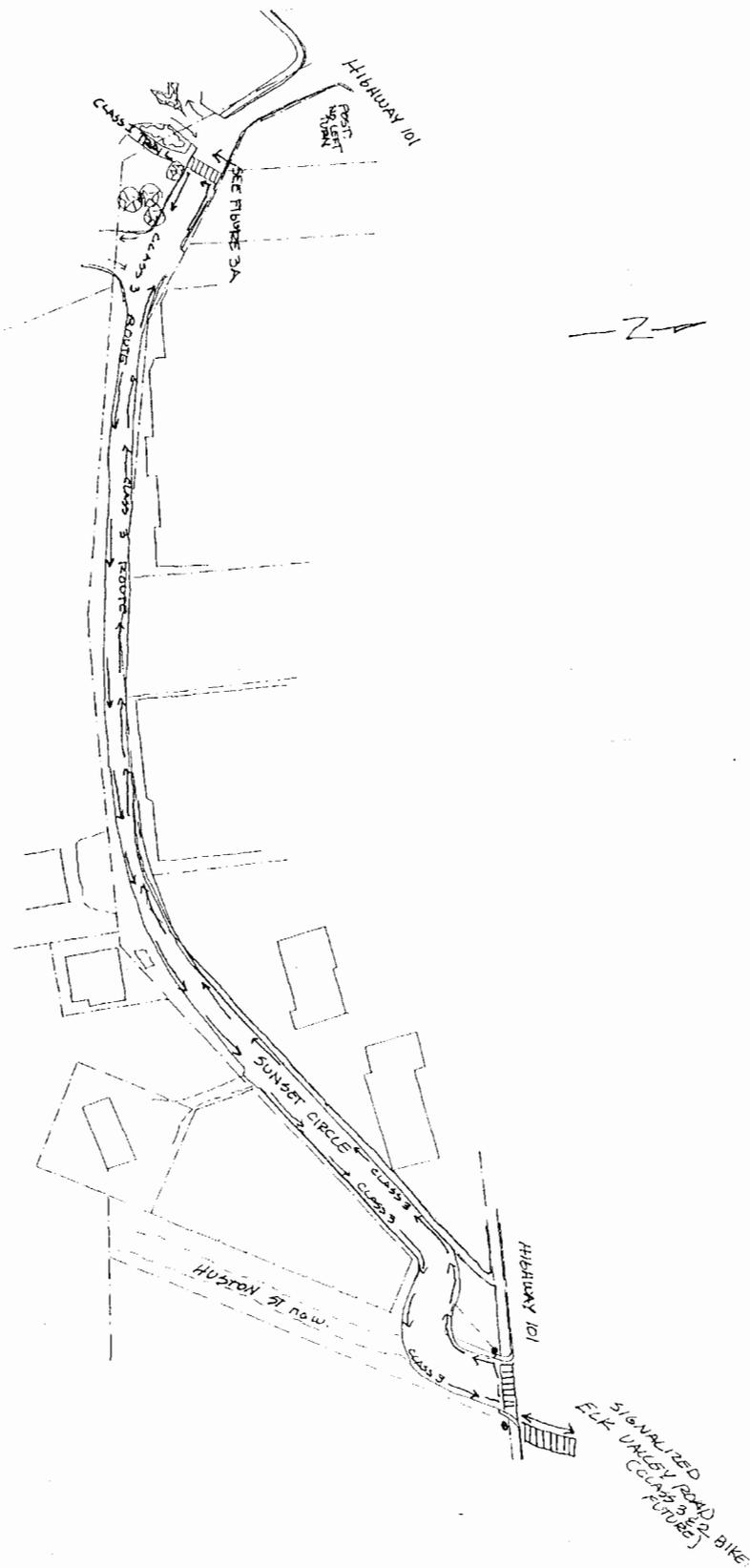


City of Crescent City - Harbor Trail Project

August 2003

Existing Elk Creek Area

Figure 3

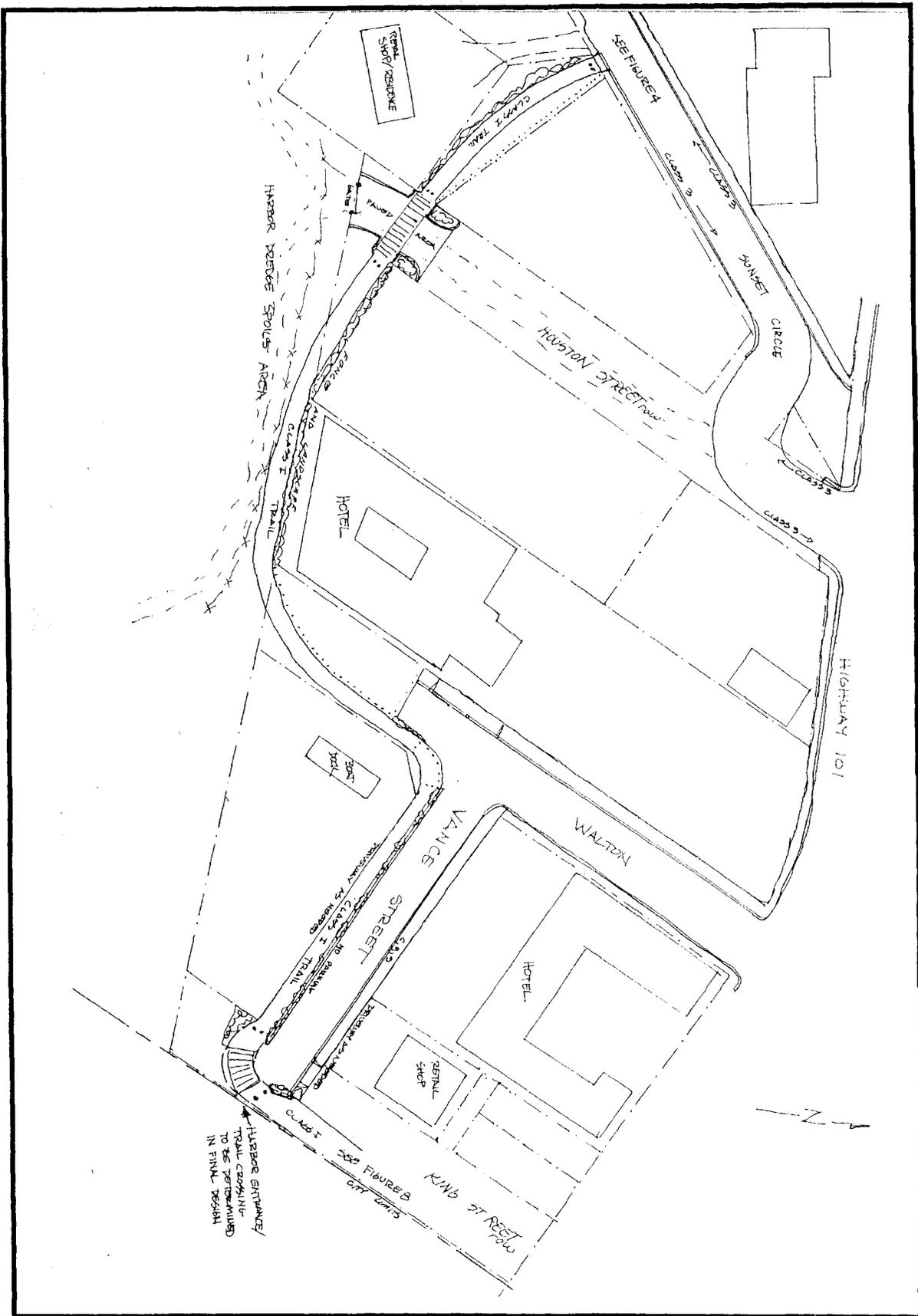


City of Crescent City - Harbor Trail Project

August 2003

Sunset Circle Bike Route

Figure 4

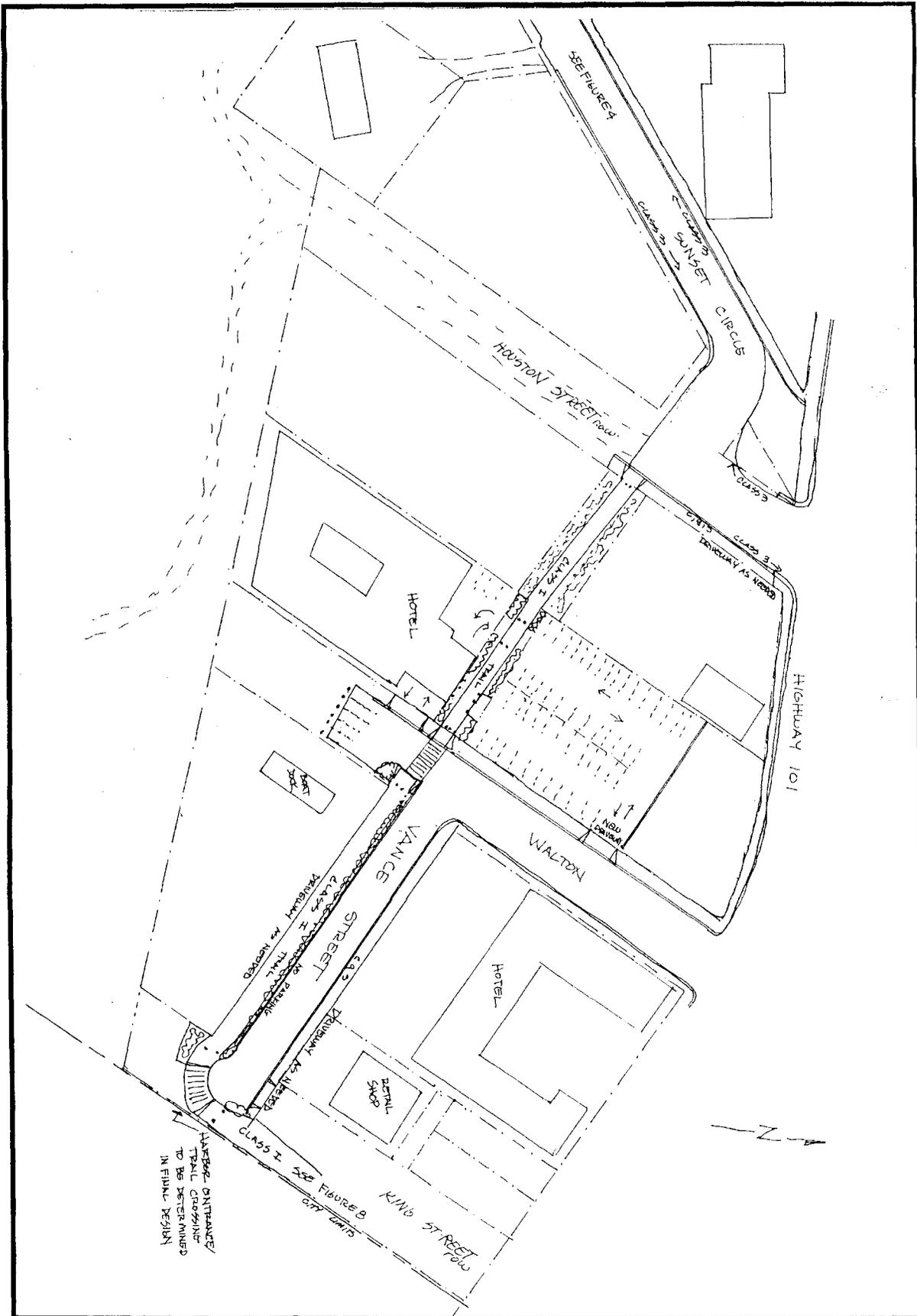


City of Crescent City - Harbor Trail Project

August 2003

Vance Street—Alternative A

Figure 5

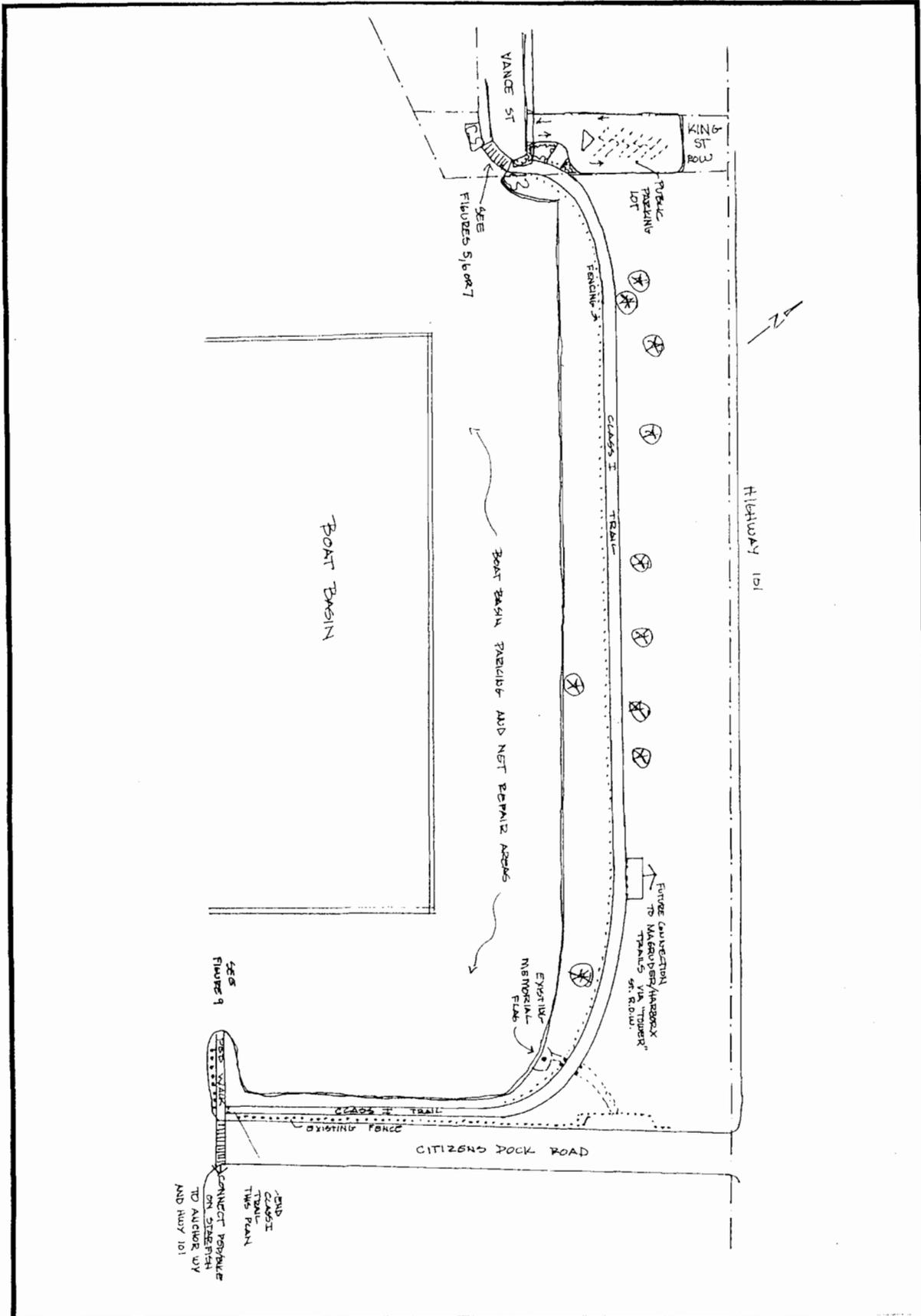


City of Crescent City - Harbor Trail Project

August 2003

Vance St—Alternative B

Figure 6

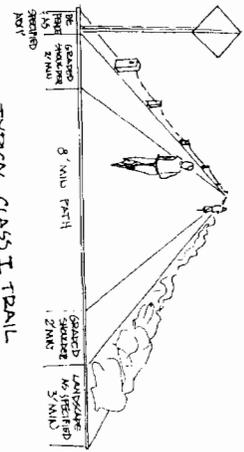


City of Crescent City - Harbor Trail Project

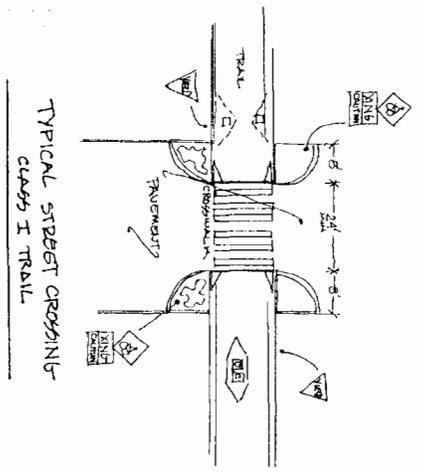
August 2003

Harbor Basin Bike Trail

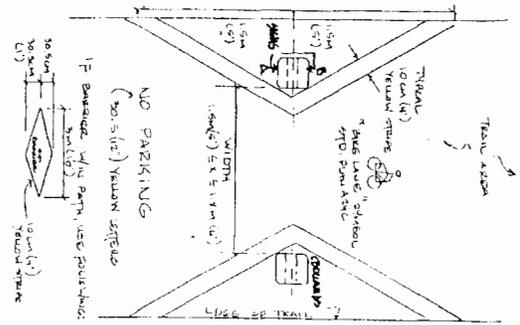
Figure 8



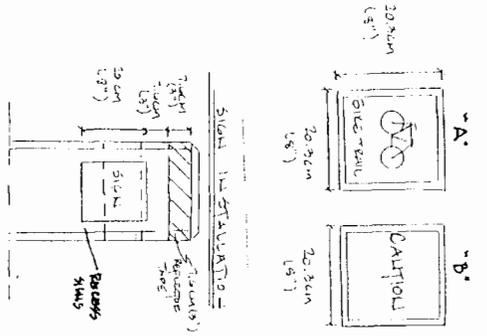
TYPICAL CLASS I TRAIL



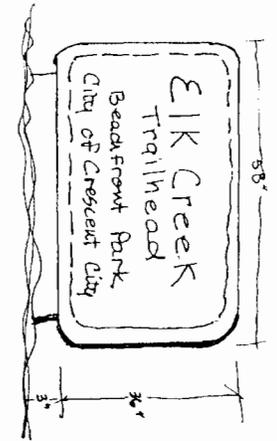
TYPICAL STREET CROSSING
CLASS I TRAIL



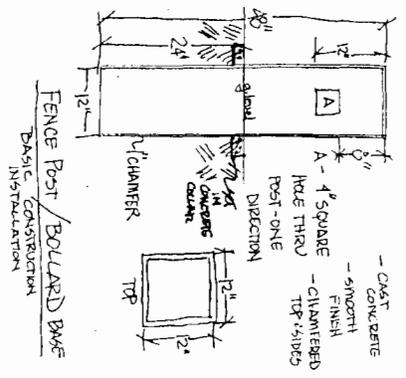
TRAIL HEAD SIGNS AND MARKINGS
CLASS I TRAIL



TRAIL HEAD SIGN AND MARKINGS



TRAIL HEAD SIGN @ HWY 101



FENCE POST/BOLLARD BASE
BASIC CONSTRUCTION
INSTALLATION



POST AND CHAIN FENCE

