01051-09004

Attachment A:
PROJECT INFORMATION
CITY OF ARCATA
RAIL-WITH-TRAIL CONNECTIVITY PROJECT

DRAFT: June 30, 2010

Applicant:

City of Arcata
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1.0 GENERAL INFORMATION

Title: City of Arcata Rail-with-Trail Connectivity Project

Project Applicant:
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Contact: Ms. Karen Diemer, Environmental Services Deputy Director

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Lead Agency (NEPA):
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Contact: Merritt Perry, Project Engineer/Project Manager

Directions to Project Site:

- North end (Larson Park): From Route 101 southbound, take Sunset Avenue exit. Turn Right onto Sunset Avenue, right on to Jay Street. Follow Jay Street to the end and enter City of Arcata's Larson Park on the right.
- South end (Bracut): From Route 101 northbound, exit left into Bracut Industrial Park.

County: Humboldt

USGS 7.5 Minute Quadrangle Maps: Arcata North; Arcata South

Section, Township, Range: The project traverses from the north from T6N/R1E Sections 29 and 32 and runs along the western edge of T5N/R1E Sections 4, 9, and ends on Section 17.

Latitude/Longitude:

- Northern end (Larson Park): 40° 52' 48" N; 124° 05' 01" W
- Southern end (Bracut): 40° 49' 39" N; 124° 05' 04" W

Northing/Easting:

- Northern End: 2210665; 5985602
- Southern End: 2191610; 5984933

Property Owner(s):
Various; mostly North Coast Railroad Authority (NCRA) and City of Arcata street rights-of-ways (see Table 1 in Attachment C for a list of abbreviations and acronyms). The City of Arcata also owns Larson Park, Foster Avenue extension area adjacent to Sunset Avenue, Shay Park parcel, parcels at intersection of Alliance and Foster, the Arcata Marsh and Wastewater Treatment Plant. The U.S. Fish and Wildlife Service (FWS) manages the Humboldt Bay National Wildlife Refuge which is adjacent to the trail alignment and project elements may be included on this property. The trail may cross several privately owned parcels: Alliance Avenue at 13th/14th and M Streets (owned by Arthur Hunter); south of the Samoa Boulevard intersection (owned by S&W Properties); and possibly on Bracut industrial park parcel (Rick Hess). If the secondary trail alignment is utilized, this segment would cross lands owned by the Northern Humboldt Union High School District.

Parcel Numbers:
The selected trail alignment crosses various properties, as provided in Table 2 (Attachment C), which includes Assessor's Parcel Numbers (APNs) for City-owned parcels, Humboldt Bay National Wildlife Refuge (managed by Fish and Wildlife Service). The project will mostly utilize NCRA and City streets rights-of-ways. The privately owned parcels the trail may cross are (from North to South): (1) Corner of Sunset Ave and Foster Ave (future roadway extension); (2) Alliance Avenue at 13th/14th and M Streets, the S&W Property just south of the Samoa Boulevard intersection (APN 503-251-011) and Bracut industrial park parcel (APN 501-241-031).

Legal Interest in Parcels: Will be provided for Coastal Zone properties (e.g. deeds, leases, easements, etc.). An MOU/MOA exists between the NCRA and the City of Arcata (_____date) for use of the potential trail corridor for the Rail-with-Trail Connectivity project.

General Plan Designation: See Table 2 (Attachment C); Multiple designations, primarily undesignated right-of-way, Natural Resource (NR) and Public Facility (PF); mostly NCRA right-of-way or City street right-of-way, also through City parks designated Public Facility (PF), private property designated Industrial Limited (IL), and the Arcata Marsh and Wildlife Sanctuary designated Natural Resource.

Zoning Designation:
See Table 2 (Attachment C); multiple zonings across the alignment, primarily located in undesignated right-of-way, Natural Resource (NR) and Public Facility (PF); mostly NCRA right-of-way or City street right-of-way; also through City parks designated Public Facility, private property designated Industrial Limited, and the Arcata Marsh and Wildlife Sanctuary designated Natural Resource.

Project Summary:
Figure 1 (Attachment B) provides a map of the project vicinity and Figures 2-1 through 2-28 (Attachment B) includes map series showing the Project Study Boundary (PSB). The proposed Arcata Rail-with-Trail Connectivity Project involves construction, operation, and maintenance of an approximately 4.5 mile long Class I, ADA accessible, non-motorized multiuse trail. The proposed project corridor would run from northern Arcata at Larson Park (near Sunset Avenue and the Arcata Skate Park), through the City of Arcata and the Arcata Marsh, and along the eastern edge of Humboldt Bay south to the Highway 101 and Bracut intersection. The existing corridor includes three transportation arteries: the North Coast Railroad Authority's railroad right of way, a portion of the Highway 101 corridor and also segments of City-owned road right of way.

Funding Source(s):
In 2009, the City received grant funding from the California Coastal Conservancy to complete planning, engineering design, and permitting for a "Rails-with-Trails" facility (the proposed project). "Rails-with-Trails" is an arrangement in which an established shared-use trail runs parallel to a rail line that is either functional or has the capacity to become functional in the future. Sources of funding for construction are currently being pursued by the City of Arcata. It is likely that there will be more than one funding source. The City of Arcata will be able to pursue construction-specific grant funding once the design and permitting for the project is complete.

Construction Dates: (Estimated) July 1st, 2011 to Oct 15th, 2015

Permits and Approvals:
A series of permit procedures and agency approvals are expected for implementation of the proposed project, as listed below.

A. U.S. Army Corp of Engineers (COE)

- Section 10 and Section 404 Permit—The proposed project requires authorization from the U.S. Army Corps of Engineers (COE) under Section 10 of the Rivers and Harbors Act of 1899 for activities below the Mean High Water (MHW) which is 6.4 feet MLLW (6.0 NAVD) for the project vicinity; and under Section 404 of the Clean Water Act for activities below the High Tide Line (HTL) which is estimated to be approximately 8.8 MLLW (8.0 NAVD) for the project vicinity.
- NOAA Fisheries—As part of the COE permit process, the COE will consult directly with NOAA Fisheries for potential effects to federally listed species under Section 7 of the Endangered Species Act (ESA). A Federal Biological Assessment (BA) will be prepared for use in the Informal or Formal consultation process between COE and NOAA.
- **U.S. Fish and Wildlife Service (FWS)**—The COE will consult directly with FWS for potential effects to federally listed species under Section 7 of the ESA. The Federal BA will address species of concern for the FWS, potential FWS issues/topics of concern, and will be provided to FWS for review and use in the consultation process with the COE.

- Wetland Mitigation and Monitoring Plan—this document is required as part of the permitting process for temporary and permanent fill activities of wetlands or Waters of the U.S.
- NEPA Environmental Assessment (EA)

B. California Regional Water Quality Control Board (RWQCB)–401 Water Quality Certification

C. California Department of Fish and Game (DFG)

- 1600 Lake and Streambed Alteration Agreement Permit
- State of California Biological Assessment—California Department of Fish and Game (DFG) is responsible for state listed species under the California Endangered Species Act. As such, a focused biological assessment has been prepared to evaluate potential impacts to the recently listed (June 25, 2009) longfin smelt (*Spirinchus thaleichthys*). Consultation regarding state listed species will occur between the Applicant and DFG regarding potential effects to this species.
- Additionally, if NOAA Fisheries issues a Biological Opinion regarding Coho salmon (State and Federally listed), pursuant to the Section 7 ESA consultation the applicant will request a Consistency Determination under Section 2080.1 of the Fish and Game Code from DFG.

D. Humboldt Bay Harbor, Recreation and Conservation District—Permit

E. California Coastal Commission

- Coastal Development Permit (CDP)—Consolidated permit process for areas of both City and Commission primary jurisdiction within the Coastal Zone

F. City of Arcata

- CEQA Initial Study / Mitigated Negative Declaration—The City of Arcata is the lead agency under CEQA.
- The City will request that the Coastal Commission process a consolidated Coastal Development Permit (CDP) for the portions of the project in the Coastal Zone (both areas of City and Commission primary jurisdiction)
- City of Arcata Grading Permit

G. County of Humboldt

- Grading Permit
- Humboldt County Encroachment Permit

H. California Department of Transportation—(Caltrans) Encroachment Permit

The following is a list of environmental approvals/permits that are currently being requested for the proposed project, along with a status of approvals / permits process:

Agency	Approval Type	ID Number	Date Applied	Date Approved
City of Arcata	a. CEQA--Mitigated Negative Declaration	SCH#: Not yet assigned	TBD	Not approved
FWS	ESA Section 7 Consultation	NA	TBD	Not approved
COE	a. Section 10 and 404 Permit	File # not yet	TBD	Not

	b. ESA Section 7 Consultation with NOAA Fisheries c. NEPA--Environmental Assessment	assigned		approved
RWQCB	401 Water Quality Certification	Ref # not yet assigned	TBD	Not approved
DFG	a. Section 1600 Streambed Alteration Agreement b. ESA Section 7 Consistency Determination	NA	TBD	Not approved
Harbor District	Permit	NA	TBD	Not approved
California Coastal Commission	CDP	NA	TBD	Not approved

Public Agencies with Jurisdictional Authority

- Federal
  - U.S. Army Corps of Engineers (COE)
  - U.S. Fish & Wildlife Service (FWS)
  - National Marine Fisheries Service (NMFS)
- State
  - Regional Water Quality Control Board (RWQCB)
  - California Coastal Commission
  - California Department of Fish & Game (DFG)
  - North Coastal Railroad Authority (NCRA)
  - California Public Utilities Commission (CPUC)
  - California Department of Transportation (Caltrans)
- Local
  - Humboldt County Public Works Department
  - Humboldt Bay Harbor, Recreation and Conservation District
  - City of Arcata

Supporting Documentation

- Wetland Delineation (USACE, DFG, CCC)
- Cultural Resources Investigation
- ASTM Phase I Corridor Study

2.0 PROJECT BACKGROUND

2.1 Project History

The City of Arcata currently has 20 miles of off-road trails and 16 miles of bike lanes. Although the City's active non-motorized transportation system is institutionally established, there are several large gaps that make the City difficult to navigate for pedestrians and bicycles. In 2004, the City drafted the Arcata Pedestrian and Bicycle Master Plan, in which over 35 miles of projects were developed to meet the increasing local demand for non-motorized alternatives and connectivity to and from the Pacific Coast and Humboldt Bay.

The railroad right-of-way owned by the North Coast Railroad Authority (NCRA), which travels through the center of the City of Arcata on a north/south axis, was identified in the 2004 Master Plan as a corridor of significant potential for a non-motorized trail. This portion of the NCRA corridor passes through several City parks, across commercial areas within the City, across primary City streets and a state highway (SR255), through the City of Arcata Marsh and Wildlife Sanctuary, adjacent to the public works yard and wastewater treatment facility yard, and along the Eureka-Arcata Safety Corridor and Caltrans right-of-way.

The *Humboldt Bay Trail Feasibility Study* (Alta, 2007) further studied the feasibility of a trail between Arcata and Eureka and presented alternative alignments and sections for trail construction. The 2007 Study covered a large portion of the current project including the section from South I Street in Arcata to the Bracut Intersection along Highway 101 on the Eureka-Arcata Corridor.

In 2009, the City received grant funding from the California Coastal Conservancy to complete planning, engineering design, and permitting for a "Rails-with-Trails" facility (the proposed project). "Rails-with-Trails" is an arrangement in which an established shared-use trail runs parallel to a rail line that is either functional or has the capacity to become functional in the future. In such projects, the trail is designed and developed to operate in the railroad right-of-way in such a way as to avoid interference with the functionality of the adjacent rail line.

2.2 Relationship to Railroad

In 1975, the railroad in the study area shipped 65,000 cars (almost 200 cars per day). However, rail usage dropped dramatically in the following decade as the Humboldt County timber industry declined. In 1989, the NCRA was formed by the California Legislature under the North Coast Railroad Authority Act to ensure continuation of railroad service in Northwestern California. By 1997, the railroad was running only three to four trains per week. In 1997, severe winter storms caused substantial rock slides and erosion, damaging much of the NCRA's tracks and infrastructure. This included tunnel closures on the NCRA line at the Eel River Canyon, which cut off the north end of the line from the rest of the NCRA track system. Since 1997, the NCRA has been engaged in trying to obtain federal and state funds to reopen the line. Though the tracks have not been in use for over 13 years, the NCRA maintains the stance that rail service will be restored in at least portions of the project area.

In May of 2009, in anticipation of the proposed project, the NCRA released Policy 0907 – "Trail Projects on the NWP Line Rights-of-Way: Design, Construction, Safety, Operations, and Maintenance Guidelines." This document outlines the NCRA's policies on "Rails-with-Trails" projects and provides uniform and consistent standards on NCRA's rights-of-way for the design, construction, safety, operations, and maintenance of Rails-with-Trails Projects. The setbacks from railroad track required in this plan are the driving force for the location and footprint of the proposed trail (and resulting impacts to wetlands and Waters of the U.S./State). The alignment selection process described below further elaborates on how the footprint of the trail has been selected, in the context of the NCRA Policy 0907. The Alternatives Analysis for the proposed project additionally discusses the alignment options and associated potential impacts.

2.3 Alignment Selection

At the beginning of the planning and preliminary design phases for the project (September 2009), a general corridor was identified as the preferred location for the project. The project began with a multi-step iterative process in which several potential alignments were considered and evaluated, eventually leading to the selection of a final alignment. The following chronology details the process through which the various alignment options were generated and evaluated and the steps taken to identify a final selected alignment.

1. A general corridor and preliminary concepts for the trail alignment were presented in the City's RFP (City of Arcata, 2009). The general corridor provided at this point was based on results from *Humboldt Bay Trail Feasibility Study* (Alta, 2007) as well as the City *Pedestrian and Bicycle Master Plan* (City of Arcata, 2010). The corridor generally followed the NCRA railroad through the City from the Arcata Skate Park to the Bracut Industrial Park. The southern half of this alignment had been identified for use in the 2007 trail feasibility study.
2. A series of field visits were conducted with the design and environmental teams to identify areas that could accommodate a trail with less construction impacts to the environment and/or improved ease of construction.
3. The project area was divided into segments and sub-segments for purposes of identification and evaluation.
4. At least two alignment options (often three) through each segment were identified for evaluation.
5. The potential alignment options were presented to the City of Arcata, steering team, and stakeholders.
6. Comments were received from the City of Arcata, steering team, and stakeholders regarding the various alignment options within each segment.
7. A study area was defined for the project in which field data would be collected (see Figures 2-1 through 2-28 in Attachment B). The boundaries of the study area were drawn in order to cover the extents of potential anticipated impacts of all feasible alignments under consideration.
8. A topographic survey of the study area was conducted, in which the following information was collected: locations of utilities and infrastructure, impervious surfaces, railroad prism, railroad tracks, ordinary high water mark, vegetation, and topography.
9. A "Natural Features Inventory" was conducted in the study area, in which the following information was collected (at the reconnaissance level): wetlands, habitats, and rare plants.
10. A cultural resource survey and a Phase I Hazardous Material study conducted in the study area.
11. All data collected within the study area was compiled and tallied by segment.
12. Additional Stakeholder and Steerming Team meetings were held to solicit further input and to present preliminary findings of field investigations.
13. An evaluation/decision matrix was developed that rated alignment alternatives for environmental and other trail considerations by segment.
14. A "Selected Alignment" was chosen with City of Arcata taking into consideration input by stakeholder group and steering team.
15. The "Selected Alignment" was presented at a public meeting to receive input and to incorporate public comments as appropriate.

Steering Team and Stakeholders

Two advisory teams were recruited during the early stages of the project to help the project team through the project. The Steering Team consisted of eight organizations with direct influence (such as permitting authority) over the project. The Steering Team participated in the alignment selection process, planning for the collection of field data, and other preliminary phases. The Stakeholder Team consisted of 19 local environmental groups, citizen groups, and other organizations/individuals with some influence or stake in the project. Stakeholders were engaged in the process as needed to meet individual and collective needs.

The following meetings were held:

- November 5, 2009 – Steering Team Meeting
- December 10, 2009 – Steering Team Meeting
- December 10, 2009 – Stakeholder Meeting
- February 4, 2010 – Public Meeting

The following organizations participated in the project as steering team members:

- North Coast Railroad Authority
- California Public Utilities Commission
- US Fish and Wildlife Service
- California Department of Transportation
- Redwood Coast Action Agency
- Humboldt County Association of Governments
- California Department of Fish and Game
- US Army Corp of Engineers

The following organizations participated in the project as stakeholders:

- Humboldt Bay Harbor District
- Local Birding Groups / Audubon
- Local Waterfowl Hunters
- PG&E
- County of Humboldt Public Works
- Friends of the Arcata Marsh
- Green Wheels (non-profit organization)
- Humboldt Baykeeper
- Coastwalk
- Humboldt Bay Bicycle Commuter's Association
- Humboldt State University
- Trails Trust of Humboldt Bay
- Corridor Access Project
- Pacific Coast Joint Venture
- Arcata Chamber of Commerce
- Eureka Chamber of Commerce
- Humboldt County Convention & Visitors Bureau
- Timber Heritage Association
- Bracut Industrial Park

- Owners of private parcels that the project passes through

Public Involvement

A public informational meeting was conducted to keep citizens apprised of City efforts and project details. The meeting included a review of past planning efforts, a project overview, an introduction to alignment determination criteria, and the selected alignment. Presentation materials developed for the meeting included a video of the trail corridor and a review of large format aerial maps. Members of the public were encouraged to make written comments directly on the maps. Public service announcements were released prior to the meeting to local TV, radio, and print media outlets. Transcriptions of public comments on the maps are available at Arcata City Hall.

2.4 Project Study Boundary

Figures 2-1 through 2-28 (Attachment B) display the extents of the Project Study Boundary (PSB). The PSB was developed to identify the boundaries within which a topographic survey would be conducted and the follow items would be studied in the field: cultural/historic resources, areas of potential hazardous contamination, sensitive habitats, wetlands, and other Waters of the U.S./Stat. The extents of the study area were defined during the alignment selection phase of the project to cover areas where it was anticipated the trail might have been designed and constructed. The northern and southern extents and a general corridor for the project were established early in the alignment selection process, but several parallel alignment options were available through the length of the project. For instance, in some areas the trail could have been placed east of the railroad tracks, west of the railroad tracks, or along the edge of a parallel roadways. In such a scenario, the study area would need to cover the extents of all three alignment options as well as adjacent lands that could be temporarily utilized during installation or for fill in order to bring the trail up to grade. Therefore, in some locations the PSB is wide or branched because many viable options were feasible, while in other locations the study area is relatively narrow because a very limited set of practical options existed. In most cases, the study area was drawn to allow for flexibility in final design of the project's footprint. Since the study area boundary varies in width throughout its length, it is not further described here and Figures 2-1 through 3-28 (Attachment B) should be referred to for the various widths of the study boundary.

It should be noted that the PSB was expanded in some cases during the data collection phases to capture the edge of wetlands/habitats if it appeared that data in specific areas had potential implications for the project. However, in most cases data was only collected within the predefined study area which had been drawn with the intent of capturing all areas of anticipated potential impacts. In addition, the study area only applies to data collected in the field; records searches were conducted beyond the edges of the study area for the cultural resource study and the Phase I (hazardous materials) corridor study.

Another important note regarding the study is the relationship of the final "impact zone" of the project and the areas of temporary impacts in comparison to the study area. The project's "impact zone" is the calculated area of permanent ground disturbance associated with the footprint of the trail, cut slopes, fill prisms, and the footprints of structural elements (e.g. bridge footings). Areas of temporary impacts consist of staging areas and areas of temporary

construction impacts. Figures 3-1 through 3-28 (Attachment B) display a summary of the final design of the trail, including the footprint of the trail surface, impact zone, and areas of temporary impacts. In all cases the footprint of the trail, the impact zone, and the areas of temporary impacts are completely contained within the study area. For further discussion of temporary and permanent impacts associated with the project, see section 4.16.

3.0 EXISTING CONDITIONS

3.1 Project Location

Figure 1 (Attachment B) provides a vicinity map of the project site. The project study boundary is linear, spanning approximately 4.5 miles between Larson Park in the north (near the City of Arcata Skate Park on Sunset Avenue) and Bracut Industrial Park in the south, as shown on map series 2 (Figures 2-1 through 2-28). The northern portion (approximately2/3) of the proposed project alignment is located in the City of Arcata (extends to southern bank of Gannon Slough) and the southern portion of the project site is located in the County of Humboldt oversight. The project is west of Highway 101. The project alignment runs through the City of Arcata generally paralleling the NCRA railroad corridor near Foster Avenue/Jolly Giant Creek, Alliance Road, and L Street within the City of Arcata. South of Samoa Boulevard, the trail alignment continues adjacent to the railroad to the Arcata Marsh. Within Arcata Marsh, the proposed trail alignment is located predominantly on existing Marsh trails. Once crossing Butcher Slough at the Arcata Wastewater Treatment Plant, the trail alignment leaves the Marsh and continues parallel to the railroad tracks adjacent to South G Street. The trail continues south beyond the Arcata City Limits parallel to the railroad tracks between Highway 101 and Humboldt Bay, crossing Gannon Slough, Jacoby Creek, Old Jacoby Creek, and Rocky Gulch. The trail terminates at the Highway 101 entrance to the Bracut Industrial Park. The specific alignment of project segments are described in detail in the project description.

3.2 Human Environment

The selected alignment passes by and through neighborhoods, commercial and industrial areas, public parks, road rights-of-way and public facilities. At numerous locations, the alignment crosses public roadways and driveways. Several segments of the alignment are currently used for access and there are several instances of encroachment by adjacent uses. The portion of the alignment from Alliance Avenue to Samoa Boulevard has the most human development and is expected to receive the highest level of use.

3.2.1 Railroad Right-of-Way and Railroad Facilities

The railroad right-of-way within the project area is approximately 43-47 feet wide. The facilities within this ROW include the railroad track, which in some areas is dilapidated with missing tracks and/or ties. The shoulders on either side of the railroad tracks are generally gravel, pavement, or soil with some sporadic vegetation. There are existing volunteer trails throughout this corridor.

3.2.2 Land Use and Zoning

The City land use designations and zones within the selected alignment, permit trail development. In addition to railroad and street rights-of-way, the project passes through City parks designated Public Facility, private property designated Industrial Limited, and the Arcata Marsh and Wildlife Sanctuary designated Natural Resource. See Table 2 (Attachment C).

3.2.3 Setbacks, Rights-of-Way, and Easements

Any required setbacks would be for public safety purposes. The L Street right-of-way is approximately 45 feet wide and contains the railroad track, vehicle travel lanes and parking areas. Easements may be required for alignment on private property.

3.3 Physical Environment

The physical elements of the environment relating to the proposed project include geology and soils, topography, water quality, floodplains and hydrology.

3.3.1 Topography, Geology, and Soils

The project area is along the shoreline of the Humboldt Bay, thus it is flat and subject to seismic forces and liquefaction. The principal underlying soil is coarse to fine grained alluvium consists mostly of unconsolidated, coarse-to-fine-grained sand and silt (alluvium) typically found on coastal plains, valley bottoms and along river flood plains. In the vicinity of Bracut, the soil primarily consists of non-marine sandstone with clay and gravel (Hookton Formation). The sandstone is typically medium-grained, well sorted, and poorly cemented. Minor beds of well-rounded pebbles and cobbles of chert, quartz, and green stone are also present. Elsewhere in the corridor there are areas of non-native marine deposits and sand indicative of fill that was brought in to construct embankments for the railroad and for the highways.

3.3.2 Floodplain

A floodplain is defined by Executive Order 11988 (Floodplain Management) as, "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) indicate portions of the project area and adjacent lands lie within both Zones A, C, and V designated Floodplains. Zone A is defined by FEMA as "Areas of 100-year flood; Base Flood Elevations (BFE) and flood hazard factors not determined." Zone C is defined as "Areas of Minimal Flooding-Outside of the 100-year Base Floodplain Area." Zone V is similar to zone C in definition yet is presumably subject to wave action. Based on FIRMs reviewed for the project area (community panel numbers 060061 004 E --revised 11/05/1997, and 060060-0780 C --revised 02/08/1999), the project corridor enters Flood Zone A from the north beginning at the intersection of the trail corridor (and railroad) with South I Street in Arcata and continues within Flood Zone A until approximately 0.4 miles north of the Jacoby Creek crossing when the trail corridor meets and then straddles the boundary between Flood Zone A (to the east) and Flood Zone V (to the west) [FEMA, 1997; FEMA, 1999]. Approximately 1,000 feet north of Bracut, the corridor leaves Flood Zone A/V boundary line and enters Flood Zone C. The portions of the project corridor within Flood Zone A and V are inside the 100-year floodplain. The portion of the project corridor within Flood Zone C is outside the 100-year floodplain, but inside the 500-year floodplain. The water crossings at Segments 6.1 through 7.4 are below high tide line (8.0 feet NAVD). According to a floodplain report prepared for the 101 corridor (Caltrans, 2003), the floodplain for the area north of Bracut (formerly Brainard's Ridge), is approximately 371 hectares (916 acres). FEMA maps showing floodplains in relation to Route 101 can also be viewed at *http://msc.fema.gov/webapp/*.

The California State Reclamation Board defines a designated floodway to mean either: (1) the channel of the stream and that portion of the adjoining floodplain reasonably required to provide passage of a base flood or (2) the floodway between existing levees as adopted by the California

State Board or the Legislature. FIRM maps do not include Floodway mapping, however the new DFIRMS will. No DFIRM maps are available yet from the FEMA Map Service Center for Humboldt County. Cursory review of the County GIS files shows that the project alignment does not intersect designated floodways. Jacoby Creek, upstream from Old Arcata Road, is designated as a Floodway. No other floodways near the project area have been established. As noted above, downstream of the Old Arcata Road Bridge is listed as a FEMA Zone A Floodplain.

3.3.3 Hydrology and Water Quality

The Pacific Coastal Region experiences a cool maritime climate with a seasonal distribution of precipitation. The average annual rainfall for this area is approximately 1,000-mm (forty-inches) per year. The upper watershed consists of mountainous terrain. There is a high amount of vegetative cover, with minimal development and generally good soil infiltration. The lower watershed is flat, with a slightly higher concentration of development, good vegetative cover, and less permeable soils. A Floodplain Report (Caltrans, 2003) was prepared for the Highway 101 corridor and provides additional information on the regional hydrology.

Project area potential receiving water bodies include (from north to south): Jolly Giant Creek (at Shay Park), Gannon Slough; Jacoby Creek; Old Jacoby Creek; Brainard's Slough (which Rocky Gulch and Washington Gulch flow into); an unnamed drainage channel parallel and to the east of Route 101 (herein referred to as the Route 101 slough); a drainage ditch parallel and between the RR ROW and Route 101; and, Humboldt Bay. See Figures 3-1 through 3-28 (Attachment B). However, due to existing earth dikes and site elevations, the trail alignment area is unlikely to drain to the slough channel to the east of the highway. Each of these Waters are described in more detail below:

- Jolly Giant Creek is in a culvert for much of the area through the City of Arcata. In the immediate vicinity of the proposed trail alignment, it has been daylighted/restored along the Shay Park and RR ROW, and for a short segment on the west of Alliance (referred to as Stonehenge).
- Butcher Slough is tidally influenced (brackish) and outlets to the Bay near City WWTP; and receives up-gradient freshwater inputs from creeks.
- Gannon Slough flows under Highway 101 and the railroad just north of Jacoby Creek outlet. It originates about two miles north in Arcata and extends sough along the east side of the northbound 101 segement, until reaching the under-crossings and outlet. Gannon Slough has several tributary streams (Beith, Campbell, and Grotzman Creeks). There are tidegates (upgradient of Highway 101 and railroad bridges) controlling waters that enter the slough from the City of Arcata and surrounding pasturelands.
- Jacoby Creek flows freely into Arcata Bay, just north of the Bayside Cutoff. The creek originates in the Coast Range just southwest of Kneeland and flows northwest for approximately ten miles to the outlet.
- Old Jacoby Creek flows under the highway and is controlled by a tide gate.
- Brainard's Slough is formed from the Washington Gulch and Rocky Gulch drainages, confluence of which is on the east side of the freeway before crossing under 101 via a single reinforced box culvert, then under the tracks via two 48-inch corrugated metal pipe culverts. There is one tide gate at the location where the box culvert dumps out on the west side of the freeway between the freeway and the tracks.

Beneficial uses are critical to water quality management in California. State law defines beneficial uses of California's waters that may be protected against quality degradation to include (and not be limited to): "...domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" [Water Code Section 13050(0)]. Protection and enhancement of existing and potential beneficial uses are the primary goals of water quality planning. The most sensitive beneficial uses from the standpoint of water quality management are municipal, domestic, and industrial supply, recreation, and uses associated with maintenance of resident and anadromous fisheries. The North Coast Region's rivers/water's are renowned for salmon and steelhead fishing.

3.4 Biotic Environment

The biotic environmental setting within the project study area includes wetlands, sloughs and ditches; natural communities, including aquatic, riparian, upland habitat; and sensitive species.

3.4.1 Wetlands and Waters of the U.S.

The following wetland types were mapped within the project study boundary (PSB), as shown on Figure Series 4 (Maps 4-01 through 4-28 in Attachment B). Wetland acreages based on jurisdictional area are summarized in Table 3 (Attachment C).

Palustrine Emergent

Palustrine Emergent wetlands are freshwater wetlands present within vegetated freshwater ditches, springs, and seeps in the City of Arcata, seasonal high groundwater, compacted areas near Shay park and other former industrial/commercial properties within urban limits of the City. As well, some ditches that act as stormwater conveyance, but which have extensive wetland vegetation, hydric soils, and hold persistent at least seasonal water, have been classified as palustrine emergent, particularly when there is limited signs of being man-made or directly part of City street stormwater conveyance system. This wetland type includes the palustrine ditch located along the Highway 101 corridor between the railroad bed and the highway edge of pavement. Representative vegetation consists of:

- arroyo willow (*Salix lasiolepis*) [FACW]
- Baltic rush (*Juncus balticus*) [OBL]
- California blackberry (*Rubus ursinus*) [FACW]
- fringed willowherb (*Epilobium ciliatum*) [FACW]
- Himalayan blackberry (*Rubus discolor)* [FACW]
- reed canary grass (*Phalaris arundinacea*) [FACW]
- soft rush(*Juncus effuses*) [OBL]
- tufted hairgrass (*Deschampsia cespitosa*) [FACW]

Estuarine Intertidal Emergent (Saltmarsh)

These areas are present at the margins of Humboldt Bay, Butcher Slough, Gannon Slough, and Jacoby Creek, and are subject to tidal inundation with some fresh water influence when located within tidal parts of creek mouths/estuaries. These areas are exposed at low tides and even some high tides depending on elevation. This wetland type contains herbaceous, salt-tolerant hydrophytes forming moderate to dense cover. This habitat is usually found in sheltered margins

of bays, lagoons, and estuaries. The hydric soils are subject to regular tidal inundation by salt water for at least part of each year. In the Project Study Area, these wetlands have the following typical vegetation:

- cordgrass (*Spartina densiflora*)
- marsh rosemary (*Limonium californicum*) [FACW]
- pickleweed (*Salicornia virginiana*) [OBL]
- seashore saltgrass (*Distichlis spicata*) [FACW]
- seashore saltgrass (*Distichlis spicata*) [FACW]
- spear oracle *(Atriplex patula*)
- tufted hairgrass (*Deschampsia cespitosa*) [FACW]
- Baltic rush (*Juncus balticus*) [OBL]

Humboldt Bay owl's clover, Lyngbye's sedge, and Point Reyes bird's beak, all CNPS listed plants, are also associated with the Estuarine Intertidal Emergent (Saltmarsh) wetland community, although were not identified at the site during wetland delineation field effort (incorrect season for protocol-level surveys).

Estuarine Emergent (Ditch)

These areas are isolated from direct tidal influence and are connected to the palustrine emergent ditch that runs the length of the Highway 101 corridor between the railroad bed and east towards the edge of pavement. Some portions of the palustrine ditch receive subsurface saltwater infiltration, have remnant saline conditions, or receive only occasional saltwater input during high-tide storm events. In any case, occasional areas of the ditch are classified as Estuarine Emergent wetland based on vegetation, but are considered marginal/non-habitat for the CNPS-listed saltmarsh plant species, and as such has been designated has a separate wetland habitat type, although according to FWS designation (Cowardin, 1979) this area keys out to Estuarine Emergent. Vegetation within the ditch supports some brackish species but has limited diversity, and consists of the following species:

- pickleweed (*Salicornia virginiana*) [OBL]
- seashore saltgrass (*Distichlis spicata*) [FACW]

Ditch

These areas consist of City of Arcata stormwater conveyance ditches that in many cases are established with palustrine emergent vegetation and meet the City of Arcata definition for two-parameter wetlands. The ditches were observed to have ephemeral water only that was directly related to storm events. In some cases where ditches are unvegetated and do not hold seasonal wetland hydrology, these areas would not meet City of Arcata wetland definition. The ditches are unlikely COE jurisdictional based on man-made nature of the ditches and absence of permanent or seasonal wetland hydrology.

OHWM

Jolly Giant Creek is mapped at the Ordinary High Water Mark (OHWM), and is the only non-tidal water (besides wetlands) in the PSB.

Other Waters of the U.S. (Tidal)

Other Waters of the U.S. (Tidal) are defined at the HTL and tidal areas that lack vegetation) present in the sloughs in and adjacent to the trail corridor. These areas are present within the tidal portion of Humboldt Bay, Butcher Slough, Gannon Slough, Jacoby Creek, Brainard's Slough, and Old Jacoby Creek, and are subject to both tidal inundation with some fresh water influence. However, they are partially exposed or submerged within the channels at low tides. The area lacks vegetation, including eel grass, saltmarsh species, etc.

3.4.2 Wildlife Habitat

The Humboldt Bay Area, which includes Arcata Bay, provides habitat for a large diversity of native aquatic and terrestrial animal species. The urban development and the railroad tracks and Highway 101 each limit the diverse and abundant habitat for use by wildlife species. Mammal species present in the vicinity include: black-tailed deer, gray fox, coyote, raccoon, fisher, river otter, rodents, weasels, skunks, and bats. Bird species include waterfowl (e.g. ruddy duck), shorebirds (e.g. snowy egret, black crowned night heron, dunlin/sandpiper), birds of prey (e.g. northern harrier), and songbirds (marsh wren, savannah sparrow). Creeks and sloughs in the project area could potentially serve as migration corridors for fish, such as salmon, that move between salt and freshwater to complete their life history. This slough also potentially provides resting and feeding habitat for migratory waterfowl and shorebirds. The brackish waters of the sloughs, drainage ditches, and the lower reaches of the streams provide potential habitat for special status species such as coastal cutthroat trout, southern Oregon/northern California Coho salmon, northern California steelhead, California Coastal Chinook salmon, and tidewater goby. See Figures 4-1 through 4-28 (Attachment B).

3.4.3 Sensitive Species

The terrestrial habitats surrounding the trail corridor have limited potential to support special status animal species because of the proximity to Highway 101 and the ongoing noise, high level vehicular presence, and ongoing road maintenance activities. None of the special status terrestrial animal species from the region have been documented within the corridor and these species are not likely to occur because of the lack of suitable habitats.

Special status fish species such as tidewater goby, southern Oregon/northern California Coho salmon, California coastal Chinook salmon, eulachon, longfin smelt, and coastal cutthroat trout are known to use the tributaries in Arcata and Humboldt Bay. Therefore, the sloughs, streams, and ditches located immediately adjacent to the alignment are potentially utilized by these fish species. See Figures 3-1 through 3-28 (Attachment B).

4.0 PROPOSED PROJECT

4.1 Purpose & Need

The Arcata Rail with Trail Connectivity Project is needed to improve non-motorized transportation within the existing rail corridor from northern Arcata at Larson Park, through the City of Arcata and the Arcata Marsh, and along the eastern edge of Humboldt Bay south to Bracut. The City of Arcata currently has bicycle and pedestrian facilities providing non-motorized routes within the City. However, several large gaps in this system make navigation for non-motorized traffic difficult (Alta Planning, 2010 Corridor Mgmt Plan). The City's existing non-motorized transportation facilities are generally not well linked to routes beyond the City and therefore do not contribute to a cohesive regional transportation or recreation opportunity.

Within the rail corridor south of the Arcata Marsh, public access to Humboldt Bay is severely limited and non-motorized transportation facilities do not currently exist. Bicycle traffic between Eureka and Arcata currently utilizes the paved shoulders of Route 101, Old Arcata – Myrtle Road, or Highway 255 on the Samoa Penninsula. There is currently no developed pedestrian access to Humboldt Bay south of the Arcata Marsh.

The purpose of the project is to construct, operate, and maintain an approximately 4.5 mile long Class I, ADA accessible, non-motorized multiuse trail within the rail corridor.

As identified in the City of Arcata Pedestrian and Bicycle Master Plan Update (City of Arcata, 2010), development of the rail corridor as a non-motorized transportation route is important for providing increased connectivity between several import Arcata destinations. The proposed project is also consistent with the goals and objectives outlined in the Humboldt Bay Trail Feasibility Plan (Alta, 2007) and the Completing the California Coastal Trail report (California Coastal Conservancy, 2003) completed pursuant to 2001 California Senate Bill 908.

4.2 Project Objectives

The proposed trail project will:

- Be planned for bicyclists, walkers and hikers, runners, skaters, wildlife viewers, nature educators, and other non-motorized outdoor users.
- Be a key connection in the California Coastal Trail and Humboldt Bay Trail, promoting coastal access regionally and state-wide.
- Highlight the natural, cultural, and historic resources of Humboldt Bay.
- Promote environmentally sensitive access to the Bay for wildlife viewing and a variety of recreational and educational activities.
- Serve local residents and visitors as a community amenity and nature tourism destination, promoting economic vitality.
- Promote healthy lifestyles, active volunteerism, and community stewardship.
- Be planned, promoted, developed, and managed by a collaborative multi agency partnership.
- Be planned and developed with full consideration of existing and future highway and rail uses and opportunities.
- Be planned and developed, consistent with Coastal Act policies and related local, state, and federal regulations, promoting protection of wetland, wildlife, and other natural resources.
- Be established with full consideration of the needs of private and public land owners/managers.
- Be located and designed to provide safe, enjoyable non-motorized commuter and recreational coastal access for walkers, runners, bicyclists, skaters, and other outdoor recreational users.
- Not compromise or preclude existing recreational uses including hunting and other existing, allowable recreational uses.
- Connect key destinations that will highlight the unique natural, cultural, and historic resources of Humboldt Bay.
- Integrate spur trails and other recreation facilities to connect to regional recreational, educational, and community resources and to enhance access consistent with trail goals.

- Have designated access points, including trailheads and community/neighborhood linkages, that provide safe and direct pedestrian and bicyclist access.
- Offer a variety of wildlife viewing sites and places to stop to enjoy the Bay.
- Integrate interpretation of natural, cultural, and historic resources in trail planning and design.
- Serve as an alternative route for the Pacific Coast Bike Route.

4.3 Trail Design

4.3.1 Design Guidelines

For an overview of the project design, see Figures 4-1 through 4-28 (Attachment B). The project has been designed to meet the operational needs of adjacent and intersecting roadways, the railway system, area businesses, and a variety of potential trail users. Planning, design, and implementation standards were derived from the following sources:

- North Coast Railroad Authority: Policy & Procedures Manual Section 0907: Trail Projects on the NWP Line Rights-of-Way: Design, Construction, Safety, Operations, and Maintenance Guidelines, 2009
- Public Utilities Commission of the State of California: General Order No. 26-D: Regulations Governing Clearances on Railroads and Street Railroads with Reference to Side and Overhead Structures, Parallel Tracks, Crossings of Public Roads, Highways and Streets.
- Caltrans: Highway Design Manual (Chapter 1000: Bikeway Planning and Design), 2006.
- American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 2004.
- AASHTO, Guide for the Development of Bicycle Facilities, 1999.
- U.S. Department of Transportation (USDOT), Federal Highway Administration (FHA), Manual of Uniform Traffic Control Devices (MUTCD), 2003.
- California Manual of Uniform Traffic Control Devices (CAMUTCD), 2006 (FHWA's MUTCD 2003 edition as amended for use in California).
- Institute of Transportation Engineers (ITE), Design and Safety of Pedestrian Facilities, 1998.
- U.S. Department of Transportation Federal Highway Administration: Evaluation of Safety, Design, and Operation of Shared-Use Paths Final Report, 2006.
- Rails-with-Trails: Lessons Learned, U.S. Department of Transportation, August 2002.
- Rails-to-Trails Conservancy, Rails-with-Trails, Sharing Corridors for Transportation and Recreation, 1996.

4.3.2 Design Standards

<u>Minimum and Maximum Requirements:</u>

- Minimum Tread Width: 8 feet, but will attempt to be 10 feet wherever possible
- Minimum shoulder width: 2 feet on each side of paved tread surface
- Minimum setback from edge of highway to edge of tread: 5 feet (without a barrier)
- Minimum setback from edge of highway to edge of tread: 2 feet (with barrier)
- Minimum setback from railroad track centerline to obstructions or edge of trail tread: 8.5 feet on tangent sections of tracks and 9.5 feet on curved sections of tracks

- Minimum setback from edge of tread to obstructions and buildings: 2 feet
- Minimum Vertical Clearance: 8 feet (10 feet if emergency vehicles use trail or at undercrossings, etc)
- Minimum Design Speed: 20 mph
- Maximum Gradient: 5%
- Minimum Curve Radius: 90 feet
- CalTrans Clear Recovery Zone: A physical space 30-feet wide from the edge of the highway travel way (the fog line) that must be free of obstructions and be of a grade no greater than 4:1(25%) When any portion of the trail encroaches within this zone, a physical positive barrier (e.g., concrete barrier, steel guardrailing) will be designed to prevent bicyclists from encroaching further into the clear recovery zone. Low barriers will not be used because bicyclists could fall over them and into oncoming automobile traffic.
- Maximum Fence Height: 48”
- Minimum Fence Height: 36”
- Minimum Angle at which Trail can cross Railroad Tracks: 45°
- ADA Accessibility: It is the intention to make all portions of the trail ADA accessible

Segments Adjacent to Roadways: In compliance with FHWA and Caltrans standards for a Class I Bikeway, segments of the trail adjacent to roadways will separated by 5 feet and include a physical barrier (concrete barrier or fence).

Roadway and Driveway Crossings: Will be ADA accessible and include warning signage and markings both on the trail and the approaching vehicular way.

Signage and Striping: Trail will include yellow centerline striping and additional warning signage and striping approaching intersections with existing roads and railroad crossings. In addition, signage will be added along the trail warning users of curves, bends, an d other hazardous situations.

Speed Control: Speed control can only be maintained through signage and striping; speed bumps or other surface irregularities are not permitted to control the speed of bicycles and other non-motorized vehicles.

Bollards: Bollards used at trail intersections and entrances to prevent vehicles from entering a trail have a maximum separation of five feet between bollards. Bollards are located adjacent to the trail with a removable center bollard for emergency and maintenance access. Bollards are not located in travel lanes. Bollards are designed to be visible to bicyclists and others, especially at night time, with reflective materials and appropriate striping guiding bicyclists around the center bollards.

Drainage: Design standards for the project require a 2% cross slope, except along cut sections where uphill water must be collected in a ditch and directed to a catch basin, in which case water would be directed under the trail in a drainage pipe of suitable dimensions. See sections below that address bridges, culverts, stormwater, and drainage for additional details regarding drainage for the project.

4.4 Project Alignment, Segments, and Subsegments

The project is approximately 4.5 miles in length, and runs from the City of Arcata's Larson Park at the northern end, to the Bracut Industrial Park at the southern end. The northern section of the project is located in the City of Arcata boundaries and the southern portion of the project corridor south of Gannon Slough is located in the County of Humboldt.

For ease of reference, the project is divided into eight distinct segments (Segment 0 through 7) arranged from north to south and described in detail below. In areas of complex intersections and water crossings, the segments are broken into sub-segments. The Segments are identified on Figures Series 2, Maps 2-01 through 2-28 (Attachment B).

Segment 0—*Larson Park to Sunset Avenue*

At the proposed northern trail terminus, the project begins in the City of Arcata's Larson Park. The alignment exits the southeast corner of the park, enters the railroad right-of-way (RR ROW), and travels along the west side of the railroad tracks, where it crosses Sunset Avenue

Segment 1—*Sunset to Alliance Avenue*

The project then leaves the RR ROW and runs parallel to and on the north side of the railroad tracks. The project adjoins the City of Arcata's proposed Foster Street extension project, and travels west along the south side of the Foster Street extension and along the north side of Shay Park.

Segment 2—*Alliance Avenue*

Near the end of the existing Foster Street, the alignment passes south of a cluster of existing barns and into revegetated former lumber mill yard within Shay Park. Midway through the old mill yard, the alignment turns slightly south into a forested area onto an existing raised berm that parallels Alliance Avenue at the western edge of Shay Park. The alignment follows the raised earthen berm between Jolly Giant Creek and Alliance Road to the railroad crossing at Alliance Road and 17th Street.

Segment 3

Segment 3.1—*Below the High School*

The alignment crosses the railroad tracks and Jolly Giant Creek (as the daylighted creek exits Shay Park and enters an existing culvert under Alliance Avenue). The alignment travels along the east side of Alliance Road along the toe of slope below the High School, crossing 15th Street.

Segment 3.2—*L Street Connection*

Near an existing paved trail which intersects Alliance Road from the east as part of an abandoned portion of L Street, the alignment would cross to the south side of Alliance Road, traverse along the edge of a vacant parcel (privately owned) near the Storage Units, to connect to the far northern end of L Street. The project re-enters the RR ROW and travels along L Street east of the railroad tracks to 12th Street.

Segment 3.3—*Urban Interface Trail*

The alignment enters Arcata city blocks sharing an alignment with L Street to form a proposed Urban Trail Interface. In this segment, design will focus on encouraging non-motorized

transportation as the dominant use, while vehicular use is maintained as a secondary function. Trail features in this segment may include differentiated pavement coloring, barricades, trail lighting, and landscaping. After crossing 12th Street, the alignment continues along L Street within the RR ROW on the east side of the tracks and crosses 11th Street, 10th Street, and 9th Streets.

Segment 3.4—*L Street (West Side)*
The alignment continues on the east side of the tracks crossing 8th Street to 7th Street, the end of the Urban Trail Interface. At 7th Street, the project crosses the tracks and travels along the west side of the tracks until reaching Samoa Boulevard.

Segment 3.5—*Samoa Boulevard Crossing*
Within the Samoa Boulevard crossing, the alignment crosses to the west side of a western branch of the rail road tracks (abandoned), prior to crossing Samoa Boulevard. On the south side of Samoa Boulevard the trail then must angle back to join the west side of the RR ROW, and in doing so may pass over a small corner of a private industrial parcel

Segment 4
From Samoa Boulevard, the alignment continues within the RR ROW southward along the west side of the railroad tracks.

Segment 5

Segment 5.1—*Marsh North Entrance*
Upon reaching the City of Arcata Marsh and Wildlife Sanctuary, the alignment leaves the RR ROW, and crosses an emergent wetland on a proposed bridge installed on piles to connect to an existing earthen berm that separates recently constructed City of Arcata freshwater wetland pond (to the west) as part of an enhancement project.

Segment 5.2—*Upland Berm*
The project continues along the existing upland berm that has an existing trail atop, paralleling the railroad tracks yet separated by a low area and palustrine emergent wetland until reaching South I Street.

Segment 5.3
The project crosses South I Street, deviates to the west of railroad tracks, and overlays an existing crushed gravel path (part of Arcata Marsh trail network) parallel to South I Street.

Segment 5.4
The path then turns southeast, leaving South I Street following the gravel path and continues through the Arcata Marsh and Wildlife Sanctuary until reaching the bridge at Butcher Slough just north of the City's Wastewater Treatment Plant (WWTP).

Segment 6

Segment 6.1—*Butcher Slough Crossing*
The Project crosses Butcher Slough on existing or secondary bridge.

Segment 6.2
At the WWTP, the alignment becomes parallel with the railroad tracks and South G Street, to the west of the RR ROW, and continues along the crushed gravel path.

Segment 6.3
Once past the WWTP Corporation Yard entrance the alignment re-enters the RR ROW and continues to travel in southeast towards Route 101.

Segment 7

Segment 7.1
The railroad tracks and the project alignment turn south and parallel Route 101. The project continues within the RR ROW on the west side of the tracks, and crosses the tracks to the east immediately north of Gannon Slough. This location will have a connection point to the Humboldt Bay National Wildlife Refuge that is managed by the U.S. Fish and Wildlife Service, per their request. Before crossing the tracks, an approximately 700 sf^2 Gannon Slough Overlook will be constructed on the west side of the trail. The wooden-decked viewing platform would be supported by a concrete rear retaining footing with concrete piles supporting the bayward portion, allowing the structure to be mostly suspended over wetland habitat. The platform would include safety railings and benches. This platform will provide views of the U.S. Fish and Wildlife Service Humboldt Bay National Wildlife Refuge.

Segment 7.2—*Gannon Slough Crossing*
The alignment crosses over Gannon Slough on a proposed new trail bridge between Route 101 and the railroad bridge.

Segment 7.3
The alignment remains within RR ROW east of the railroad tracks and west of Route 101 to Jacoby Creek.

Segment 7.4—*Jacoby Creek Crossing*
Immediately north of Jacoby Creek, the alignment crosses the drainage ditch between the tracks and Route 101 to access the bike lane on the proposed Caltrans Jacoby Creek replacement bridge. Immediately south of the bridge, the alignment crosses back to the eastern side of the RR ROW.

Segment 7.5
The alignment continues within the RR ROW from Jacoby Creek to Old Jacoby Creek.

Segment 7.6—*Old Jacoby Creek Crossing*
The trail crosses Old Jacoby Creek on a proposed bridge to be placed atop structural piles.

Segment 7.7
The alignment continues southward in the RR ROW between Route 101 and the tracks.

Segment 7.8
The alignment continues southward in the RR ROW between Route 101 and the tracks.

Segment 7.9

The alignment continues southward in the RR ROW between Route 101 and the tracks. The southern end of the alignment segment is within the Bracut Industrial Park. The alignment terminates between the tracks and Route 101 at the paved entrance to the Bracut Industrial Park.

4.5 Trail Surfaces

Trail surfacing will consist of 2-inch Hot Mix Asphalt Paving (HMA) for the traveled way with gravel used for the shoulders.

4.6 Trail Sub-Surfaces

Trail sub-surfacing will generally consist of compacted aggregate base with an approximate depth of six to twelve inches.

4.7 Project Width

The project ranges in width from 12 feet to approximately 30 feet. The width of the project consists of three elements: the paved tread surface, the trail's shoulders, and (in some cases) a fill prism designed to bring the trail surface to a required grade or elevation.

Immediately north of the Gannon Slough Bridge in Segments 7.3 and 7.4 there will be an interpretive sign and USFWS viewing platform for the Humboldt Bay Wildlife Refuge, owned and operated by the FWS. The FWS plans to include water access abilities at this location since it would be a short walk from the G Street intersection and would allow an alternate water access location for hunters.

4.8 Intersections, Crossings, Trailheads, Ingress/Egress, and Other Access Points

For an overview of the trail design and access points to the project, see Figures 3-1 through 3-28 (Attachment B). The project can be easily accessed at dozens of locations throughout its length. The project intersects 19 roadways (from north to south): Sunset Ave, Foster Ave, Alliance Road, 17th Street, M Street, 13th Street, L Street, 12th Street, 11th Street, 10th Street, 9th Street, 8th Street, 7th Street, 6th Street, 5th Street, Samoa Blvd, South I Street, G Street (via the driveway to the Arcata Corporation Yard), and Route 101 (via South G Street or the driveway to Bracut Industrial Park). In addition, the project passes through or connects to three City Parks and a National Wildlife Refuge. The project can be directly accessed via any of these connections. However, four trailhead locations are specifically designed as a part of the project to serve as official access locations.

Trailhead's are designed at both the north and south ends of the proposed project, as well as at the north end of L Street and at the project's junction with South G Street (at the City Corp Yard driveway). The trailhead on the northern end will be located at Larson Park, a city owned park. The trailhead will consist of a connection to the proposed trail from existing or planned walkways at Larsen Park (five to eight foot wide concrete sidewalk) that will likely have informational signs posted such as a map and information regarding the trail.

The southern trailhead will be located immediately north of the Bracut intersection on the west side of highway 101 and will likely consist of a small paved area that can serve as a turn-around and likely have an information sign similar to that for the northern trailhead. The southern

trailhead may also consist of a few designated parking spaces. The trailhead at the corporation yard will consist of parking spaces, signage, and landscaping.

Finally, the project travels along L Street from Alliance Ave to Samoa Blvd. This segment of the trail is being identified as the Urban Interface Corridor (see below). This section of the project is especially accessible as it contains the majority of the street crossings associated with the project. As this section of the project will likely experience the highest volume of visitors, the north end of L Street (between 11th Street and 12th Street) will contain a trailhead treatment including landscaping, lighting, and signage about the trail.

4.9 Fencing and Barriers

Fencing and/or physical barriers will be installed under the following five conditions:

(1) in locations in which the trail is within the Railroad Right-Of-Way, in which case the fence will be placed between the trail and the railroad tracks,
(2) where the edge of the trail is less than 5 feet from the edge of the travel way of a road, in which case the fence will be placed between the trail and the road,
(3) in cases in which the trail is less than 30-feet from the edge of the travel way of Route 101 (i.e. within the CalTrans "Clear Recovery Zone"), , in which case the fence will be placed between the trail and Route 101,
(4) along the edges of bridges and boardwalks, and/or
(5) areas in which a vertical clearance equal to or greater than 30 inches separates the surface of the trail and the adjacent ground surface (e.g. at the edge of retaining walls).

In areas falling under condition #1, the barrier will likely consist of a four-foot high wooden split-rail fence with posts ten feet on center or black vinyl coated chain link fencing. In areas falling under condition #2, the barrier will consist of a physical barrier separation such K-rail, fencing, guardrail, or shrubs. In areas falling under condition #3, the barrier will consist of a physical barrier separation such as k-rail, fencing, shrubs, or guardrail, where there is danger of motorist encroachment. In areas falling under condition #4 and #5, the barrier will consist of wooden or metal bridge railings.

4.10 Landscape Architecture

Minimal landscaping of the trail is anticipated due to the existing natural setting of the site. Where adjacent native vegetation is disturbed it will be replaced, and areas will be revegetated using erosion control mix (using native seed mix with a sterile quick grow species). A landscape architecture firm, Alta, has been contracted to design visual elements of the trail and will include landscaping with locally appropriate species such as native species and allies.

4.11 Lighting

Modify light at intersection of 17th Street and Alliance to include an additional lighting to illuminate the trail. Add additional decorative street lighting along L Street where there no street lights currently exist.

4.12 Modifications to Existing Utilities

Where new paving or new surface work will occur over existing utilities, all necessary elements (such as existing valve boxes, manhole lids, electrical vaults, etc) will be raised to the new

elevation of the trail surface. The project design does not include any conflicting with existing utility poles and relocation of such facilities will not be necessary. Where existing storm drainage exists adjacent to the trail, short extensions or modifications to the inlets may be made to allow runoff from the trail to enter the existing storm drain system.

4.13 Bridges, Culverts, and Other Water Crossings

Several areas within the potential project boundaries are defined as "Waters of the U.S./State", including Jolly Giant Creek (at Shay Park), Butcher Slough, Gannon Slough, Jacoby Creek, Old Jacoby Creek, and Brainard's Slough, and as such require water crossings. Following is a summary of the water crossings that are part of the proposed project. Additionally, Table 4 (Attachment C) summarizes the number of piles (if any), type of bridge crossing, and square feet of shaded substrate (channel bottom/bed/bank below 8.0 feet NGVD) associated with each of the new crossings.

- Jolly Giant Creek (Segments 2 and 3.1): Jolly Giant Creek is in a culvert for much of the area through the City of Arcata. In the immediate vicinity of the proposed trail alignment, the creek was daylighted/restored (1997) as well as through Shay Park (former lumber deck) along the RR ROW. The creek was also daylighted for a short segment on the west side of Alliance (referred to as Stonehenge). This creek is not tidally influenced and as such the limits of agency jurisdiction is defined at the Ordinary High Water Mark (OHWM). A new 23 foot bridge will be installed at the project's crossing of the creek, though no piles are necessary for this crossing and will have no direct impacts below the OHWM. Shading of the water will occur under the bridge deck. Additionally, some willows may be impacted in order to allow a right-angle trail crossing of the track.

- Arcata Marsh Berm Bridge (Segment 5.1): This water crossing is at a location in which the City of Arcata recently created a berm around a restored pond. The proposed bridge spans a large drainage channel, allow the project to go from the elevated railroad prism to the elevated top of the berm, spanning the drainage channel. This drainage channel is not tidally influenced. The bridge consists of four equally-sized bridge decks totally a 93 foot span. Each of the four bridge decks rests on concrete footings that directly impact wetlands. This bridge will not require the installation of new piles (see Table 4, Attachment C). Shading of the wetland under the bridge deck will occur and has been calculated as a permanent wetland impact.

- Butcher Slough (Segment 6.1): This water crossing is at an existing bridge near City WWTP; the existing bridge currently carries the City's primary sanitary sewer conveyance pipeline (welded to the underside of the existing bridge). The water is tidally influenced (brackish) and receives up-gradient freshwater inputs from Jolly Giant Creek. A new 72 foot span bridge is proposed adjacent to the existing bridge in order to accommodate appropriate width for both bicycle and pedestrian traffic. This bridge will require the installation of four new piles, none of which are proposed within the water (i.e., below 8.0 feet NAVD) (see Table 4, Attachment C). Pile driving near water's edge will be necessary, which will result in elevated noise within the waterbody during project implementation. Shading of the water will occur under the bridge deck.

- Gannon Slough (Segment 7.2): Gannon Slough has tidegates controlling waters that enter the slough from the City of Arcata and surrounding pasturelands, and is free-flowing within the proposed alignment. This open water slough is considered potential habitat for tidewater goby. Currently existing railroad bridge and Caltrans Highway 101 bridge. A new bridge with 180 foot span is planned between the two existing bridges. This bridge will require the installation of 16 new piles, 13 of which are proposed within the water (i.e., below 8.0 feet NAVD) (see Table 4, Attachment C). Pile driving near water's edge will be necessary for the other three piles, which will result in elevated noise within the waterbody during project implementation. Shading of the water will occur under the bridge deck.

- Jacoby Creek (Segment 7.4): Jacoby Creek flows freely into Arcata Bay. Currently there is a railroad bridge and a CalTrans Highway 101 bridge that both cross this creek/tidal estuary that free-flows to the ocean. The Caltrans bridge is being replaced as part of the Highway 101 improvement project, and as analyzed in a DEIR (Caltrans, 2007). The Caltrans bridge includes pedestrian/bicycle crossing as part of the highway improvements. Therefore, the proposed Rail-with-Trail project will utilize the upgraded bridge that Caltrans is constructing and will not require additional work within Jacoby Creek crossing. No additional piles in water are required. Piles may be necessary adjacent/above the HTL in order to tie to the Caltrans bridge.

- Old Jacoby Creek (Segment 7.6): Old Jacoby Creek flows under the highway and is controlled by a tide gate with a large culvert. The water is tidally influenced and is potential habitat for tidewater goby. The new bridge will span approximately 124 feet. This bridge will require the installation of six new piles, two of which are proposed within the water (i.e., below 8.0 feet NAVD) (see Table 4, Attachment C). Pile driving near water's edge will be necessary for the other four piles, which will result in elevated noise within the waterbody during project implementation. Shading of the water will occur under the bridge deck.

- Brainard's Slough (Segment 7.8): formed from the Washington Gulch and Rocky Gulch drainages, confluence of which is on the east side of the freeway before crossing under 101 via a single reinforced box culvert, then under the tracks via two 48-inch corrugated metal pipe culverts. There is one tide gate at the location where the box culvert dumps out on the west side of the freeway between the freeway and the tracks. A new bridge with 148 foot span is planned. This bridge will require the installation of 6 new piles, 5 of which are proposed within the water (i.e., below 8.0 feet NAVD) (see Table 4, Attachment C). Pile driving near water's edge will be necessary for the other pile, which will result in elevated noise within the waterbody during project implementation. Shading of the water will occur under the bridge deck.

Design standards for the project require a 2% cross slope, except along cut sections where uphill water must be collected in a ditch and directed to a catch basin, in which case water is directed under the trail in a drainage pipe of suitable dimensions. Culverts may be necessary under the new trail bed or possibly under the railroad in order to direct runoff to drainage facilities such as

existing ditches and City stormwater system. Project stormwater and drainage is further discussed below.

4.14 Drainage and Stormwater

The existing drainage system along the western edge of Highway 101 between the Jacoby Creek outlet and the Brainard Slough outlet consists of a drainage ditch which lies between the edge of the highway and the existing railroad track prism on the western side of the ditch. The proposed trail would extend from the railroad prism into a portion of the existing drainage ditch, resulting in less available drainage ditch volume for storm discharges. In order to evaluate the potential impacts of the decrease in drainage capacity, a hydrologic and hydraulic analysis of the drainage ditch along Highway 101 was completed (W&K, 2010).

4.15 Earthwork, Cut/Fill, and Grading

Filling of the area adjacent to the railroad prism will be necessary in many locations in order to reach an appropriate grade for the trail. In some areas minor grading may be necessary such as in the marsh on existing trails, cut bank along Alliance Road, and for the connection to Larson Park.

Generally, in areas where the trail is adjacent to the existing railroad fill prism, additional clean fill from local sources will be imported and placed to establish the necessary grade of the trail. The trail will be constructed at or below level of the existing railroad prism to keep the amount of fill needed to a minimum.

Where there are transitions away from the railroad fill prism, there are some areas where embankments will need to be cut. In these areas the cut and fill will be balanced as possible so that the required grades can still be achieved. Any excess fill from excavations will be used elsewhere on the project for the construction of the trail. The net quantity of grading for the project is approximately 8,316 cubic yards, consisting of approximately 5,818 cubic yards of cut and approximately 2,488 cubic yards of fill. These cut/fill quantities are approximate, and include area necessary for project features such as trail pad, culverts, retaining walls, and bridges and piles, etc. Section 5.2 and Attachment C, Table 3 present quantified amount and types of permanent fill material within wetlands and Waters of the U.S., for project features including trail pad, culverts, retaining walls, and bridges and piles.

4.16 Calculation of Impact Areas

Impacts associated with the construction of the project are divided into four categories: (1) permanent ground impacts (a.k.a. “impact zone), (2) permanent shading impacts (associated with elevated structures/bridge), (3) temporary impacts associated with construction staging areas, and (4) other temporary construction impacts (see Attachment C: Tables 3 and 5) and. Figures 3-1 through 3-28 (Attachment B) display a summary of the final design of the trail, including the footprint of the trail surface, impact zone, and areas of temporary impacts. The project’s “impact zone” is the calculated area of permanent ground disturbance associated with the footprint of the trail, cut slopes, and fill prisms. Shading impacts are vegetated areas classified as wetlands over which a bridge or structure is located but in which the ground is not permanently disturbed. Staging areas are locations in which construction equipment and materials will be temporarily stored during construction. Other construction impacts consist of a five-foot buffer around the

"impact zone" in which temporary construction impacts could potentially occur and where revegetation will occur where/if deemed necessary. Construction staking will limit the area of temporary construction impacts.

4.17 Construction Techniques/Equipment

Earthwork and rough grading will be conducted with a bulldozer, backhoe or excavator where possible, fine grading of base will be by a grader. A vibratory roller will be used for compacting base and rolling pavement. Pile driving machines will be used for driving piles, cranes and/or excavators for lifting bridge decks into place. Backhoes or excavators will be used for the placement any piping or conduit. If necessary drainpipes under the railroad will be installed by jack and bore or directional drilling techniques.

Hot mix asphalt will be delivered 10-wheel trucks and compacted using steel drum or vibratory rollers. Rollers also will be used for compacting both the imported fill, aggregate base and hot mix asphalt necessary for the construction of the trail. Dump Trucks, concrete trucks and 18-wheel tractor trailers will be used for delivery of equipment.

Proposed bridge construction work within Gannon Slough may involve temporary dewatering using cofferdams. These activities will be describe in detail as well as minimization and avoidance measures as part of the Federal and State ESA consultations with NOAA Fisheries, FWS, and DFG. Project-specific Best Management Practices (BMPs) that are developed in the BA's to reduce potential impacts, are summarized herein in Section 5.

4.18 Construction Staging, Storage, and Access

Equipment and materials used in the construction of the project will be stored on site within the limits of disturbance or in upland areas specifically designated by the City. Areas designated by the City for staging will not require any clearing or grubbing for use as a staging area. See Figures 4-1 through 4-28 (Attachment B). Staging areas, storage, and equipment parking will not occur within watercourse bed/bank, or channel. Access to the trail segments along the Highway 101 corridor will be from the edge of pavement and staging would be conducted on the grassy shoulder, and where encroachment permit from Caltrans is secured, the paved shoulder could be used as well. In the area south of Samoa Boulevard where a boardwalk/bridge will traverse from the railroad bed across existing wetlands in order to join with existing Arcata Marsh berm that with existing trail atop, this area will require special precaution in order to reduce temporary impacts to the wetlands. Equipment staging and access will be necessary within the wetland area, although the size of the temporary impact area will be minimized by storing supplies and equipment in upland areas. Minimization measures will include the placement of construction fabric and protective pads (metal/wood/rubber sheets) on top of the wetlands where equipment access/staging is required to present the equipment tracks/wheels from rutting and compressing the soil and uprooting or destroying existing wetland vegetation. The area will additionally be revegetated with native wetland plants where bare ground is observed.

The project staging areas have been defined in areas that are adjacent to the proposed trail and will not require additional temporary construction access routes.

4.19 Construction Phasing

The project may be built in phases as funding allows. The trail has been divided into the following construction phases. These areas were selected to permit each area to exist as individual stand-alone project in the event of a delay in construction between adjacent phases. See the Arcata Rail-with-Trail Feasibility and Operations Plan.

4.20 Trail Management Plan

The City of Arcata will manage the Arcata Rail-with-Trail once segments are constructed. The City of Arcata has a full service Public Works Department and is experienced in managing public parks, trails and facilities. Established City management policies and practices will apply to the proposed trail. Additionally, the *Trail Management Plan* (Alta Planning, 2010) has been prepared to provide corridor management, trail maintenance, and trail safety plans to assist the City with strategies to effectively and efficiently plan for corridor management requirements.

4.20.1 Corridor Management

This plan is provided to addresses management issues throughout the study area relating to use and design of the facility. The development of a management plan represents a substantial commitment not only to the public, but also to the owner and/or operator of the trail. A multi-use trail is a unique public facility because it blends two distinct purposes. It is a non-motorized transportation corridor that in many respects must be managed like a street to assure user safety; it is also a greenway serving a variety of recreational user groups. Multi-use trail users must also co-exist with property owners adjacent to the corridor, whose interests can be different from that of the trail users. For trails located on or adjacent to active rail lines, the need for effective management is significantly magnified.

4.20.2 Trail Maintenance

Trail maintenance should take into consideration the following unique aspects of the trail and local setting. The Arcata Rail-with-Trail will be considered a joint or "shared use" facility, defined as a paved trail open to the general public for recreation and non-motorized transportation purposes in a corridor that serves other transportation functions. Virtually all paved multi-use trails in the United States are shared use facilities between the general public and maintenance vehicles. Trails require their own maintenance, emergency access, and security vehicles. Although the NCRA is the most obvious shared use within the corridor, the trail would also be shared with existing utilities and with maintenance vehicles. The future presence of the rail line will be a dominant factor in the management and maintenance of the Arcata Rail-with-Trail. A rail-with-trail must be managed, operated, and maintained in a way that will: a) protect the adjacent railroad infrastructure and operators; b) minimize costs to the railroad and to the trail managing entity; and c) maximize public enjoyment and safety.

The following represents the major maintenance-related responsibilities:

- Develop and implement a maintenance plan and assure adequate funding.
- Monitor security/safety of the trail through routine inspections.
- Oversee major maintenance and rehabilitation efforts.
- Manage issues that may arise with properties abutting the trail corridor.
- Act as the chief trail spokesperson with the public, including elected officials, and respond to the issues and concerns raised by trail users.

- Preserve the linear integrity of the corridor and set the policy on non-trail uses of the corridor.

4.20.3 Trail Safety

A Trail Safety Plan is a requirement of the 2009 *NCRA Policy and Procedures Manual* for a public agency proposing a rail-with-trail facility. As specified in the *NCRA Policy and Procedures Manual*, the public agency shall prepare a Safety Plan including certain design, maintenance and operations measures. Each required topic is discussed in this plan as follows:

- Section 2.2: Trespassing and Crime Prevention. Topics include trespassing reduction and crime prevention strategies, such as regulatory signage, emergency access and identification of a Trail Manager within the City of Arcata.
- Section 2.3: Emergency Response. Topics include emergency response procedures and responsibilities.
- Section 2.4: Security and Patrols. Topics include signage, establishment of a coordinated and responsive patrol service and other security measures.
- Section 2.5: Trail Barrier Design Standards. Topics include recommended barrier systems and railroad right-of-way access.

The *Humboldt Bay Trail Feasibility Study* (Alta, 2008) contains information on engineering standards, damage-resistance construction materials, landscaping, educational and informal signage and project implementation.

As proposed, the Arcata Rail-with-Trail complies with the current editions of the *California Department of Transportation Highway Design Manual*, Chapter 1000 "Multi-use path Planning and Design", the U.S. Department of Transportation, Federal Highway Administration "Manual on Uniform Traffic Control Devices – California Supplement (CAMUTCD)" and the American Association of State Highway and Transportation Officials' (AASHTO) "Guide for Development of Bicycle Facilities." Additional guidance concerning the design of rails-with-trails facilities was considered, including the U.S. Department of Transportations' "Rails-with-Trails: Lessons Learned."

5.0 COMPENSATION FOR IMPACTS, REDUCTION OF IMPACTS, AND AVOIDANCE OF IMPACTS

5.1 Conservation Measures

Conservation measures are intended to minimize or avoid environmental impacts to listed species or critical habitat. Various divisions and departments of the State of California and the federal government may agree upon additional conservation measures, if determined necessary in order to ensure avoidance and minimization of potential impacts. These proposed conservation measures are not contractually binding, but may be made a condition of project approvals, such as the federal Letter of Concurrence or Biological Opinion from NOAA Fisheries.

Erosion and Sediment Control

Proposed conservation measures relating to erosion and sediment control consists of installing, maintaining, and removing temporary erosion and sediment control devices such as berms, dikes, swales, check dams, sediment traps, sediment basins, matting, mulching, slope drains, sediment fences, sediment barriers, construction accesses, and other structural or nonstructural erosion and sediment control devices. Typical work areas include medians, interchanges, cut and fill slopes, areas disturbed by Project construction, material sources, and disposal sites.
The work described in these proposed measures will be shown on the final project plans as part of a project erosion and sediment control plan as part of the grading plan/permit (and SWPPP), and are the minimum requirement for wet weather site conditions. The project will include coordination of temporary erosion control features with project-specific permanent erosion control features, if applicable, to the extent practicable to assure economical, effective, and continuous erosion control throughout the construction and post-construction period.

Environmental Protection

Proposed conservation measures relating to environmental protection, describe duties and obligations with respect to protection of the waters/wetlands, air, hydrology and water quality, wildlife and listed plant species, and other environmental resources of the State. The project implementation will comply with all applicable federal, State, and local environmental, health, safety and other laws, acts, statutes, regulations, administrative rules, ordinances, orders and permits, as they may be amended from time to time (referred to in this Section as "Laws"). Comply with all applicable Laws, whether or not specifically referenced in this Section or elsewhere in the Contract.

- **Hazardous Waste and Hazardous Substances** – Should any hazardous substances be used during project construction, the Contractor will comply with all applicable federal, State and local laws and regulations as they pertain to the storage, handling, management, transportation, disposal and documentation of:
  - Hazardous substances
  - Oil and hazardous materials
  - Hazardous waste
  - Solid waste

  For the purposes of this measure, the term "hazardous substances" includes oil and hazardous materials. Additional requirements, if any, concerning hazardous materials on the Project will be included in the Special Provisions.
- **Inert Material** - Handle inert materials orderly by placing debris in designated stockpile sites. Inert materials include weathered, consolidated asphalt paving, concrete (including embedded re-bar), clean soil, rock and brick.
- **Unexpected Contamination** - If, during construction, unanticipated hazardous substances are discovered that threaten the health and safety of workers, the public, or the environment, the following procedures will be implemented:
  - Immediately remove all affected employees and secure the area to prevent access.
  - Notify the Project Owner and the Project Engineer immediately and provide written notification within 24 hours, setting forth a description of the incident. The Project Engineer will attempt to resolve the unanticipated situation expeditiously.
- **Spills and Releases** - In the event of a spill or release of hazardous substance or hazardous waste, the following procedures will be followed:

- Immediately commence response actions as set forth in the PCP, SPCC, SWPPP, and/or Contingency Plan, as appropriate. If any of the provisions set forth in these plans conflict, the actions providing the greatest protection of public health and safety and the environment shall be implemented.
- Immediately notify the Project Owner and Project Engineer and provide written notification to jurisdictional agencies within 24 hours, setting forth a description of the incident.
- If the release impacts or threatens to impact any surface water body, or exceeds the quantity listed in 40 CFR 302.4 and OAR 340-108-0010(1)(d), immediately notify the EPA and the USCG through the National Response Center. The National Response Center can be reached at 1-800-424-8802.
- Conduct cleanup of the released material in compliance with OAR 340-108 and all other applicable laws.
- Provide a written spill report to the Project Engineer within 48 hours of completing initial cleanup activities. If spill cleanup is not completed within seven days, provide an interim spill report to, the Project Engineer within seven days of the incident. Include, at a minimum, the type of material and quantity released, a description of how the release occurred, containment and cleanup methods employed, disposal location for cleanup materials (include disposal receipts), any EPA and/or California State Fire Marshal incident identification numbers issued, and a description of how similar incidents will be prevented in the future.

- **Pollution Control** - Prevent, control, and abate pollution of the environment as required by all applicable laws. Perform changes or alterations of work required by new or amended environmental pollution laws, not contemplated at the time of beginning project implementation.
- **Water Pollution Control Measures** - Prevent, control, and abate pollution of state waters as required by the Contract and local, state and federal regulations and requirements. Be fully informed of the NPDES Storm Water General Conditions, and conduct construction operations accordingly. Meet or exceed the SWRCB requirements for the NPDES General Permit 1200-Z, if/when issued. A copy of the permit shall be available from the Project Owner and/or Project Engineer. Maintain a copy of the General Conditions at the Project Site.
  - **Minimum Required Measures** - As a minimum, the following measures will be implemented:
    - Allow no pollutant of any kind (e.g., petroleum products or fresh concrete) to come in contact with an active flowing stream.
    - Promptly correct or repair operational procedures, leaks, or equipment problems that may cause pollution at the Project Site. If soils or other media become contaminated as a result of operational procedures or equipment problems, remove and dispose of them according to applicable laws.
    - Dispose of material waste accordingly in defined upland sites. Do not bury, dump or discharge material wastes or unused materials at the Project Site.
- **Permitted Work Areas** - Work within permitted work areas shall be performed only within the permitted in-water work period(s), unless otherwise approved. Equipment shall not enter the permitted work area except as allowed in permits issued for the Project.

- **Pollution Control Plan (PCP)** – The selected Contractor will develop and submit a PCP to prevent point-source pollution related to Contractor operations for approval 10 days before the pre-construction conference. Maintain a copy of the PCP on the Project Site at all times during construction activities, readily available to employees and inspectors. Ensure that all employees comply with the provisions of the PCP. The PCP shall satisfy all pertinent requirements of all applicable laws during construction including, but not limited to, the requirements of the Uniform Fire Code and National Fire Protection Association (NFPA) Standards, and shall include the following:
  - Methods for confining, removing, and disposing of excess concrete, cement and other mortars.
  - Measures for containing fluids and debris from washout facilities.
  - Identify hazardous products or materials to be used. Include how they will be handled, monitored, inventoried, and stored as well as spill prevention practices to be followed.
  - A spill containment and control plan that includes: notification procedures; specific clean up and disposal instructions for different products; quick response containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.
  - Measures to be used to reduce and recycle hazardous and non-hazardous waste generated from the Project, including types of materials, estimated quantity, storage methods, and disposal methods.
  - Vehicle and equipment maintenance procedures and associated pollution prevention practices.
  - Off-site vehicle tracking and dust prevention measures.
  - A map showing the locations of proposed hazardous substance storage; spill response equipment, communications equipment, fire suppression equipment and the on-site copy of the PCP.
- **Protection of Fish, Wildlife, and Plants: General** - Comply with the laws of the California Department of Fish and Game, National Marine Fisheries Service and U.S. Fish and Wildlife Service, and California Coastal Commission. Conduct operations to avoid any hazard to the safety and propagation of fish and shellfish in waters of the state.
- **Prohibited Operations** - Except where authorized by the project permits, the project will not conduct the following:
  - Blast underwater
  - Use of water jetting
  - Release petroleum products or chemicals in the water
  - Disturb spawning beds
  - Obstruct stream channels
  - Cause silting or sedimentation of water
  - Use treated timbers within the permitted work area
  - Impede adult and juvenile fish passage, including intermittent streams
- **Pre-construction activity.** The following actions must be completed before significant alteration of the project area.
  - **Marking.** Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands,

areas below ordinary high water, and other sensitive sites beyond the flagged boundary.
    - **Temporary erosion controls.** All temporary erosion controls must be in place and appropriately installed downslope of project activity until site restoration is complete.
- **Site preparation.** Native materials, including large wood, native vegetation, weed-free topsoil, and native channel materials (gravel, cobble, and boulders), disturbed during site preparation must be conserved on site for site restoration.
    - If possible, leave native materials where they are found. In areas to be cleared, clip vegetation at ground level to retain root mass and encourage reestablishment of native vegetation.
    - If native materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.
    - Stockpile all large wood taken from below ordinary high water and from within 150 feet of a stream, waterbody or wetland, native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.
    - As part of the site restoration, all large wood taken from the riparian zone or stream during construction must return to those areas and placed in a natural configuration that may be expected to function naturally.
- **Temporary access roads.** All temporary access roads must be constructed as follows.
    - Existing features. Use existing roadways, travel paths, and drilling pads whenever possible, unless construction of a new way or drilling pad would result in less habitat take. When feasible, eliminate the need for an access road by walking a tracked drill or spider hoe to a survey site, or lower drilling equipment to a survey site using a crane.
    - Soil disturbance and compaction. Minimize soil disturbance and compaction whenever a new temporary road or drill pad is necessary within wetlands or riparian area by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by agencies. Construction padding should be used in all staging areas that could temporarily impact underlying or adjacent wetlands through soil compaction and/or vegetation damage. Requests for approval of project-specific techniques for specific areas should be submitted to the agencies with the project notification.
    - Obliteration. When the project is complete, obliterate all temporary access roads that will not be in footprint of a new bridge or other permanent components of project, stabilize the soil, and revegetate the site.
- **Heavy equipment.** Use of heavy equipment is restricted as follows.
    - Choice of equipment. When heavy equipment will be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally sized, low ground pressure equipment).
    - Vehicle and material staging, construction materials storage, and vehicle fuel/refueling, operation, and maintenance, as follows:
        - Ensure that only enough supplies and equipment to complete a specific job will be stored on site, in order to reduce the staging area and likelihood of potential contamination.
        - Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any stream, waterbody or

wetland, unless otherwise approved in writing by agencies. Requests for approval should be submitted with the project notification form.

- Inspect and clean all vehicles operated within 150 feet of any stream, waterbody or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by agencies.
- Before operations begin, and as often as necessary during operation, steam clean all equipment that will be used below ordinary high water until all visible external oil, grease, mud, and other visible contaminates are removed. Complete all cleaning in the staging area.
- Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 feet of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent likely spills from entering any stream or waterbody. Place "diapers" on equipment operating within 30 feet of the Regulated Work Area (high tide line for tidal waters).
- For track-mounted equipment, large cranes, and other equipment whose limited mobility makes it impractical to move it for refueling, take precautions to minimize the risk of fuel reaching the Regulated Work Area. Implement spill prevention measures and provide fuel containment systems designed to completely contain a potential spill, as well as other pollution control devices and measures adequate to provide containment of hazardous material. Perform refueling operations to minimize the amount of fuel remaining in vehicles stored during non-work times.
- Refuel vehicles and equipment at permitted locations only.

- **Construction discharge water.** All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated as follows.
  - Water quality treatment. Design, build, and maintain facilities to collect and treat all construction and drilling discharge water, using the best available technology applicable to site conditions, to remove debris, nutrients, sediment, petroleum products, metals, and other pollutants likely to be present.
  - Return flow. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.
  - Pollutants. Do not allow pollutants such as green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24-hours to contact any waterbody, wetland, or stream channel below ordinary high water.
  - Work Area Isolation - Implement containment measures adequate to prevent pollutants or construction and demolition materials, such as waste spoils, petroleum products, concrete cured less than 24 hours, concrete cure water, silt, welding slag and grindings, concrete saw cutting by-products and sandblasting abrasives, from entering the Regulated Work Area or any waterway or wetland.
  - Do not discharge contaminated or sediment-laden water from the Project or from within a cofferdam directly into any waterway or wetland of the State until it has been treated to the satisfaction of the Project Engineer.

- Do not place any material or waste on any public or private wetland, or within 150-feet of the Regulated Work Area or any waterway.
- Do not discharge contaminated or sediment-laden water, or water contained within a cofferdam, directly into any waters of the State until it has been satisfactorily treated (e.g., by bioswale, filter, settlement pond, pumping to vegetated upland location, bio-bag or dirt-bag).
- The Engineer retains the authority to temporarily halt or modify the Project in case of excessive turbidity or damage to natural resources.
- Limit turbidity increase to 10% above background reading, as measured 100-feet below the Project.

- **Earthwork.** Earthwork, including drilling, excavation, dredging, filling and compacting, must be completed as quickly as possible.
  - Site stabilization. Stabilize all disturbed areas, including obliteration of temporary roads, following any break in work unless construction will resume within four days.
  - Inspection of erosion controls. Monitor in-stream turbidity and inspect all erosion controls daily during the rainy season, weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.
    - If monitoring or inspection shows that the erosion controls are ineffective, immediately mobilize work crews to repair, replace, or reinforce controls as necessary.
    - Remove sediment from erosion controls before it reaches 1/3 of the exposed height of the control.
    - Minimize alteration or disturbance of stream banks and existing riparian vegetation.
- **Isolation of In-water Work Area**
  - Implement containment measures adequate to prevent pollutants or construction and demolition materials, such as waste spoils, petroleum products, concrete cured less than 24 hours, concrete cure water, silt welding slag and grindings, concrete saw cutting by-products and sandblasting abrasives, from entering the regulated work area or any waterway or wetland.
  - Prepare a Work Area Isolation Plan for all work below OHW (where non-tidal) and Mean High Water (where tidal) that requires flow diversion that will describe the sequence and schedule for dewatering and rewatering activities, a plan view of all isolation elements, and a list of equipment and materials that will be used to provide back-up for key plan functions (*e.g.* an operational, properly-sized backup pumps and/or generators).
  - Restrict installation and removal of sediment fence(s) to the regulated in-water work period for the Humboldt Bay area, unless DFG in-water extension is provided.
  - Restrict placement or removal of embankment material or riprap within the regulated work area to the regulated in-water work period unless work is isolated from active flowing streams.
  - Avoid discharge of contaminated or sediment-laden water from the project or from within a cofferdam directly into any waterway or wetland of the State until it has been treated to the satisfaction of the Project Engineer.
  - Notify the Project Engineer at least three working days prior to completion of in-water isolation construction. Provide agency and DFG personnel access to the area to

remove fish trapped within the cofferdam enclosure before beginning work within the cofferdam.
  - Minimize alteration of disturbance or stream banks and existing riparian vegetation.
  - Avoid placement of any material or waste on any public or private wetland within 46 meters (150 feet) of the regulated work area or any waterway.
  - Maintain hazardous material containment booms and spills containment booms around in-water work areas to contain sediment and potential chemical and fuel spills for the duration of in-water work.
  - Suspend work, per the Project Engineer authority, in the event of excessive turbidity or damage to natural resources resulting from the project.
- **Capture and Release of Fish and Other Species**
  - Notify the Engineer at least 10 working days prior to completion of work area isolation. Provide Agency and DFG personnel access to the work area isolation to remove fish trapped within the isolated area before beginning work within the isolated area.
  - Conduct capture and release of any listed fish that may be trapped within the isolated work area using methods approved by NOAA Fisheries, including supervision by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.

5.2 Special-Status Species and Biological Resources

1. **In-water work period.** All work within the active channel will be completed during July 1 through August 31, or anytime, if a fish biologist determines that the affected area is not occupied by adult fish congregating for spawning or in an area where redds are occupied by eggs or pre-emergent alevins.

2. **Pile installation. (A)** Pilings may be replaced with steel round pile 24 inches in diameter or smaller, steel H-pile designated as HP24 or smaller, or untreated wood; **(B)** when using an impact hammer to drive or proof steel piles, one of the following sound attenuation methods must be used to effectively dampen sound pressure waves in all areas to a single strike peak threshold of 206 decibels and, for cumulative strikes, a 183 decibel SEL in areas and times as some of the fish are most likely smaller than 2 grams: **(i)** Completely isolate the pile from flowing water by dewatering the area around the pile; **(ii)** if water velocity is 1.6 feet per second or less, surround the piling being driven by a confined or unconfined bubble curtain, as described in NOAA FISHERIES and USFWS (2006), that will distribute small air bubbles around 100% of the piling perimeter for the full depth of the water column (Wursig *et al*. (2000) and Longmuir and Lively (2001)); and **(iii)** if water velocity is greater than 1.6 feet per second, surround the piling being driven by a confined bubble curtain (*e.g*., a bubble ring surrounded by a fabric or nonmetallic sleeve) that will distribute air bubbles around 100% of the piling perimeter for the full depth of the water column.

3. **Existing Pile Handling.** The following steps will be used to minimize creosote release, sediment disturbance and total suspended solids: **(A)** Install a floating surface boom to capture floating surface debris; **(B)** keep all equipment (*e.g*., bucket, steel

cable, vibratory hammer) out of the water, grip piles above the waterline, and complete all work during low water and low current conditions; **(C)** cut the pile off at least 3 feet below the sediment line; never intentionally break a pile by twisting or bending; **(D)** slowly lift the pile from the sediment and through the water column; **(E)** place the pile in a containment basin on a barge deck, pier, or shoreline without attempting to clean or remove any adhering sediment – a containment basin for the removed piles and any adhering sediment may be constructed of durable plastic sheeting with sidewalls supported by hay bales or another support structure to contain all sediment and return flow which may otherwise be directed back to the waterway; and **(F)** dispose of all removed piles, floating surface debris, any sediment spilled on work surfaces, and all containment supplies at a permitted upland disposal site.

4. **Fish capture and removal. (A)** Fish capture and removal must be completed in any area that is to be isolated from the active channel; **(B)** a supervisory fish biologist experienced with work area isolation and competent to ensure the safe capture, handling and release of all fish will supervise this part of the action, and complete the fish salvage form from Appendix D that will be submitted with the action completion report; and **(C)** any fish trapped within the isolated work area must be captured and released using a trap, seine, or other methods as prudent to minimize the risk of injury, then released at a safe release site.

5. **Fish passage. (A)** Fish passage must be provided for any adult or juvenile fish present in the action area during construction, unless passage did not exist before construction; and **(B)** after construction, adult and juvenile passage that meets NOAA FISHERIES' fish passage criteria must be provided for the life of the action (NOAA FISHERIES 2008, or latest version).

6. **Construction discharge water. (A)** All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated using the best available technology applicable to site conditions to remove debris, nutrients, sediment, petroleum products, metals and other pollutants likely to be present; and **(B)** do not allow pollutants such as green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any waterbody, wetland, or stream channel below ordinary high water.

7. **Temporary access routes. (A)** Do not build temporary access routes for motorized equipment where grade, soil, or other features suggest a likelihood of excessive erosion (*e.g.*, dunes, rills or gullies) or failure; **(B)** when possible, use existing routes that will minimize soil disturbance and compaction within 150 feet of any waterbody; **(C)** when the action is completed, obliterate all temporary access routes, stabilize the soil and restore the vegetation; and **(D)** restore temporary routes in wet or flooded areas before the end of the applicable in-water work period.

8. **Temporary stream crossings. (A)** If a temporary stream crossing is necessary, a fish biologist must be consulted to ensure that the proposed crossing will not interfere with spawning behavior, eggs or preemergent juveniles in an occupied redd, or native submerged aquatic vegetation; **(B)** if the crossing is a ford, it must be located and designed to provide for foreseeable risks, such as flooding and associated bedload and

debris, to prevent the diversion of streamflow out of the channel and down the road if the crossing fails; **(C)** if vehicles and machinery must cross riparian areas and streams, cross perpendicular to the main channel wherever possible; and **(D)** when a crossing is no longer needed, block the area, obliterate the route, and restore the soils and vegetation.

9. **Heavy equipment. (A)** Heavy equipment will be selected and operated as necessary to minimize adverse effects on the environment (*e.g.*, minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils); and **(B)** all vehicles and other heavy equipment will be used as follows: **(i)** Stored, fueled and maintained in a vehicle staging area placed 150 feet or more from any waterbody, or in an isolated hard zone such as a paved parking lot; **(ii)** inspected daily for fluid leaks before leaving the vehicle staging area for operation within 50 feet of any waterbody; and **(iii)** steam-cleaned before operation below ordinary high water, and as often as necessary during operation to remain free of all external oil, grease, mud, and other visible contaminants.

10. **Stationary power equipment.** Generators, cranes and any other stationary equipment operated within 150 feet of any waterbody will be maintained and protected as necessary to prevent leaks and spills from entering the water.

11. **Preconstruction activity.** Before significant alteration of the action area, flag the boundaries of clearing limits associated with site access and construction to minimize soil and vegetation disturbance, and ensure that all temporary erosion controls are in place and functional.

12. **Site preparation. (A)** During site preparation, conserve native materials for restoration, including large wood, vegetation, topsoil and channel materials (gravel, cobble and boulders) displaced by construction; **(B)** when possible, leave native materials where they are found; and **(C)** in areas to be cleared, clip vegetation at ground level to retain root mass and encourage reestablishment of native vegetation.

13. **Actions that require pollution and erosion control. (A)** Any action that will require the use of materials that are hazardous or toxic to aquatic life (such as motor fuel, oil, or drilling fluid), or that involves earthwork that is likely to increase soil erosion and cause runoff with visible sediment into surface water, must complete effective pollution and erosion control measures at the project site and **(B)** describe practices that will be used to: **(i)** Inventory, store, handle and monitor any hazardous products or materials that will be used as part of the action; **(ii)** contain and control a spill of those hazardous materials; **(iii)** confine, remove and dispose of excess concrete, cement, grout and other mortars or bonding agents, including washout facilities; **(iv)** avoid or minimize pollution and erosion at all roads, stream crossings, drilling sites, construction sites, borrow pits, equipment and material storage sites, fueling operations and staging areas; **(v)** prevent construction debris from dropping into any waterbody, and to remove any material that does drop with a minimum of disturbance; **(vi)** avoid or minimize resource damage if the action area is inundated by precipitation or high streamflow; and **(vii)** stabilize all disturbed soils following any break in work unless construction will resume within four days.

14. **Actions that require work area isolation. (A)** Any action, except for piling installation or removal, that involves a substantial amount of excavation, backfilling, embankment construction, or similar work below ordinary high water where adult or juvenile fish are reasonably certain to be present, or 300 feet or less upstream from spawning habitats, must be effectively isolated from the active stream; **(B)** the electronic notification for these actions must explain how the COE or applicant will isolate the work area, including site sketches, drawings, specifications, calculations, or other information commensurate with the scope of the action; **(C)** the notification must also include the name, address, and telephone number of a person responsible for designing this part of the action that NOAA FISHERIES may contact if additional information is necessary to complete the effects analysis; and **(D)** describe practices that will be used to ensure the area will remain effectively isolated throughout the range of stream flows likely to occur during construction.

15. **Actions that require stormwater management. (A)** Any action that will expand, recondition, reconstruct, or replace pavement, replace a stream crossing, otherwise increase the contributing impervious area within the project area, or create a new stormwater conveyance or discharge facility, must meet stormwater pollution reduction and flow control requirements described below; actions that merely resurface pavement by placing a new surface, or overlay, directly on top of existing pavement with no intervening base course and no change in the subgrade shoulder points, are not subject to these stormwater requirements; **(B)** pollution reduction requirements apply to runoff produced by all contributing impervious area that is within or contiguous with the project area; flow control requirements apply to all stormwater discharges that do not flow directly into a large water body where the discharge is unlikely to increase stream erosion rates, *e.g.*, a mainstem river, estuary, or the ocean; **(C)** the electronic notification must explain how the COE or applicant will manage stormwater runoff from all contributing impervious area that is within or contiguous with the project area using site sketches, drawings, specifications, calculations, or other information commensurate with the scope of the action; **(D)** describe the pollutants of concern, identify all contributing and noncontributing impervious areas that are within and contiguous with the project area, explain how the volume of stormwater to be treated was calculated, show the combination of treatment technologies that will be used to treat the identified pollutants of concern for the calculated volume of runoff, and the proposed maintenance activities and schedule; **(E)** include the name, address, and telephone number of a person responsible for designing this part of the action that NOAA Fisheries may contact if additional information is necessary to complete the effects analysis; **(F)** all stormwater quality treatment practices and facilities must be designed to accept 50% of the cumulative rainfall from the 2-year, 24-hour storm for that site, except as follows: climate zone 4 – 67%; climate zone 5 – 75%; and climate zone 9 – 67%. (ESA-listed salmon, steelhead, or southern green sturgeon are unlikely to occur in Zones 5 or 9.) A continuous rainfall/runoff model may be used instead of the above runoff depths to calculate water quality treatment depth**; (G)** for runoff that cannot be infiltrated or evaporated such that no discharge to surface or subsurface waters results, apply one or more of the following specific primary treatment practices, supplemented with appropriate soil amendments and, if possible, plantings of metals

hyperaccumulating species, that will maximize treatment efficiency prior to discharge to surface or subsurface waters: **(i)** Bioretention; **(ii)** bioslope; **(iii)** infiltration pond; **(iv)** porous pavement; **(v)** constructed wetlands; or **(vi)** vegetated and soil amended swale designed for infiltration; **(H)** all stormwater flow control treatment practices and facilities must also be designed to ensure that no increase in sediment transporting flows occurs (*i.e*., match the natural hydrology) between the bankfull event or the 10-year flow event (annual series), whichever is less; **(I)** when conveyance is necessary to discharge treated stormwater directly into surface water or a wetland, the following requirements apply: **(i)** Ensure that all runoff from the road or bridge is treated before commingling with any runoff from offsite for conveyance; **(ii)** maintain natural drainage patterns; **(iii)** where overland flow would concentrate causing erosion, use a conveyance system made entirely of manufactured elements (*e.g*., pipes, ditches, outfall protection) that extends at least to ordinary high water of the receiving water; and **(iv)** stabilize any erodible elements of this system as necessary to prevent erosion; **(J)** for all structural stormwater facilities and conveyance systems, document completion of inspections and maintenance activities according to a regular schedule in a log that is available for inspection on request by the COE or NOAA Fisheries; and **(K)** sediment and liquid from any catch basin cleaning may only be disposed of in an approved facility.

16. **Permanent stream crossing replacement. (A)** Demonstrate that a permanent stream crossing replacement that passes over a floodplain will not impair the physical and biological processes associated with a fully functional floodplain, and will restore any physical or biological process that was degraded by the previous crossing; **(B)** ensure that all stream crossings are designed and placed to: **(i)** Avoid causing local scour of slough and irrigation ditch banks and reasonably likely spawning areas; **(ii)** align with well-defined, stable channels; (**iii)** remove vacant bridge supports below MLW unless the vacant support is part of the rehabilitated or replacement stream crossing; and **(iv)** reshape exposed floodplains and slough banks to match upstream and downstream conditions after installation.

5.3 Fill in Waters of the US

The total estimated project fill material anticipated to be placed in wetlands and Waters of the U.S./State is 4,212 cubic yards. Tables 3 and 5 (Attachment C) presents quantified fill material within wetlands and Waters of the U.S.

Construction Impacts

Temporary impacts to wetlands during construction have been minimized by utilizing existing upland areas and/or proposed fill areas for trail footprint for staging and storage, as well as avoiding mapped wetland areas whenever feasible.

The area south of Samoa Boulevard prior to the approach of I Street, a new bridge/boardwalk will be necessary over wetlands to access the existing trail on top of the pond berm. The installation of the boardwalk will require equipment staging under and adjacent to this area which is mapped as Palustrine Emergent wetland, and as such temporary impacts cannot be avoided at this location, although they can be minimized by storing supplies and equipment in upland areas. Minimization measures will include the placement of construction fabric and

protective pads (metal/wood/rubber sheets) on top of the wetlands where equipment access/staging is required to present the equipment tracks/wheels from rutting and compressing the soil and uprooting or destroying existing wetland vegetation. The area will additionally be revegetated with native wetland plants where bare ground is observed.

As well, construction staging is proposed at a turn-around at the south end of G Street at the on/off ramp to Highway 101. This staging area is an upland compacted area used by various entities for storage of woodwaste, bark mulch, etc. The access from this staging area would require temporary impacts to the palustrine emergent ditch that runs along south G Street between the edge of pavement and the railroad bed. This temporary access could also result in disturbance to some mapped riparian overstory that is growing above the top of bank and could be considered a one-parameter wetland be the coastal commission (lacks wetland soils and hydrology beyond the top of bank). This access route is unavoidable, as

Bridge Shading

Bridge shading is considered an impact in to wetlands and has been included in the wetland impact calculations. The narrow pedestrian bridges (approximately 12 feet wide) are likely to allow light for at least part of the day (due to change in sun angle throughout the day). As well, for tidal areas of Butcher Slough and Gannon Slough, height of the bridges above water surface, particularly at low tide, and height above ground surface, would allow adequate sunlight to reach benthic areas below the bridges. Thus, where the proposed bridge spans are across "Other Waters of the U.S. (Tidal)" (i.e. open water or un-vegetated mud, excludes vegetated wetland classifications or eel grass), the potential impact to underlying waters is not considered significant.

Although for wetland areas the bridge installations are unlikely to cause die-off of underlying vegetation, some level of impact cannot be discounted. Since it would be speculative to quantify this potential impact, direct shading impacts have been estimated at a 1:1 ratio based on portions of bridge span that cross vegetated wetland areas.

Wetland Mitigation

A Wetland and Habitat Mitigation and Monitoring Plan (MMP) will be prepared to ensure compensation for filling of wetlands as a result of the project. The MMP will incorporate habitat replacement for direct impacts to riparian areas (to address City of Arcata regulations and Coastal Commission considerations). Wetland impacts have been minimized where possible, particularly for the Estuarine Intertidal Emergent (Saltmarsh) since acreage of this wetland classification is dwindling around Humboldt Bay. Additionally, the installation of the trail promotes Coastal Act goals for public access, recreation, and nature study, and while some wetland impacts are anticipated, other functions of the coastal area will be enhanced. The project will strive to protect the special resources and plans to provide educational opportunities and signage for those utilizing the trail that will improve the general public's knowledge of wetland and sensitive coastal resources.

A variety of opportunities exist for wetland mitigation near and adjacent to the project site, consisting of wetland creation, enhancement, re-establishment.

Saltmarsh Restoration / Re-establishment

A combination of replacement (described below) coupled with onsite restoration is likely the most feasible method for providing mitigation in areas nearby to the area of impact as well as increasing value and function of existing onsite degraded wetlands. The saltmarsh present along the trail corridor is subject to a high percentage of spartina grass and other invasive plants; therefore, there are significant restoration/re-establishment opportunities for the dwindling saltmarsh habitat along the Bay margin. Restoration of denuded saltmarsh areas will provide drastic improvements over existing conditions, removing non-natives would immediately improve the character, quality, and function of the saltmarsh wetlands. The direct fill to saltmarsh wetlands has been minimized wherever possible within the trail impact area. Wetland mitigation options, in the form of saltmarsh re-establishment exist at both the Old Jacoby Creek and the Brainard's Slough proposed crossings (currently consist of mud "sink-holes" sandwiched between the railroad bed and highway pavement) Additional wetland creation/restoration/re-establishment opportunities could be present east of Highway 101 in the brackish portions of Old Jacoby Creek. If re-establishment is selected as a mitigation solution, adequate ratio for compensation will be developed in discussion with permitting agencies. An additional option would be for replacement utilizing a mitigation bank within the project watershed, with replacement of in-kind wetland types (i.e., saltmarsh creation would compensate for saltmarsh impacts).

Emergent Ditch Replacement

The Palustrine Emergent ditch (that has portions mapped as Estuarine Emergent—Ditch) that currently is present between the railroad bed and Highway 101 western edge of pavement, will be filled and moved over towards the highway alignment, but will still be within the RR-ROW. The replacement ditch will serve as replacement/compensation for the filled portions of the existing ditch at a 1:1 ratio. This new ditch will be designed to hold water similar to current conditions, and will not purposefully outlet or provide runoff opportunities, and as such will function similarly as Palustrine Emergent and Estuarine Emergent—Ditch. The area will likely still receive some level of brackish input, similar to the highway 101 median that is at or just above sea level and as such receives brackish infiltration and as such as scattered estuarine species in some locations (Caltrans, 2007).

Wetland Replacement

Wetland mitigation will be necessary to compensate for unavoidable wetlands fill. The City is currently considering options for wetland mitigation, to include both palustrine and estuarine replacement relative to the amount of impact. Wetland mitigation will be provided at a minimum of 1:1 ratio to ensure no net loss of wetlands. A combination of onsite restoration (described above) and offsite mitigation/replacement is proposed for direct impacts/fill to saltmarsh wetlands (Estuarine Intertidal Emergent--Saltmarsh), with a minimum 1:1 replacement ratio to ensure no net loss. A higher ratio (above 1:1) may be proposed if temporal delay is expected for the final wetland mitigation plans (in meeting wetland creation success criteria).

Mitigation for impacts to wetland areas from bridge shading will be calculated at a 1:1 replacement ratio, although actual impacts to these areas would likely be less than 1:1 as some, if not all, of the shaded wetland vegetation will likely survive. Bridge shading to the non-vegetated "Other Waters of the U.S. (Tidal)" is not considered to result in a direct impact since the width

and height of the proposed bridges would allow for adequate sunlight to access the benthic areas and the existing absence of vegetation would not require sunlight for the area to continue to function.

Habitat Replacement

The MMP will incorporate habitat replacement for direct impacts to riparian areas (to address City of Arcata regulations and Coastal Commission considerations). Mitigation for riparian impacts can be conducted onsite with replacement willow plantings along the trail corridor (and in appropriate locations) at a minimum 1:1 ratio.

5.4 Hazardous Materials

The Conservation Measures and construction techniques will ensure that potential impacts are minimized relating to hazardous materials. A Phase I Corridor Environmental Site Assessment (ESA) has been conducted for the trail corridor and recommendations of that report will be implemented regarding avoidance of potential unknown or known subsurface contamination issues.

5.5 Floodplains

The local floodplain administrator (County and City of Arcata) for this project will require a memo from the design engineer specifying the Base Flood Elevation (BFE) along the alignment in Zone A. FEMA Flood Insurance Study (FIS) details the approximate water surface elevations (WSE) of drainages given design storm events. In order to calculate the WSE, boundary conditions must be assumed, which in most cases is the downstream WSE. For drainages discharging to Humboldt Bay, the downstream WSE corresponds to a WSE of a tidal event. The FIS for Humboldt County lists the 100-year high tide WSE as 9.37 ft. For all three crossings analyzed (Hydrology Tech Memo, Winzler & Kelly May 2010), the existing bridge deck elevations are below the 100-year high tide WSE. In addition, the crown elevations of the Caltrans culverts passing under Highway 101 are below the 100-year high tide WSE. The placed fill for the trail is not supporting a structure that is subject to flood insurance, i.e. residential/commercial structure; therefore, the established BFE is not anticipated to drive the trail finished grade. The project does not include building structures within Zone A.

The proposed project will result in some filling in FEMA Flood Zone A. The project area from the Brainards Crossing North to the crossing of I Street in Arcata is designated as a Zone A. FEMA defines Zone A as the following: “Zone A is a flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by approximate methods.” The footprint area of the proposed project area fill encroachment was compared to the area of the Zone A floodplain that comprises the project area (Figure 2). The estimated the area of the Zone A floodplain which comprises the project area is 1,440 acres. The overall fill encroachment footprint of the project area that lies within the Zone A floodplain was found to be approximately 4.5 acres, or less than 0.31%. When compared to the total area available for inundation of floodwaters, the proposed construction scenario results in placement of negligible amounts of fill.

The entire trail was analyzed to determine which if any additional crossings of creek and trail were within the designated FEMA Floodplain. The FEMA FIS maps were analyzed and it was determined that there were no additional crossings within the floodway. The remaining crossings included the I Street crossing and the Jolly Giant Creek crossing.