

- E2US3N: Estuarine, Intertidal, Unconsolidated Shore, Mud, and Regularly Exposed (Figure 3). The NWI identifies the tidally influenced wetlands in the southern portion of the study area as this type. This estuarine wetland is often referred to as mudflat, is regularly tidally inundated, and may be vegetated with brown and green algae.
- E1UB2L: Estuarine, subtidal, unconsolidated bottom, sand, subtidal (Figure 3). This estuarine wetland represents Humboldt Bay.
- E2EM1N: Estuarine, intertidal, emergent, persistent, regularly flooded (Figure 3). This estuarine wetland is located below the OHWM, is usually only exposed during very low tides, and may be vegetated with eelgrass.

Estuarine intertidal irregularly exposed wetland habitat occupies a narrow band west of the study area, below and above the OHWM where there is frequent tidal inundation. This vegetation community is referred to as salt marsh. Estuarine habitat is located west of the study area from the north slough to the south slough and is interspersed along both sides of the study area from the railroad tracks south to the Herrick Avenue Park and Ride (Figures 4, 5, and 6). A significant amount of high quality salt marsh is located well above the OHWM and immediately adjacent to the footpath in the northern portion of the study area. The estuarine habitat is comprised entirely of herbaceous vegetation that is interspersed with patches of intertidal mudflat scattered with brown and green algae.

For detailed descriptions of vegetation communities, refer to SHN (2007).

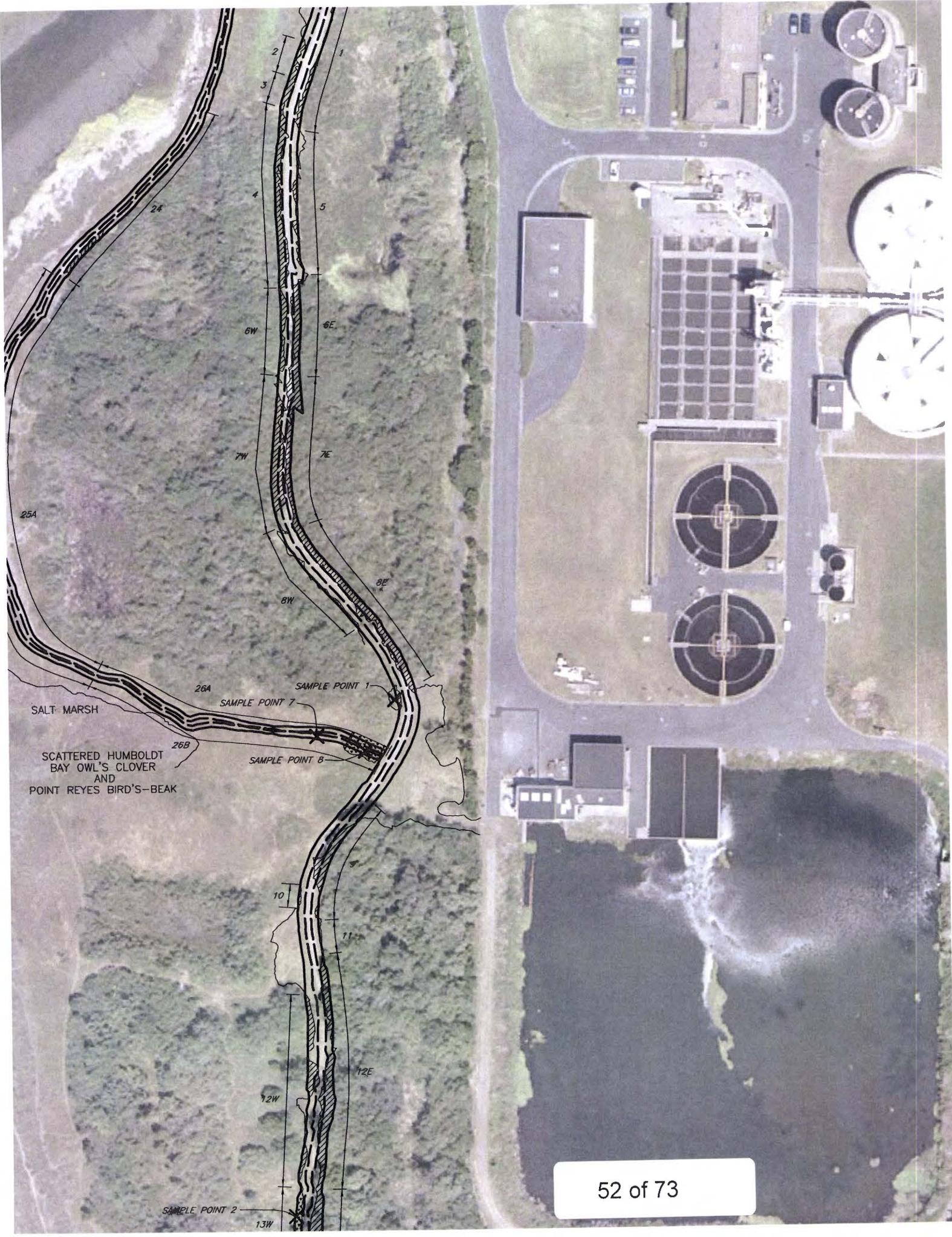
## 4.0 Wetland Delineation

### 4.1 Methodology

Prior to conducting fieldwork, the SHN wetland delineation team reviewed existing information to assist with the determination of wetland boundaries within the study area. This review included *Soils of Western Humboldt County California* (McLaughlin and Harradine, 1966); NWI maps (USDI, 1987); U.S. Geological Survey (USGS) topographic quadrangle maps (Eureka); and aerial photographs.

Eight sample points were characterized in the study area for the aforementioned botanical, hydrological, and soil parameters, in accordance with the 1987 *ACOE Wetland Delineation Manual* (Environmental Laboratories, 1987; Figures 4, 5, and 6). Point locations were selected:

1. to achieve appropriate coverage and characterization of wetland and upland habitats;
2. to determine the approximate boundary line between wetlands and uplands by determining the extent of one or more key wetland criteria (hydrology, hydric soils, and hydrophytic vegetation); and
3. to document potential changes in the vegetative community.



SALT MARSH

SCATTERED HUMBOLDT  
BAY OWL'S CLOVER  
AND  
POINT REYES BIRD'S-BEAK

26A

SAMPLE POINT 7

SAMPLE POINT 1

SAMPLE POINT 8

SAMPLE POINT 2



NO IMPACT

16W

17E

16E

18W

18E

19W

19E

NO IMPACT

NO IMPACT

20W

20E

DUNEMAT/COASTAL PRAIRIE HABITAT

DUNEMAT/NORTHERN FORED



HERRICK AVEN  
PARK & RIDE

All sample points were dug to a depth of 16 inches. Due to the nature of the proposed trail improvement project, sample points were selected based on areas proposed for impact. A limited number of sample points were characterized in the Phase II study area due to the linear nature of the project. Additionally, the eight points characterize the various vegetation types in the area, which allows for extrapolation to other similar vegetation types and elevations within the study area. Soil profile depths were measured from the surface to each horizon, and the thickness of each horizon was also measured; the Munsell Soil Color Chart (Kollmorgen, 1990) was referenced to determine the matrix and mottle colors (if present). Soils were closely inspected for hydric soil indicators as well as primary and secondary hydrology indicators. Each pit was located by Global Positioning System (GPS), flagged with a pine stake, and refilled at the conclusion of data collection.

At each sample point, the vegetation stratum was inspected and identified to the lowest taxonomic level (species) possible at the time of the field visit. Relative percent cover of each plant species was visually estimated within the sample point and within each stratum. The 50/20 method<sup>2</sup> was applied to each stratum to determine the dominant plant species and to satisfy the hydrophytic vegetation criteria. The herbaceous stratum was inspected at a 5-foot radius centered on the sample point; shrub and tree strata were inspected similarly at a 30-foot radius. The wetland indicator status of plant species for this investigation was based on the regional index (Reed, 1988); botanical nomenclature follows *The Jepson Manual, Higher Plants of California* (Hickman, 1993).

Seven of the eight sample points that were characterized had normal wetland conditions, as defined by ACOE (Environmental Laboratories, 1987). However, sample point 5 was characterized as atypical due to the presence of non-native soils. The ACOE defines an atypical situation as one in which effects from human activities or natural events that have resulted in altering positive wetland hydrology, soil, or vegetation indicators (Environmental Laboratories, 1987).

## 4.2 Results

For each sample point, an ACOE Routine Wetland Determination Data Form was completed. Copies of all data forms are included in Attachment 1. Impacts for each trail segment are included in Table 1 and summarized below.

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<sup>2</sup> The 50/20 rule: for each stratum of the plant community, dominant species are the most abundant species that immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species comprising 20 percent or more of the total dominance for that stratum (Environmental Laboratory, 1987).

Table 1 Vegetation and Wetland Impacts Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California					
Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
<b>Main Trail</b>					
North Slough	No Impact	0.0	No additional area for trail without filling the slough	TBD <sup>1</sup>	Salt Marsh
1	No Impact	0.0	Trimming/ Clearing	275	Scrub-shrub
2	No Impact	0.0	Trimming	129.6	Scrub-shrub
3	No Impact	0.0	Large Stem Clearing	137.6	Scrub-shrub
4	Trimming	86.3	Trimming/ Clearing	757.9	Scrub-shrub
5	No Impact	0.0	Trimming	168.3	Scrub-shrub
6 East	Trimming	78.0	Trimming/ Clearing	479.9	Scrub-shrub
6 West	No impact	0.0	Trimming/ Clearing	265.1	Scrub-shrub
7 East	Trimming	109.9	Trimming/ Clearing	611.7	Scrub-shrub
7 West	Trimming	259.7	Trimming/ Clearing	563.5	Scrub-shrub
8 East	Trimming	139.6	Trimming/ Clearing	1009.7	Scrub-shrub
8 West	No Impact	0.00	Trimming/ Clearing	99.1	Scrub-shrub
9	Trimming	105.3	Trimming/ Clearing	390.3	Scrub-shrub
10	No Impact	0.0	Trimming/ Clearing	30.3	Scrub-shrub
11	No Impact	0.0	No Impact	0.0	N/A <sup>2</sup>
12 East	Trimming	142.7	Trimming/ Clearing	1114.3	Scrub-shrub
12 West	Trimming	44.8	Trimming/ Clearing	518.3	Scrub-shrub
13 East	Trimming	49.6	Trimming/ Clearing	587.6	Scrub-shrub
13 West	Trimming	92.6	Wetland	360.5	Emergent wetland
14 East	No Impact	0.00	Trimming/ Large Stem Clearing	784.6	Scrub-shrub

Table 1 Vegetation and Wetland Impacts Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California					
Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
14 West	Trimming	963.0	Trimming/ Large Stem Clearing	752.4	Scrub-shrub
15 East	No Impact	0.00	Trimming/ Clearing/ Wetland	2343.7	Scrub-shrub
15 West	Trimming/ Wetlands	2684.3	Trimming/ Clearing/ Wetland	2327.2	Scrub-shrub
16 East	No Impact	0.00	Trimming/ Large Stem Clearing/ Wetland	630.6	Scrub-shrub
16 West	Trimming/ Wetlands	653.2	Trimming/ Large Stem Clearing/ Wetland	602.7	Scrub-shrub
17 East	Trimming/ Wetlands	15.5	Trimming/ Clearing/ Wetland	206.6	Scrub-shrub
18 East	Trimming/ Clearing/ Wetlands	33.1	Trimming/ Clearing/ Wetland	264.4	Scrub-shrub
18 West	No Impact	0.00	Trimming/ Clearing/ Wetland	424.4	Scrub-shrub
19 East	No Impact	0.00	Trimming/ Clearing/ Wetland	14.6	Scrub-shrub
19 West	No Impact	0.00	Trimming/ Clearing/ Wetland	76.9	Scrub-shrub
20 East	No Impact	0.00	Trimming/ Clearing	119.5	Scrub-shrub
20 West	No Impact	0.00	Trimming/ Clearing	75.8	Scrub-shrub
21 East	No Impact	0.00	Trimming/ Clearing	186.8	Scrub-shrub
22 East	No Impact	0.00	No Impact	0.00	Scrub-shrub
22 West	No Impact	0.00	Trimming/ Clearing	199.2	Scrub-shrub
South Slough	Salt marsh	58.5	Salt marsh	258.8	Salt marsh

Table 1 Vegetation and Wetland Impacts Elk River Wildlife Trail Improvement Project, Phase II, Eureka, California					
Trail Segment No.	Existing Trail	14-Foot Impact Length (sq. ft.)	Additional 6-foot Width (each side of trail)	6-Foot Impact Length (sq. ft.)	Habitat Type to be Affected per Trail Segment
<b>Foot Path</b>					
23	No Impact	0.00	Salt marsh	169.3	Salt marsh
24	No Impact	0.00	Trimming	758.0	Scrub-shrub
25 A	Dunemat/Northern Foredune Grassland	493.65	Dunemat/Northern Foredune Grassland	1619.8	Sensitive Dunemat/Northern Foredune Grassland Habitat
25 B	Dunemat/Northern Foredune Grassland	493.65	Dunemat/Northern Foredune Grassland	1653.4	Sensitive Dunemat/Northern Foredune Grassland Habitat
26 A	Emergent wetland	36.4	Wetland	227.6	Emergent wetland
26 B	Emergent wetland	36.4	Wetland	239.8	Emergent wetland
<b>Railroad to Herrick Avenue Park and Ride</b>					
Trail Segment	Existing Trail	Impact Length 14 Foot	Additional 6 foot Width	Impact Length 6 Foot	Habitat Type to be Affected per Trail Segment
27 North	No Impact	0.00	Salt marsh	324.4	Salt marsh
27 South	No Impact	0.00	Salt marsh	100.3	Salt marsh

1. TBD: To Be Determined (once trail design is finalized).  
2. N/A: Not Applicable

Although portions of the study area tend to dry out due to the lack of an impermeable confining layer, hydrologic factors, such as a high and fluctuating water table and high precipitation exert an overriding influence on the plant species that occur in the wetland portions (Environmental Laboratories, 1987), as well as the morphology and structure of the soils present in the study area. The majority of the study area included some species considered to be hydrophytic. However, in Humboldt County, many species listed as facultative wetland indicators occur frequently in transitional or upland habitats, and are poor indicators of wetland status in the absence of the other corroborating soils and hydrological factors. Overall, the combination of hydrophytic vegetation, hydric soils, and saturation or ponding was used in this delineation to define wetlands.

Refer to SHN (2007) for recommendations to reduce potential impacts.

#### 4.2.1 The Main Trail

Eight sample points were inspected to characterize wetland conditions along the main trail (sample points 1-8; Attachment 1; Figures 4, 5, and 6). Sample points 1-3 had a predominance of hydrophytes, and included a mix of scrub-shrub and herbaceous species. These sample points were inspected

during the dry season; therefore, primary wetland hydrology was only encountered at sample point 3. Secondary indicators were observed in sample points 1 and 2. Soils are low in chroma (10YR2/1 and 10YR 4/2) and sample points 2 and 3 have mottles.

Sample point 4 has a mix of upland and wetland species, but had a predominance of upland species. No hydrology indicators were detected. The soil is low in chroma (10YR 4/2) but lacked redoximorphic features.

Approximately 3,386 sq. ft (0.08 acre) of freshwater wetlands will be impacted within the existing footprint of the main trail and approximately 7,252 sq. ft. (0.17 acre) of wetlands are located within the impact zone (Figures 4 and 5). The total freshwater wetland impact for the main trail segment portion of the study area is approximately 10,638 sq. ft. (0.24 acres).

The existing trail over the south slough is very narrow, therefore trail improvements will result in impacts to salt marsh wetlands (Figure 6). Approximately 59 sq. ft. of salt marsh is located along the existing path and approximately 259 sq. ft. of salt marsh is located in the impact zone. Therefore, a total of approximately 317 sq. ft. of salt marsh will be impacted within the south slough.

The most significant amount of vegetation trimming or clearing within the study area will occur along the main trail (Figures 4, 5, and 6). Due to the difficulty of differentiating vegetation clearing impacts from wetland impacts in the portions of the study area where both impacts occur along the same trail segment, the following numbers correspond to segments with vegetation clearing only (Table 1). Approximately 2,072 sq. ft. of vegetation will be trimmed or cleared along the existing trail and approximately 9,257 sq. ft. of vegetation will be trimmed or cleared within the impact zone of the main trail. Therefore, a total of approximately 11,328 sq. ft. (0.26 acres) of vegetation will be impacted along the main trail by trimming and/or clearing.

#### 4.2.2 Footpath

Approximately 169 sq. ft. of salt marsh along the western side of the north slough will be impacted to expand the width of the footpath (Figure 4).

Two wetland sample points, 7 and 8, were characterized along the footpath (Figure 4). Sample point 7 consists of upland species, including the upland sand dune sedge (*Carex pansa*). Soils are low in chroma in the upper horizon (10YR 2/2) but lighter in the lower horizon (10YR 4/3). No redoximorphic features or hydrology indicators were detected in the soil profile for sample point 7. Sample point 8 is dominated by hydrophytes including slough sedge and Pacific bramble. Soils are low in chroma (10YR 2/2), have abundant mottles, and were saturated in the upper 12 inches.

The proposed trail improvements along the footpath will impact approximately 73 sq. ft. of wetlands within the existing footpath and approximately 467 sq. ft. of wetlands within the impact zone (Figure 4). Therefore, a total of approximately 540 sq. ft. of freshwater emergent wetlands will be impacted along the footpath for the proposed trail improvement project.

A small section of willows, approximately 758 sq. ft., will be impacted along section 24 of the footpath (Figure 4).

#### **4.2.3 Railroad to Pound Road Parking Lot**

Wetland sample point(s) were not characterized in this portion of the study area because the wetland/upland boundary is readily apparent. The existing trail is located on a fill prism and there is obvious salt marsh habitat downslope from the trail, along both the north and south sides of the path (Figure 6). Proposed trail improvements along segment 27 north and 27 south will impact approximately 425 sq. ft. of salt marsh (Figure 6). Trail improvements in this portion of the study area do not require vegetation trimming and/or clearing.

#### **4.2.4 Pound Road Parking Lot to Herrick Avenue Park and Ride**

One wetland sample point was characterized in this portion of the study area (sample point 5), which is located along the north side of Pound Road (Figure 6). Vegetation is dominated by herbaceous emergent hydrophytes and secondary hydrology indicators were noted. Soils consist of one profile and appear to be non-native road fill based on the presence of rocks, rubble, bark, and charcoal (atypical situation). Soils in sample point 5 are not low in chroma (10YR3/4) but due to the abundance of mottles throughout the profile (7.5YR 4/6), soils at this location are considered hydric.

A significant area of salt marsh habitat is located to the south of Pound Road. This area is frequently inundated by brackish/estuarine water from a network of tidal channels in that area. The majority of the salt marsh is located outside the study area (Figure 6) but a small portion could be impacted if the new trail segment from the Pound Road Parking lot to the Herrick Avenue Park and Ride is located along the southern shoulder of Pound Road. The amount of impact will have to be determined once the final trail alignment is determined. Vegetation clearing within this portion of the study area appears to be limited to the west side of Pound Road, just north of the Herrick Avenue Park and Ride, if the new trail segment is constructed there.

Two brackish wetland pockets are located along the western and eastern sides of Pound Road (Figure 6). If the new trail segment is located along the southern/western side of Pound Road, the smaller of the two wetland pockets will be impacted. Final wetland impacts for this section of the study area will need to be determined once the final trail layout is designed.

### **4.3 Total Wetland Impacts**

Based on the above, approximately 11,178 sq. ft. (0.26 acres) of freshwater wetland will be impacted and approximately 911 sq. ft. of salt marsh will be impacted by the proposed trail improvement project. The combined total wetland impacts in the study area are approximately 12,089 sq. ft. (0.28 acres).

#### 4.3.1 Estuarine Habitat

Estuarine/salt marsh habitat located adjacent to the study area was not characterized with sample points because it either clearly resides outside potential impact zones or indicators are readily apparent due to the presence of wetland hydrology. Because the limits of that habitat can easily be delineated, a significant amount of salt marsh habitat is shown on Figures 4-6.

#### 4.3.2 Sensitive Areas

Wetlands within the Coastal Zone are under the regulation of a number of agencies including ACOE, CCC, California Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), and local lead agencies. The definition of a wetland varies among the agencies ranging from a stricter mandate regarding the quality of water resources to a broader mandate concerning the protection of sensitive habitats (DFG, 2007). ACOE regulates wetlands pursuant to Section 404 of the Clean Water Act and requires the presence of all three wetland criteria to meet the ACOE definition of jurisdictional wetlands. CCC and DFG have broader mandates including the protection of coastal resources, biological resources (biodiversity), and ecological functions. Therefore the presence of all three wetland criteria is not required to identify these environmentally sensitive areas (CCC, 1994; DFG, 2007).

For the purpose of this study, areas that provide important habitat for wildlife, contribute to the functional values of adjacent wetlands, and/or provide habitat for special status species are considered ESHA and have been identified throughout the study area. Areas identified as ESHA are not meant to meet a strict regulatory definition of any resource agency but instead have been delineated based on SHN's scientific understanding of the important values of these areas and our best professional judgment. Habitat that has been delineated as ESHA is consistent with Section 6.A.6 of the City of Eureka General Plan Policy Document (City of Eureka, 1999).

ESHA that will be impacted by the proposed project includes the dunemat/northern foredune grassland habitat along a portion of the footpath (Figure 4). This habitat is located in other portions of the study area, such as in the southern portion of the main trail, but the existing trail is wide enough so trail improvements are not expected to result in impacts there. Approximately 987 sq. ft. of dunemat/northern foredune habitat will be impacted along the existing footpath; an additional 3,373 sq. ft. of this sensitive habitat will be impacted due to trail widening. Therefore, a total of approximately 4,260 sq. ft. (0.1 acre) of dunemat/northern foredune grassland will be impacted along the footpath.

Other ESHA has been identified in the project area and includes the willow thickets and substantial areas of shrubs that provide habitat for wildlife (Figures 4, 5, and 6). The amount of vegetation that will be impacted was quantified because it may be subject state and local regulations. The total amount of vegetation, not including wetland and dunemat/northern foredune grassland habitat that will be impacted in the study area is approximately 12,086 sq. ft. (0.28 acres).

Gary Bird

Wetland Delineation for Phase II of the Elk River Trail Improvement Project, Eureka, California

October 31, 2007

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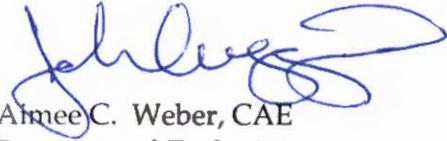
## 5.0 Limitations

The conclusions in this wetland delineation reflect the best professional judgment of the SHN wetland delineation team and should not be considered final until verified by the ACOE and CCC, as well as reviewed by the DFG, and/or other local agencies with interest in wetland regulation/conservation. Property boundaries and wetland/upland mapping are approximate. Once the final trail layout is designed, particularly from the Pound Road Parking Lot to Herrick Avenue Park and Ride, wetland impact areas may increase. Furthermore, the conclusions in this report represent a "snapshot in time" and it is possible that not all herbaceous species were present at the time of the fieldwork. In addition, the delineation was not completed at the height of the wet season.

Please feel free to call us anytime at 707-441-8855 regarding the results of this report or the project.

Sincerely,

**SHN Consulting Engineers & Geologists, Inc.**

fr   
Almee C. Weber, CAE  
Botanist and Ecologist

ACW:lms

Attachment 1. Wetland Delineation Data Forms

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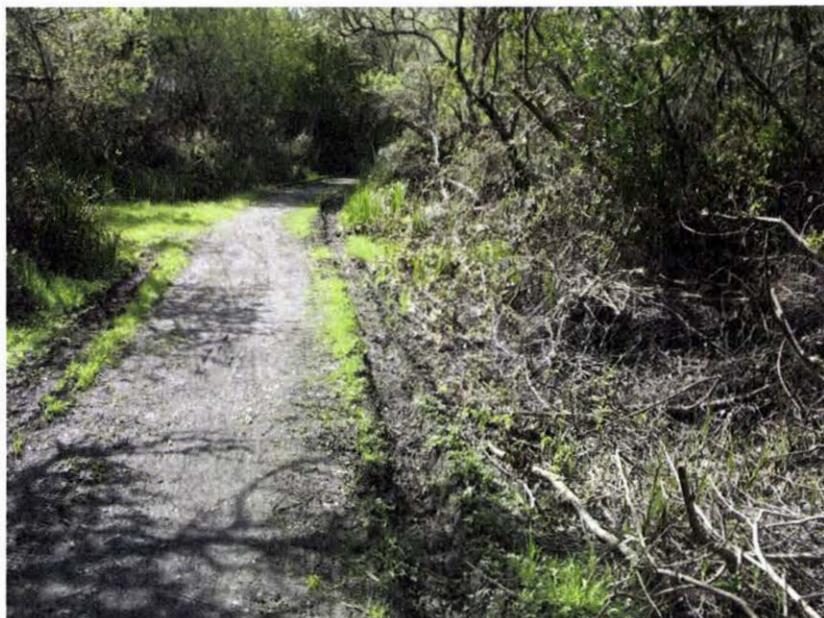
**Photo 1.**  
Dunemat/northern  
dune grassland habitat  
adjacent to the southern  
portion of the main trail  
segment. Photo taken by  
SHN on 6-9-07,  
orientation is north.



**Photo 2.**  
Dunemat/northern  
dune grassland habitat  
located within the  
impact zone of the  
footpath. Photo taken  
by SHN on 4-13-07,  
orientation is southwest.



**Photo 3.** Humboldt Bay owl's clover and Point Reye's bird's beak located adjacent and along the network of undesignated trails located near the footpath. Note the plants are located immediately adjacent to walking surface and in a few locations on the walking surface. Photo taken by SHN on 4-13-07, orientation is south.



**Photo 4.** Palustrine scrub-shrub habitat that will be impacted by trail improvements along the main trail segment. This was taken near sections 16 and 17 on 4-13-07, orientation is south.





**Photo 5.** Disturbed habitat in the foreground and Palustrine scrub-shrub in the background. Portions of the main trail that are this wide will not result in impacts to wetlands or ESHA. Photo taken by SHN on 6-09-07, orientation is southeast.



**Photo 6.** Path from the railroad to Pound Road parking lot. Upland habitat is located immediately adjacent to the trail. Note salt marsh in background, indicated by arrow. Photo taken by SHN on 6-9-07, orientation is east.



**Species List**  
**Elk River Wildlife Trail Improvement Project Phase II 2007 Surveys, Eureka, California**

Scientific Name	Common Name	Presence (1=tree, 2=shrub, 3=herb)
<i>Alnus rubra</i>	red alder	1
<i>Eucalyptus globulus</i>	blue gum	1
<i>Ilex aquifolium</i>	English holly	1
<i>Malus fusca</i>	Oregon crab apple	1
<i>Pinus attenuata</i>	knobcone pine	1
<i>Pinus contorta</i> ssp. <i>contorta</i>	beach pine	1
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir	1
<i>Rhamnus purshiana</i>	cascara	1
<i>Salix hookeriana</i>	Hooker's willow	1
<i>Salix lasiolepis</i>	arroyo willow	1
<i>Salix sitchensis</i>	Sitka willow	1
<i>Sequoia sempervirens</i>	coast redwood	1
<i>Baccharis pilularis</i>	coyote brush	2
<i>Cytisus scoparius</i>	Scotch broom	2
<i>Gaultheria shallon</i>	salal	2
<i>Genista monspessulana</i>	French broom	2
<i>Lonicera involucrata</i> var. <i>ledebourii</i>	black twinberry	2
<i>Lupinus arboreus</i>	yellow bush lupine	2
<i>Myrica californica</i>	wax myrtle	2
<i>Ribes sanguineum</i> var. <i>glutinosum</i>	pink-flowering currant	2
<i>Rosa nutkana</i>	Nootka rose	2
<i>Rubus discolor</i>	Himalaya berry	2
<i>Rubus parviflorus</i>	thimbleberry	2
<i>Rubus spectabilis</i>	salmonberry	2
<i>Sambucus racemosa</i>	red elderberry	2
<i>Vaccinium ovatum</i>	evergreen huckleberry	2
<i>Abronia latifolia</i>	yellow sand-verbena	3
<i>Achillea millefolium</i>	common yarrow	3
<i>Agrostis exarata</i>	western bent-grass	3
<i>Agrostis</i> sp.	bent grass	3
<i>Agrostis stolonifera</i>	creeping bent-grass	3
<i>Agrostis viridis</i>	bentgrass	3
<i>Aira caryophylla</i>	silver European hairgrass	3
<i>Ambrosia chamissonis</i>	silver burweed	3
<i>Ammophila arenaria</i>	European beachgrass	3
<i>Anagallis arvensis</i>	scarlet pimpernel	3
<i>Anaphalis margaritacea</i>	pearly everlasting	3
<i>Anthoxanthum odoratum</i>	sweet vernal grass	3
<i>Armeria maritima</i> ssp. <i>californica</i>	sea-pink	3

**Species List**  
**Elk River Wildlife Trail Improvement Project Phase II 2007 Surveys, Eureka, California**

Scientific Name	Common Name	Presence (1=tree, 2=shrub, 3=herb)
<i>Artemisia pycnocephala</i>	artemisia	3
<i>Aster chilensis</i>	common California aster	3
<i>Athyrium filix-femina</i>	lady fern	3
<i>Atriplex leucophylla</i>	beach saltbush	3
<i>Atriplex patula</i>	spear oracle	3
<i>Atriplex triangularis</i>	spearscale	3
<i>Bellis perennis</i>	English daisy	3
<i>Blechnum spicant</i>	deer fern	3
<i>Brassica nigra</i>	black mustard	3
<i>Briza maxima</i>	large quaking or rattlesnake grass	3
<i>Briza minor</i>	small quaking or rattlesnake grass	3
<i>Bromus</i> spp.	brome grasses	3
<i>Cakile maritima</i>	sea rocket	3
<i>Calystegia soldanella</i>	beach morning-glory	3
<i>Camissonia cheiranthifolia</i>	beach primrose	3
<i>Cardamine oligosperma</i>	western bittercress	3
<i>Cardionema ramosissimum</i>	sandmat	3
<i>Carex deweyana</i> ssp. <i>leptopoda</i>	short-scaled sedge	3
<i>Carex lyngbyei</i>	Lyngbye's sedge	3
<i>Carex obnupta</i>	slough sedge	3
<i>Carex pansa</i>	sand dune sedge	3
<i>Carex</i> sp.	sedge	3
<i>Castilleja ambigua</i> ssp. <i>humboldtensis</i>	Humboldt Bay owl's clover	3
<i>Chamomilla suaveolens</i>	pineapple weed	3
<i>Cichorium intybus</i>	chicory	3
<i>Cirsium arvense</i>	Canada thistle	3
<i>Cirsium vulgare</i>	bull thistle	3
<i>Claytonia sibirica</i>	Siberian candyflower	3
<i>Conium maculatum</i>	poison hemlock	3
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Point Reyes bird's-beak	3
<i>Cortaderia jubata</i>	pampas grass	3
<i>Crocosmia</i> sp.	crocosmia	3
<i>Cuscuta salina</i>	Dodder	3
<i>Cynosurus echinatus</i>	hedgehog dogtail grass	3
<i>Cyperus eragrostis</i>	nut-grass or tall flat-sedge	3
<i>Dactylis glomerata</i>	orchard grass	3
<i>Daucus carota</i>	wild carrot or Queen Anne's lace	3
<i>Deschampsia cespitosa</i> ssp. <i>cespitosa</i>	tufted hair-grass	3

**Species List**  
**Elk River Wildlife Trail Improvement Project Phase II 2007 Surveys, Eureka, California**

Scientific Name	Common Name	Presence (1=tree, 2=shrub, 3=herb)
<i>Digitalis purpurea</i>	foxglove	3
<i>Distichlis spicata</i>	saltgrass	3
<i>Eleocharis sp.</i>	spike-rush	3
<i>Epilobium ciliatum</i>	northern willow herb	3
<i>Equisetum arvense</i>	common horsetail	3
<i>Equisetum hyemale ssp. affine</i>	common scouring rush	3
<i>Erechtites minima</i>	toothed coast fireweed	3
<i>Eriogonum latifolium</i>	beach buckwheat	3
<i>Eschscholzia californica</i>	California poppy	3
<i>Festuca arundinacea</i>	tall fescue	3
<i>Festuca rubra</i>	red fescue	3
<i>Foeniculum vulgare</i>	fennel	3
<i>Fragaria vesca</i>	wood strawberry	3
<i>Fuschia sp.</i>	ornamental fuschia	3
<i>Galium sp.</i>	bedstraw	3
<i>Geranium dissectum</i>	cut-leaved geranium	3
<i>Geranium molle</i>	dovefoot geranium	3
<i>Geranium sp.</i>	geranium	3
<i>Gnaphalium sp.</i>	cudweed	3
<i>Grindelia stricta</i>	gunweed	3
<i>Hedera helix</i>	English ivy	3
<i>Heracleum lanatum</i>	cow parsnip	3
<i>Holcus lanatus</i>	common velvet grass	3
<i>Hordeum marinum</i>	Mediterranean barley	3
<i>Hypericum perforatum</i>	Klamath weed or common St. John's-wort	3
<i>Hypochaeris radicata</i>	hairy cat's-ear	3
<i>Iris douglasiana</i>	Douglas iris	3
<i>Jaumea carnosa</i>	fleshy jaumea	3
<i>Juncus balticus</i>	Baltic rush	3
<i>Juncus bolanderi</i>	Bolander's rush	3
<i>Juncus bufonius</i>	common toad rush	3
<i>Juncus effusus</i>	common rush	3
<i>Juncus ensifolius</i>	dagger-leaf rush	3
<i>Juncus leseurii</i>	salt grass	3
<i>Juncus patens</i>	spreading rush	3
<i>Lathyrus latifolius</i>	everlasting pea	3
<i>Lathyrus littoralis</i>	beach pea	3
<i>Lathyrus sp.</i>	pea	3
<i>Lemna sp.</i>	duckweed	3

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<i>Lessingia filaginifolia</i>	beach aster	3
<i>Leucanthemum vulgare</i>	ox-eye daisy	3
<i>Leymus mollis</i>	American dunegrass	3
<i>Linum bienne</i>	western blue flax	3
<i>Lolium perenne</i>	perennial ryegrass	3
<i>Lolum multiflorum</i>	Italian ryegrass	3
<i>Lonicera hispidula</i> var. <i>vacillans</i>	hairy honeysuckle	3
<i>Lotus corniculatus</i>	birdfoot trefoil	3
<i>Lotus micranthus</i>	rose-flowered lotus	3
<i>Lupinus bicolor</i>	miniature lupine	3
<i>Lysichiton americanum</i>	skunk cabbage	3
<i>Madia sativa</i>	tarweed	3
<i>Melilotus officinalis</i>	yellow sweet clover	3
<i>Mentha pulegium</i>	pennyroyal	3
<i>Montia parvifolia</i>	streambank spring beauty	3
<i>Navarretia squarrosa</i>	skunkweed	3
<i>Oenanthe sarmentosa</i>	Pacific water-parsley	3
<i>Parentucellia viscosa</i>	yellow parentucellia	3
<i>Petasites frigidis</i> var. <i>palmatus</i>	western coltsfoot	3
<i>Phalaris arundinacea</i>	reed canary grass	3
<i>Plantago lanceolata</i>	English plantain	3
<i>Plantago major</i>	common plantain	3
<i>Poa macrantha</i>	sand dune bluegrass	3
<i>Polygonum arenastrum</i>	beach knotweed	3
<i>Polypogon monspeliensis</i>	rabbitfoot grass or annual beard grass	3
<i>Polystichum munitum</i>	sword fern	3
<i>Potentilla anserina</i>	silverweed	3
<i>Prunella vulgaris</i>	self-heal	3
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	western bracken fern	3
<i>Ranunculus occidentalis</i>	western buttercup	3
<i>Ranunculus repens</i>	creeping buttercup	3
<i>Raphanus sativus</i>	wild radish	3
<i>Rorippa nasturtium-aquaticum</i>	water cress	3
<i>Rubus ursinus</i>	Pacific bramble or California blackberry	3
<i>Rumex acetosella</i>	sheep sorrel	3
<i>Rumex crispus</i>	curly dock	3
<i>Rumex salicifolius</i>	willow dock	3
<i>Salicornia virginica</i>	pickleweed	3
<i>Scirpus americanus</i>	three-square bulrush	3

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<i>Scirpus cernuus</i>	low club-rush	3
<i>Scirpus microcarpus</i>	small-flowered bulrush	3
<i>Scrophularia californica</i>	coast figwort	3
<i>Senecio vulgaris</i>	common butterweed	3
<i>Silene sp.</i>	catchfly	3
<i>Solidago spathulata</i>	dune goldenrod	3
<i>Sonchus asper ssp. asper</i>	prickly sow thistle	3
<i>Spartina densiflora</i>	cordgrass	3
<i>Spergularia macrotheca</i>	sandspurry	3
<i>Stachys ajugoides</i>	hedge nettle	3
<i>Stachys chamissonis</i>	Chamisso's hedge nettle	3
<i>Tanacetum camphoratum</i>	dune tansy	3
<i>Trifolium pratense</i>	red clover	3
<i>Trifolium repens</i>	white clover	3
<i>Trifolium wormskioldii</i>	springbank clover	3
<i>Triglochin maritima</i>	seaside arrow-grass	3
<i>Triphysaria eriantha ssp. eriantha</i>	butter-and-eggs	3
<i>Typha latifolia</i>	broadleaf cattail	3
<i>Urtica dioica ssp. holosericea</i>	stinging nettle	3
<i>Verbascum thapsis</i>	woolly mullein	3
<i>Veronica americana</i>	American brooklime	3
<i>Vicia americana var. americana</i>	American vetch	3
<i>Vicia hirsuta</i>	hairy vetch	3
<i>Vinca major</i>	greater periwinkle	3