APPENDIX A

WATERS AND WETLANDS

DELINEATION OF WETLANDS AND OTHER WATERS

COYOTE CREST WIND ENERGY PROJECT
TRANSMISSION LINE POLE REPLACEMENT CORRIDOR

GRAYS HARBOR AND LEWIS COUNTY, WASHINGTON

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Note: The photos, field forms and rating sheets for the appendices to this report have not been reproduced for publication but are available for review upon request.

Appendix A. Site Photographs
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1.0 INTRODUCTION

Everpower Wind Holdings, Inc (Everpower) is proposing to build the Coyote Crest Wind Energy Project near the City of Centralia, Washington in Lewis and Grays Harbor Counties (Figure 1). As part of this project, Everpower will replace existing overhead transmission line poles along two paved roads west of the Chehalis River. For the purposes of this report, "Project" refers only to the transmission line pole replacement activities associated with the larger Coyote Crest Wind Energy Project.

Tetra Tech EC, Inc. (Tetra Tech) was contracted by Everpower in November 2009 to conduct a field delineation of wetlands and other waters (streams, lakes, deep ponds, etc.). The purpose of the field delineation was to field verify, characterize, and delineate the wetlands and other waters within the anticipated Project footprint and adjacent study area buffer (defined as the Project study corridor). A delineation provides mapped locations of wetlands and other waters for use in assessing impact avoidance and minimization. In the state of Washington, delineations also provide characteristics for rating the wetlands and classifying the streams in order to apply protective buffers as prescribed by each county's Critical Areas ordinance or code. The field investigation was conducted by Tetra Tech on November 18 and 19, 2009. This report is a discussion of the results of that field investigation.

1.1 Project Description

The proposed Coyote Crest Wind Energy Project will require the replacement of existing timber poles with larger poles along a total of approximately seven miles of Garrard Creek Road and South Bank Road. The survey limits for this effort comprise a 100-foot road right-of-way (ROW), which includes the ROW and the wetlands and other waters just outside or abutting the ROW (Figure 4, Sheets 4-1 through 4-18). No wetlands or other waters (in this case streams) are proposed for direct impacts from the pole replacement activities. However, several of the poles to be replaced are located within county-designated wetland and stream buffers. Disturbance to the wetland and stream buffers from pole replacement activities will take place within the gravel road shoulders (i.e. previously disturbed buffers) or within the upland slopes between the road and wetland/water feature. Wherever possible, the transmission line poles will be removed by equipment sitting on the asphalt road and reaching over to the pole locations. An auger will drill a larger hole in the same location as the existing pole to accommodate the larger pole. This will create a soil disturbance of an approximate three-foot diameter around each pole. If guy wires are required, an auger will drill holes for each guy wire. With overall equipment activity, there may be up to 30 feet of disturbance at a pole replacement site. Care will be taken to minimize temporary disturbances in the wetland and stream buffers (i.e. uplands) caused by parking of vehicles and equipment.

1.2 Purpose and Regulatory Framework

The purpose of this report is to formally document the locations of wetlands and other waters present in the Project study corridor and provide a characterization of these resources for the purpose of determining their federal and state jurisdictional status. Wetlands are defined for regulatory purposes as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" [33 Code of Federal Regulations (CFR) 328.3, 40 CFR 230.3]. "Other waters" include rivers, streams, lakes, and ponds. The following sections describe the regulatory framework for wetlands and other water resources within the Project region.

1.2.1 Federal Jurisdiction

Under Section 404 of the Clean Water Act (CWA), the U.S Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) regulate the discharge of dredge and fill material into "waters of the United States." The jurisdictional status of wetlands and other waters is generally based on the *USACE Jurisdictional Determination Form Instructional Guidebook* (USACE 2007) and USACE guidance resulting from the 2001 Supreme Court decision *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army of Corps of Engineers* (Findlaw 2001) and *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (USACE 2008a). In order for an aquatic feature to be considered a "waters of the U.S." it must be at least one of the following:

- A traditional navigable water (TNW)
- A wetland adjacent to a TNW
- A relatively permanent water (RPW), including tributaries that typically flow year-round or have a continuous flow at least seasonally (typically three consecutive months depending on the region)
- A wetland that directly abuts a RPW
- A wetland adjacent (proximal but not abutting) to a RPW, but only if it can be shown that the feature has a "significant nexus" with a TNW
- A non-RPW or wetland adjacent to a non-RPW if the feature has a "significant nexus" with a TNW (USACE 2007b).

Adjacent is defined as "bordering, contiguous, or neighboring." Wetlands separated from other waters of the U.S. by barriers such as natural river berms, man-made dikes, and beach dunes may be considered adjacent wetlands. The 2008 ruling also requires that the agencies not generally assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies or small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

Recent agency guidance states that the agencies will apply the significant nexus standard as follows (USACE 2007a):

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters; and
- Significant nexus includes consideration of hydrologic and ecologic factors.

In the absence of adjacent wetlands, lateral jurisdiction over nontidal waters extends to the ordinary high water mark (OHWM). The definition of the OHWM is "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (65 Federal Register 12823, 2000).

1.2.2 State Jurisdiction

The Washington Department of Ecology (WDOE) regulates wetlands and other waters through the state's Shoreline Management Act (SMA) and Growth Management Act (GMA). Under the SMA, each city and county adopts a shoreline master program that is based on state guidelines but tailored to the specific needs of the community. The GMA regulatory framework requires that each county have a Critical Areas Ordinance (CAO) program. The county's Critical Areas Ordinance (or Critical Areas Protection Code) provides specific rules for protecting Critical Areas. Critical Areas include as example, wetlands, floodplains, aquifers, and steep slopes (Grays Harbor County 2010, Lewis County 2010).

The Critical Areas Ordinance for Lewis County, Article IV(A) provides wetland and stream classification guidelines for determining protective buffers, allowed activities within wetlands and buffers, and guidelines for mitigation of impacts to wetlands and buffers. In general road maintenance and improvement and utility line activities are allowed uses subject to the priorities, protection, and mitigation requirements of the code. The Grays Harbor County Code 18.02 provides similar guidelines in addition to requiring "mitigation sequencing" (impact avoidance, minimization and mitigation) to conserve wetlands and other waters. Exemptions to or modifications of wetland area requirements and/or buffer averaging may be applied at the discretion of the County planning departments for low intensity activities such as those associated with maintenance within utility corridors (Grays Harbor County 2010, Lewis County 2010).

2.0 SITE DESCRIPTION AND LOCATION

The proposed Project is situated within the Puget Trough Physiographic Province and on the very eastern edge of the Coast Ranges Physiographic Province (Franklin & Dyrness 1988). The Coast Ranges Province is characterized by steep mountain slopes with sharp ridges formed in Tertiary rock formations. The dominant soils are classified as Haplumbrepts (Western Brown Forest Soils) characterized by a thick surface horizon with clay loam textures and high organic content. The Puget Trough Province is characterized as a depressed, glaciated area with geology and topography resulting from lobes of the Cordilleran Icecap that pushed into the area from the north during the Pleistocene Epoch. The retreat of this icecap resulted in glacial deposits in the form of till (unsorted gravels and other sediments) and outwash (stratified sand and gravels carried by running water from icemelt). Soils in this area often have gravelly surface and/or subsurface layers.

The Project is within the Natural Resources Conservation Service (NRCS) Region 9 of the United States (the Northwest region). The USACE has further divided the nation into subregions called Land Resource Regions (LRR). The Project is located in LRR A, the Northwest Forests and Coast subregion. The regional topography is hilly with many stream drainages on elevations ranging from about 100 to 800 feet. The portion of this subregion in the Project area comprises the Chehalis River floodplain with adjacent pastures, hardwood forests, and farms at the base of conifer forest lands managed for timber all within 100 to 150 feet in elevation. The Project study corridor spans portions of one range, two townships and 13 sections of land, as summarized in Table 1.

Table 1. Townships, Ranges, and Sections within Project Study Corridor

Township	Range	Sections
15N	5W	1, 2, 3, 10, 11, 15, 16, 21, 22
16N	5W	23, 26, 35, 36

The Chehalis River, a major drainage with an extensive floodplain runs east of and adjacent to the study area corridor. Perennial streams cross the Project study corridor including Garrard Creek and South Fork Garrard Creek which meander across the valley generally northward and eventually eastward to drain to the Chehalis River. Davis Creek, another perennial creek, drains west to east to the Chehalis River crossing under South Bank Road via a culvert. The Chehalis River and reaches of the south and main stems of Garrard Creek within the study areas corridor are mapped by StreamNet, the Pacific States Marine Fisheries Commission interactive website, as containing Coho salmon (*Oncorhynchus kisutch*) (StreamNet 2003). In addition, Davis Creek and the Chehalis River are mapped as containing winter steelhead (*Oncorhynchus mykiss)*. Neither of these salmonid species is state or federal-listed as threatened or endangered (USFWS 2007) however, they are listed by the Washington Department of Fish and Wildlife (WDFW) as "Priority Species" with special recommendations for protections and conservation (WDFW 2008).

2.1 Vegetative Community

The linear study area corridor for this Project straddles South Bank Road and Garrard Creek Road within the Chehalis River watershed. It includes a mix of upland pastures, woodlots, small farms, and numerous wetlands with forested, emergent (i.e. erect, rooted, emerging above water level), and scrub-shrub vegetation. South Fork Garrard Creek and Garrard Creek, the dominant drainages in the south half of the Project, are commonly lined with scrub-shrub and/or young hardwood forest riparian areas. Numerous emergent wetlands are scattered across the floodplains of these streams. Several former stream channel meanders (oxbows) of each of these streams are apparent on aerial photos as emergent wetlands or scrub-shrub/forested riparian remnants.

The Chehalis River is the dominant drainage in the northern half of the Project. The floodplain of this river is large and supports numerous emergent, scrub-shrub, and riparian wetlands typical of the Puget Trough Province. While native species are common, especially in off-site low-lying areas, the roadside areas typically include several non-native invasive species due to disturbances from road construction and maintenance activities and adjacent farms and residences. Reed canarygrass (*Phalaris arundinacea*) dominates the emergent wetlands but is also common in upland swales and ditches and along road banks where it may comprise over 95 to 100 percent of the vegetative cover in large patches. See Table 5 for dominant and subdominant species within the Project study area.

2.2 Soil Survey Data

A total of 8 soil units in Lewis County and 11 soil units in Grays Harbor County mapped by the NRCS occur within the Project study corridor. These soils are described in Tables 2 and 3 and depicted in Figure 3-1 through 3-3. Lewis and Grays Harbor Counties share many of the same soils but each has its own set of map unit numbers. The majority of the soils are variations of silty loams, silty clay loams, and silty or loamy clays. The soils typically formed in residuum and colluvium (debris at the base of slopes) from siltstones and sandstones or in alluvium (unconsolidated sediments) from basic igneous and sedimentary rock. Some of the valley soils formed in glacial outwash terraces.

Five of these soil units in Lewis County are designated by the NRCS as hydric, and one of these soil units in Grays Harbor County is designated by the NRCS as hydric (NRCS 2009a). Hydric soils are defined as soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994).

Although hydrophytic vegetation and wetland hydrology indicators must be confirmed before a wetland determination can be made, hydric soils information is useful in determining the potential presence of wetlands. High precipitation and atypical levels of inundation during the site visit precluded soil sampling in some wetlands. For this reason, a more routine level of delineation was conducted with emphasis on confirming the presence of wetland vegetation and hydrology indicators and using the soil survey as an indication of potential hydric soil presence.

Table 2. NRCS Mapped Soils within Lewis County Portion of Project Study Corridor

Map Unit #	Soil Name	Soil Drainage Class, Description	Typical Profile	Hydric	Hydric Inclusion
27	Buckpeak silt loam, 30 to 65% slopes	Well drained. On mountain slopes. Water table depth below 80 inches. Frequency of flooding: none.	0 to 19 inches: Silt loam, 10YR 3/2, 3/3 19 to 44 inches: Silty clay loam 10YR 3/3 44 to 60 inches: Silty clay loam 10YR 3/3	No	No
44	Centralia loam, 15 to 30% slopes	On hillslopes and ridges. Well drained. Water table depth below 80 inches. Frequency of flooding: none.	0 to 17 inches: Loam, 10YR 3/2, 3/3 17 to 38 inches: Clay loam, 10YR 3/3, 4/4, 4/6, 3/4, 3/6 38 to 49 inches: Clay loam, 10YR 5/2 49 to 60 inches: Clay loam, 10YR 5/2	No	Yes (2%)
47	Chehalis silt loam	Well drained. On flood plains and terraces, 0-3% slopes. Water table depth below 80 inches. Frequency of flooding: occasional.	0 to 17 inches: Silt loam, 10YR 2/2, 3/2 17 to 44 inches: Silty clay loam, 10YR 3/3, 4/4, 4/6, 3/4, 3/6 44 to 60 inches: Stratified fine sandy loam to silty clay loam, 10YR 4/4, 4/6, 3/4, 3/6	Yes	N/A
61	Cloquato silt loam	Well drained. On flood plains and terraces, 0-3% slopes. Water table depth below 80 inches. Frequency of flooding: occasional.	0 to 9 inches: Silt loam, 10YR 3/2 9 to 60 inches: Silt loam, 10YR 3/3	Yes	N/A
89	Galvin silt loam, 0 to 8% slopes	Galvin and similar soils: 90%. Minor components: 5%. Somewhat poorly drained. On alluvial fans. Water table depth: 6 to 18 inches. Frequency of flooding: none.	0 to 9 inches: Silt loam, 10YR 3/2 9 to 14 inches: Silt loam, 10YR 3/3 14 to 41 inches: Silty clay loam, 10YR 4/4, 4/6, 3/4, 3/6 41 to 60 inches: Silty clay, 10YR 6/2, 5/4, 5/6, 5/8, 7.5YR 5/6, 5/8, 4/6	Yes	N/A
118	Lacamas silt loam, 0 to 3% slopes	Lacamas and similar soils: 60%. Lacamas, undrained, and similar soils: 35%. Poorly drained. On flood plains and terraces. Water table depth: 12 to 18 inches. Frequency of flooding: none.	0 to 7 inches: Silt loam, 10YR 3/2 7 to 17 inches: Silt loam, 10YR 5/2, 4/2 17 to 36 inches: Silty clay, 5Y 5/2, 4/2 36 to 60 inches: Clay, 5Y 5/2, 4/2	Yes	N/A
119	Lacamas silt loam, 3 to 8% slopes	Lacamas and similar soils: 60%. Lacamas,. undrained, and similar soils: 35%. Poorly drained. On terraces. Poorly drained. Water table depth: 12 to 18 inches. Frequency of flooding: none.	0 to 7 inches: Silt loam, 10YR 3/2 7 to 17 inches: Silt loam, 10YR 4/2, 5/2 17 to 36 inches: Silty clay, 5Y 5/2, 4/2 36 to 60 inches: Clay, 5Y 5/2, 4/2	Yes	N/A
132	Melbourne loam, 15 to 30% slopes	Well drained. On mountain slopes and ridges. Water table depth below 80 inches. Frequency of flooding: none.	0 to 4 inches: Loam, 10YR 3/3 4 to 8 inches: Clay loam, 10YR 3/3 8 to 18 inches: Clay loam, 10YR 3/3 18 to 42 inches: Clay, 10YR 4/4, 4/6, 3/4, 3/6 42 to 60 inches: Clay loam, 10YR 3/3	No	Yes (2%)

Table 3. NRCS Mapped Soils within Grays Harbor County Portion of Project Study Corridor

Map Unit #	Soil Name	Soil Drainage Class, Description	Typical profile	Hydric	Hydric Inclusion
13	Buckpeak silt loam, 8 to 30 % slopes		0 to 20 inches: Silt loam, 10YR 3/2, 3/3 20 to 50 inches: Silty clay loam, 10YR 3/4, 3/6, 4/4, 4/6 50 to 54 inches: Weathered bedrock	No	No

Map Unit #	Soil Name	Soil Drainage Class, Description	Typical profile	Hydric	Hydric Inclusion
14	Buckpeak silt loam, 30 to 65 % slopes	Well drained. On slumps. Water table depth below 80 inches. Frequency of flooding: none.	0 to 16 inches: Silt loam, 10YR 3/2, 3/3 16 to 47 inches: Silty clay loam, 10YR 3/4, 3/6, 4/4, 4/6 47 to 51 inches: Weathered bedrock	No	No
15	Buckpeak silt loam, 65 to 90 % slopes	Well drained. On slumps. Water table depth below 80 inches. Frequency of flooding: none.	0 to 15 inches: Silt loam, 10YR 3/2, 3/3 15 to 40 inches: Silty clay loam 10YR 3/4, 3/6, 4/4, 4/6 40 to 44 inches: Weathered bedrock	No	No
28	Centralia loam, 8 to 30 % slopes	Well drained. On hill slopes. Water table depth below 80 inches. Frequency of flooding: none.	0 to 14 inches: Loam, 10YR 3/2, 3/3 14 to 50 inches: Clay loam, 10YR 3/4, 3/6, 4/4, 4/6, 3/3 50 to 60 inches: Loam, 10YR 3/3	No	No
29	Centralia loam, 30 to 65 % slopes	Well drained. On hill slopes. Water table depth below 80 inches. Frequency of flooding: none.	0 to 10 inches: Loam, 10YR 3/2, 3/3 10 to 48 inches: Clay loam, 10YR 3/4, 3/6, 4/4, 4/6, 3/3 48 to 60 inches: Loam, 10YR 3/3	No	No
30	Chehalis silt loam	Well drained. On floodplains, 0-3% slopes. Water table depth below 80 inches. Frequency of flooding: occasional	0 to 12 inches: Silt loam, 10YR 3/2, 3/3 12 to 24 inches: Silt loam, 10YR 3/3 24 to 52 inches: Silty clay loam, 10YR 3/3 52 to 60 inches: Silt loam, 10YR 3/4, 3/6, 4/4, 4/6	No	Yes (5%)
34	Copalis silt loam, 30 to 65 % slopes	Well drained. On terraces. Water table depth below 80 inches. Frequency of flooding: none.	0 to 6 inches: Silt loam, 5YR 3/2, 3/3, 3/4, 2.5/2 and 7.5YR 3/2, 3/3, 3/4 6 to 21 inches: Silt loam, 5YR 3/2, 3/3, 3/4, 2.5/2 21 to 36 inches: Silt loam, 7.5YR 5/6, 5/8, 4/6 36 to 60 inches: Cemented material	No	No
125	Rennie silty clay loam	Rennie and similar soils: 65%. Rennie, drained and similar soils: 20%. Minor components: 20%. Poorly drained. On floodplains, 0-2% slopes. Water table at surface. Frequently flooded.	0 to 7 inches: Silty clay loam, 10YR 3/2 7 to 13 inches: Silty clay loam, 10YR 4/2 13 to 48 inches: Silty clay, 10YR 5/2 48 to 54 inches: Clay, 10YR 5/2 54 to 60 inches: Clay, 10Y 4/1, 5GY 4/1, 10GY 4/1, 5G 4/1, 10G 4/1, 5BG 4/1, 10BG 4/1	Yes (all soil components)	
127	Salzer silty clay	Salzer and similar soils: 75%. Salzer, drained and similar soils: 15%. Minor components: 15%. Very poorly drained. On flood plains, swales, depressions, 0-2% slopes. Water table at surface. Frequently flooded.	0 to 6 inches: Silty clay, 10YR 4/2 6 to 21 inches: Clay, 5Y 4/1 21 to 29 inches: Clay, 5Y 5/2, 4/2 29 to 50 inches: Clay, 5Y 6/1, 5/1 50 to 59 inches: Silty clay loam, 2.5Y 5/2 60 inches: Sandy clay loam, 2.5Y 4/2	No	Yes (25%)
134	Skamo silt loam, 0 to 8 % slopes	Moderately well drained. On terraces, fans. Water table depth at 18 to 36 inches. Frequency of flooding: none.	0 to 10 inches: Silt loam, 10YR 2/2, 3/2 10 to 19 inches: Silty clay loam 10YR 3/3 19 to 29 inches: Silty clay loam 10YR 3/4, 3/6, 4/4, 4/6 29 to 48 inches: Silty clay loam 10YR 3/3 48 to 60 inches: Silty clay loam 10YR 3/3	No	No
135	Spanaway very gravelly sandy loam, 1 to 8 % slopes	Somewhat excessively drained. On terraces, outwash plains. Water table depth below 80 inches. Frequency of flooding: none.	0 to 11 inches: Very gravelly sandy loam, 10YR 2/1 11 to 16 inches: Extremely gravelly sandy loam, 10YR 3/4, 3/6, 4/4, 4/6 16 to 60 inches: Extremely gravelly sand, 10YR 4/2	No	No

2.3 Climate

Precipitation data from the National Weather Service (NWS) Center for Olympia, Washington (the closest center with archived data) was examined. These data characterize the climate-sourced hydrology for the water resources examined November 18 and 19, 2009. The Water Year in Washington is the period measured from October 1 to September 30. Daily precipitation amounts for the two weeks prior to

and including the first day of the field investigation are provided in Table 4. Rainfall data available on-line for Olympia are summarized as follows:

- Water-Year-to-Date as of November 18, 2009: 11.79 inches
- Normal Water-Year-to-Date: 8.87 inches
- Water-Year-to-Date departure from normal: 2.92 inches above normal
- Month-to-date rainfall for November 18, 2009: 6.47 inches
- Normal month-to-date precipitation: 4.68 inches
- Month-to-date departure from normal: 1.79 inches above normal

Table 4. Daily Precipitation Summary for Project Area

Date (2009)	Precipitation (Inches)	Date (2009)	Precipitation (Inches)
November 4	0.00	November 12	0.10
November 5	0.34	November 13	0.36
November 6	1.13	November 14	Trace
November 7	0.72	November 15	0.25
November 8	0.14	November 16	1.51
November 9	0.52	November 17	0.73
November 10	0.44	November 18	0.16
November 11	0.07	November 19	0.90

Overall, precipitation amounts for this period as well as for the water-year-to date were considerably greater than normal (NWS 2009). Two days before the site visit was conducted, the area received 1.51 inches in one day, 1.23 inches above normal for the month-to date, causing the site to be in a much wetter than normal condition during the site visit. In addition, 0.90 inch fell during the second day of the site visit. As a result, the presence of primary wetland hydrology indicators (i.e. soil saturation and inundation) to confirm wetland boundaries were used with caution. Instead, soil and vegetation community characteristics were more heavily weighted in determining wetland boundaries. The high precipitation levels also made some areas inaccessible due to the flooding beyond boundaries of wetlands and above the OHWM of streams, and included flooding of some upland fields.

3.0 METHODS

3.1 Information Review

Prior to conducting the field survey, numerous sources of data were reviewed to gain a general understanding of the ecology of the Project area. These sources included National Wetlands Inventory (NWI) maps (USFWS 1997), aerial imagery, the United States Geological Survey (USGS) topographic maps (USGS 1986) and National Hydrography Dataset (NHD) (USGS 2007), StreamNet Northwest Fish Data Interactive Mapper (StreamNet 2003), and the NRCS soil surveys of Grays Harbor County Area, Pacific County and Wahkiakum County, Washington (NRCS 1986) and Lewis County, Washington (NRCS 1987).

3.2 Field Analysis

The Project study corridor was examined for the geographic location and extent of wetlands according to a combination of the routine and comprehensive methodologies and guidelines in the Corps of Engineers *1987 Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2008b) and the *2007 Washington State Wetlands Identification and Delineation Manual* (WDOE 2007). These guidelines were used to identify the presence or absence of wetlands. Soil hue, value, and chroma are described with standardized color chips in the Munsell Soil Color Charts (GretagMacbeth 2000). Plant indicator status is derived from Reed (Reed 1988).

In addition to an examination of wetlands, the field investigation included an examination of NWI- and USGS-mapped streams ("blue lines") as well as drainages not mapped by the NWI or USGS. For the purpose of evaluating avoidance buffer widths (per each of the counties' Critical Areas ordinance or codes), wetland and other waters features were mapped with GPS if they were in proximity to existing utility poles. Many were mapped using an estimated offset in order to avoid trespassing and in some cases, steep embankments or high water.

Streams within the Project study corridor were classified according to USACE guidelines (USACE 2007) as perennial, intermittent, or ephemeral according to water permanence. As noted in Section 1.2.1, jurisdictional status of a stream is contingent upon flow duration. Streams were considered perennial if they flow continuously throughout the year and their water surface is usually at a lower elevation than the water table in the surrounding landscape. Intermittent streams are larger drainages situated on intermediate landscape positions (typically neither headwaters nor valleys) that receive baseflow only during the wet weather season for a minimum of three consecutive months. Ephemeral streams are small drainages in the upper reaches of the landscape that only flow in response to direct precipitation or snowmelt but that have widely variable channel or scour characteristics.

The methods for determining perennial streams include direct observation of flow during the dry season (Cowardin et al. 1979) and a combination of observing indicators of continuous flow and aerial photo evidence of flow. The methods for distinguishing an intermittent stream included observing the following characteristics: its position on the landscape; indicators of flow level and velocity; hydrophytic plant species in or adjacent to the stream; indicators of prolonged soil saturation within the stream channel; well-developed stream banks; a defined meandering channel with scour and deposition; and/or exposure of rock and gravel in a continuous low lying channel. Streams were determined to be ephemeral if they had generally straight, poorly developed stream channels tending to flatten out at the base of slopes, upland-dominated vegetation in the channel, and side slopes with characteristics typical of the surrounding landscape.

Some drainages within the Project study direct runoff of a short duration immediately following a rainfall event. Some have capacity to direct flow in portions of the feature either connecting to streams downslope or eventually "running out" as overland flow, infiltrating into the soils. These drainage features were determined to be erosional features and not ephemeral streams if they lacked scour, deposition, and channel morphology.

3.3 Mapping

The boundaries of wetlands and the channels of streams within the Project study corridor were recorded using Geo® XH™ Global Positioning System (GPS) and Garmin GPS units. The Geo®XT™ unit

provides an estimated 3-foot (1 meter) survey accuracy (post-processing) for open areas with little or no canopy cover. The Garmin unit was used to map features under canopy cover. Offsets were used in several cases where slopes were dangerously steep, in areas of swift current or overbank flooding, or in order to avoid trespassing on private lands. Many wetlands continue offsite or their boundary is adjacent to (outside of) the study area boundary. In cases where it appeared that an existing pole was potentially within a buffer of an offsite wetland, the location of the wetland boundary was estimated from aerial photos for purposes of rating the wetland in order to apply the appropriate buffer. The field-collected data points were plotted as a map layer using GIS software (Figure 4 and 4-1 through 4-22). In addition to the mapped wetlands and streams within the road ROW, the edges of some wetlands just outside the Project study corridor were recorded (with offset points) for purposes of gauging their proximity to the Project.

4.0 RESULTS AND DISCUSSION

As noted above, sample plots were established for recording wetland criteria where accessible. In several cases, the wetlands were inaccessible due to deep inundation and/or they were located at the base of steep road embankments or just outside of the road right-of way and thus on private properties. In some cases, only wetland sample plots were established because any upland plots within the ROW would be in road prism/road shoulder (i.e. fill) substrates, and thus soil samples would not be required. Table 6 notes which of the wetlands included sample plots. The wetlands lacking sample plots were based on an evaluation of geomorphic position, visible hydrology, and dominant plant species.

4.1 Vegetation

The vegetation in the project area consists of a range of native and non-native species. Wetlands range from pasture to woodland to scrub-shrub communities. The uplands are typically shrub-dominated undergrowth and second-growth timberlands or roadside brush. Reed canarygrass (*Phalaris arundinacea*) is common in the uplands as well as the wetlands and was not a reliable indicator of the wetland-upland boundary in most cases. In the areas dominated by reed canarygrass, uplands were often distinguished by the presence of Himalayan blackberry (*Rubus discolor*) combined with upland soil characteristics. Plants observed during the November site visit are listed in Table 5. Red alder (*Alnus rubra*) and Oregon ash (*Fraxinus latifolia*) were common trees in forested wetlands and salmonberry (*Rubus spectabilis*), willow (*Salix* spp.), and red osier dogwood (*Cornus sericea*) were common scrub-shrub species. Plant taxonomy in this report follows the United States Department of Agriculture (USDA) Plants Database Plants Profile (NRCS 2008). An indicator status code follows the name of each of the plants listed in Table 5 that were common across the Project study corridor. The wetland indicator categories are from the United States Fish and Wildlife Service (USFWS) National List of Plant Species that Occur in Wetland: Northwest (Region 9) (Reed 1988).

Table 5. Common Plant Species Observed within Project Study Corridor

Scientific Name	Common Name (USDA 2009)	Indicator Status*
Acer macrophyllum	big-leaf maple	FACU
Adiantum aleuticum	maidenhair fern	FAC
Agrostis sp.	bentgrass	FAC/FACW/OBL
Alnus rubra	red alder	FAC
Carex obnupta	slough sedge	OBL
Cornus sericea	redosier dogwood	FACW
Cytisus scoparius	Scotch broom	NOL
Equisetum arvense	field horsetail	FAC
Festuca arundinacea	tall fescue	FAC-

Table 5. Common Plant Species Observed within Project Study Corridor

Scientific Name	Common Name (USDA 2009)	Indicator Status*
Frangula (Rhamnus)purshiana	cascara buckthorn	FAC-
Fraxinus latifolia	Oregon ash	FACW
Gaultheria shallon	Oregon grape	FACU
Holcus lanatus	common velvetgrass	FAC
Ilex aquifolium	English holly	NOL
Juncus sp.	rush	FACW/OBL
Oenanthe sarmentosa	Pacific water parsley	OBL
Oplopanax horridus	devil's club	FAC+
Oxalis oregana	redwood sorrel	NI
Phalaris arundinacea	reed canarygrass	FACW
Polystichum munitum	sword fern	FACU
Populus balsamifera	black cottonwood	FAC
Pseudotsuga menzeisii	Douglas-fir	FACU
Pteridium aquililium	bracken fern	FACU
Ranunculus repens	creeping buttercup	FACW
Rosa pisocarpa	clustered wild rose	FAC
Rosa nutkana	Nootka rose	FAC-
Rubus discolor	Himalayan blackberry	FACU
Rubus laciniatus	evergreen blackberry	FACU
Rubus spectabilis	salmonberry	FAC+
Rubus ursinus	trailing blackberry	FACU
Sambucus racemosa	red elderberry	FACU
Salix scouleriana	Scouler's willow	FAC
Salix piperi	Piper willow	FACW
Spiraea douglasii	Douglas' spirea	FACW
Symphoricarpos albus	common snowberry	FACU
Thuja plicata	western redcedar	FAC
Tsuga heterophylla	western hemlock	FACU+
Urtica dioica	stinging nettle	FAC+

***** Indicator Status is defined as follows (Reed 1988):

Code	Indicator Status	Occurrence
OBL	Obligate Wetland	Occurs almost always (estimated probability 99%) under natural conditions in wetlands.
FACW	Facultative Wetland	Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU	Facultative Upland	Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).
UPL	Obligate Upland	May occur in wetlands in another region, but occurs almost always (estimated probability 99%) under natural conditions in non-wetlands in the regions specified.
NI	No indicator	Insufficient information available to determine an indicator status.
NOL	Not on list	The species does not occur in the region.

4.2 Soils

Overall, the soils observed within the Project study corridor generally matched the silt loams ands silty clay loams mapped by the NRCS for the area and described in Table 2. However, many of the wetlands within the project are smaller than the mapping scale of the NRCS mapped soil units and were thus not mapped as hydric in the NRCS soil surveys. The dominant soils supporting upland vegetation across the

Project typically had a surface layer soil matrix with a low value and chroma of 2 or 3 (i.e. 10YR 2/2 or 10YR 3/2) and the hydric soils had a surface layer matrix, generally high in organics, with a low value and very low chroma of 1 (i.e. 10YR 2/1 or 10YR 3/1) or a low chroma of 2 with redoximorphic features. While the wetland regional supplement to the delineation manual generally considers a soil with a low value and chroma of 2 to be hydric, some soils met this criterion but were considered upland soils because they were in sharp contrast to soils in the adjacent wetlands and supported a clear dominance of upland plant species. In addition to distinguishing the wetland soils from upland soils by the chroma number, higher clay content was typical in the wetland soils. In some cases, the wetlands were in areas mapped by the NRCS as having upland soils with hydric soil inclusions.

4.3 Delineated Wetlands

The Cowardin classification system categorizes wetlands by vegetative community and hydrologic regime (Cowardin et al. 1979). Cowardin classifications for the NWI wetlands within the Project boundaries are provided in the NWI map legend (Figures 2-1 through 2-3). It should be noted, however that the NWI is based on aerial photo interpretation and the field survey provides a more accurate evaluation of wetland locations and classifications. The Cowardin classifications of the wetlands within the Project study corridor are noted in Table 6 and include the following: Riverine (R), Palustrine (i.e., freshwater) emergent (non-woody plants rooted in soils that are saturated at least part of the time with most of the plant emerged above the surface) (PEM); Palustrine scrub-shrub (PSS); and Palustrine forested (PFO). PEM wetland types are further distinguished as seasonal inundated (PEMC), seasonal saturated (PEME), or semi-permanent inundated (PEMF). One PFO wetland within the Project study corridor is intermittently flooded (PFOJ). Additional Cowardin classification modifiers relevant to the emergent wetlands within the Project study corridor include partially drained/ditched (d), farmed (f), and diked/impounded (h). Modifiers for the Riverine wetlands within the Project study corridor include upper perennial (3), aquatic bed (AB), unknown submerged (6), and seasonal (C).

The hydrogeomorphic (HGM) class provided for each wetland is based on the HGM classification system that considers the influence of land shape and landscape setting on the functions of the wetland (Hruby 2006). The HGM classifications for western Washington include Tidal Fringe, Flats, Lake-fringe, Slope, Riverine, and Depressional. The HGM wetland classifications that occur within the Project study area are Riverine (R), Slope (S), Depressional (D), and Flats (F). Riverine wetlands lie in the active floodplain of a river or stream and are strongly influenced by overbank flooding of the river or stream (with flooding at least once every 2 years). Depressional wetlands are in concave landforms with elevations lower than the surrounding landscape. The hydrological sources for this wetland type are sheetflow, direct precipitation and often groundwater. Water flows to the lowest point in the depression and may overflow to an outlet during periods of high inundation levels. Slope wetlands are on slopes with unidirectional flow usually from seeps but also from runoff. The wetland may have an outlet but its lowest point is within the depression, not at the outlet. Flats wetlands are uniformly flat with direct precipitation as the only hydrological source. In some cases, wetlands that were HGM-classified as Riverine because of a frequency of flooding of the nearby stream but were classified as Palustrine because plant community and hydrology was better characterized by the Palustrine wetland modifiers. Wetlands with their classifications and characteristics are provided in Table 6. Irregularities in wetland identification letters are due to Project boundary reductions resulting in some delineated wetlands being removed from the report.

Table 6. Wetlands Delineated within Project Study Corridor

ID	Fig. #	Photo #	Plot Pair #s	Near-by Pole #	HGM Class	Cowardin Class	Likely Juris-diction	Characteristics
C	4-8	3	No plots	5, 6	R	PSSC	USACE WDOE	Adjacent floodplain of Stream I (South Fork Garrard Creek). Seasonally inundated. Inaccessible. Pole 5 is between road and wetland. Dominated by red alder, reed canarygrass, redosier dogwood, salmonberry. Sword fern on upland edges.
D	4-8	4	WD-1	7, 8	D	PEMCf	USACE WDOE	Depression in floodplain pasture; connection with South Fork Garrard Creek. Pole 8 (P8) located between edge of road and edge of wetland D, Inundated 4 inches during site visit. Primary hydrology sources: runoff, overbank flooding, cement culvert leads from the roadside ditch on east side Garrard Creek Road; however supported barely a trickle on site visit. Reed canarygrass and grazed pasture grasses; evergreen blackberry on uplands. No upland plot; upland is just upslope of base of road prism.
E	4-19	5	No plots.	12	R	RAB36C	USACE WDOE	Riverine wetland on floodplain of Chehalis River. Down very steep bank from road. Inaccessible. Pole 12 is on road shoulder well above the wetland. Dominant vegetation includes salmonberry and red alder. Unknown bottom.
F	4-19	6	WF-1 WF-2	13, 14	S	PEMEh	WDOE	Poles 13 and 14 are well away from this wetland. Main hydrology sources for this wetland include sheetflow of the hillside, a marginal ephemeral stream (barely has a channel) that flows off the hillslope, and direct precipitation. The wetland drains offsite via a culvert under South Bank Road. Wetland F was likely created from impoundment after the road was constructed.
G	4-18	No photo (ob-scured by brush)	No plots	None	R	PFOJ	USACE WDOE	Was not GPS-mapped due to very steep slope between road and wetland (i.e. inaccessible); mapped using aerial photo and NWI GIS layer. Associated with main stem Garrard Creek and connected to large riverine wetland system. Steep brushy slope from road to wetland; deeply inundated during site visit beyond ROW. No poles nearby.

ID	Fig. #	Photo #	Plot Pair #s	Near-by Pole #	HGM Class	Cowardin Class	Likely Juris-diction	Characteristics
H	4-15	7	WH-1	18	R	PEMC	USACE WDOE	Wetland continues offsite beyond ROW (and beyond fence). Pole 18 is to the SW, Pole 17 is across road to the NW. Stream P feeds the wetland via a large culvert. Inundation was 2 inches during site visit with deeper ponding further south in grazed pasture. Dominated by reed canarygrass with Himalayan blackberry on upland edges. No upland plot; upland is just upslope of base of road prism.
I	4-12 4-13	8	No plots	21, 22, 23, 24	D	PSSC/ PEMC	USACE WDOE	Side channel wetland continues offsite to floodplain wetlands; surface water connection with Garrard Creek. Inacceesible (inundated approximately 5 feet deep during site visit). Dominated by Oregon ash, red alder, reed canarygrass, salmonberry, red osier dogwood. Cascara buckthorn, Hamalayan blackberry, snowberry, sword fern are dominant in uplands. Poles 22, 23 and 24 are between road and wetland.
J	4-12	9	WJ-1	25	D	PFOCh	WDOE	Isolated ash wetland at base of slope depression impounded by road. Inundated 3 feet during site visit. Wetland continues offsite north beyond ROW. Dominated by slough sedge, reed canarygrass, Oregon ash, red alder, western redcedar, willow, spirea. Upland edges and elevated slash piles dominated by snowberry and Himalayan blackberry. Nearest pole (P25) is on opposite side of road.
K	4-12	10	No plots	25	F	PEMC	WDOE	Isolated upland-wetland mosaic in compacted pasture inside fence (50% upland, 50% wetland). Pole 25 in upland with radius of 25 feet to wetland. Dominated by rush species, and grazed bluegrass, velvetgrass, and bentgrass species. Upland vegetation includes unidentifiable grazed grasses and Himalayan blackberry. Plot not taken due to fence/private property and residents present. Mapped with hydric soil by NRCS (Rennie siltly clay loam).
L	This wetland in a pasture of Garrard Creek floodplain was determined to be well outside the ROW and was thus not mapped. The nearest pole is to the west on the opposite side of Garrard Creek Road.							
M	This wetland was also verified by the NWI but determined to be well outside the ROW and was thus not mapped.							

ID	Fig. #	Photo #	Plot Pair #s	Near-by Pole #	HGM Class	Cowardin Class	Likely Juris-diction	Characteristics
N	4-9	11	WN-1	31	S	PSSCd / PEMC	WDOE	Pole 31 located between road and Wetland N. Depression inundated 4 inches during site visit. Surface water connection with Garrard Cr. is ephemeral only via drainage ditch. Pole 31 is approx. 20 feet from wetland. Wetland vegetation: clustered rose, Oregon ash, Douglas' spirea, willow, red alder, stinging nettle, reed canarygrass. Upland vegetation: red alder, sword fern, Nootka rose, blackberry, bracken fern, tall fescue.
O	4-9	12	WO-1 WO-2	32, 33	D	PEME	WDOE	Pole 32 and 33 are adjacent. Isolated; shallow inundation in areas. Fed by 24-inch plastic culvert and direct precipitation somewhat impounded by adjacent road. Reed canarygrass is dominant with willow, spirea, and alder on edge, Himalayan blackberry in adjacent upland.

4.3.1 Wetland Ratings

Wetlands were rated according to the Washington State Wetland Rating System for Western Washington-Revised (Hruby 2006). This system rates wetlands as Category I through IV based on assessment of wetland function groups (water quality, hydrologic function, and habitat), level of disturbance, and rarity of wetland type. A relatively undisturbed wetland with important habitat features such as mature forest would typically rate as a high functioning wetland (Category I). A wetland that scores moderately high for all wetland function groups or conversely, rates only moderate for functions but contains one or more state listed Priority Habitats (WDFW 2008) would score as a Category II wetland. Highly disturbed wetlands that are partially drained or filled and/or are dominated by invasive species would rate low (Category III or IV).

Wetland ratings include consideration of rare species and rare habitats that occur within or adjacent to the wetland being rated. This list includes the U.S. Fish and Wildlife Service (USFWS) threatened, endangered, and species of concern list for Lewis and Grays Harbor Counties, the Washington Department of Fish and Wildlife (WDFW) special status species list, and the Washington Natural Heritage Program (WNHP) special status species list to determine documented occurrences of threatened or endangered plant or animal species within proximity of the wetlands. Only one rare plant species, Columbian whitetop aster (*Sericocarpus rigidus)*, is mapped by the WNHP as occurring within the Project study corridor (WNHP 2007). The presence or absence of this species was not confirmed due to season (the plant is not in bloom in November); however, *S. rigidus* is an upland plant not found in wetlands and would thus, not influence the wetland ratings. Table 7 provides the wetland functions ratings and subsequent buffers provided in the Grays Harbor Critical Protection Areas Code. See Appendix C for the Wetland Rating Sheets which contain detailed function capacity scoring.

Table 7. Wetland Ratings and Buffer Widths for Wetlands within Project Study Corridor

Wetland ID	Figure #	Photo #	Category as Rated (I, II, II or IV)	County	Required Buffer Width (feet)
C	4-8	3	III	Grays Harbor	34
D	4-8	4	IV	Grays Harbor	17
E	4-19	5	II	Grays Harbor	68*
F	4-19	6	IV	Grays Harbor	17
G	4-18	N/A	I	Grays Harbor	68
H	4-15	7	III	Grays Harbor	34
I	4-12, 4-13	8	II	Grays Harbor	51
J	4-12	9	III	Grays Harbor	34
K	4-12	10	IV	Grays Harbor	17
L	Determined to be too far outside of ROW to require mapping and assessment				
M	Determined to be too far outside of ROW to require mapping and assessment				
N	4-9	11	IV	Grays Harbor	17
O	4-9	12	IV	Grays Harbor	17

* Required buffer for Category II wetland is 51 feet and 17 feet was added for having a buffer slope exceeding 33.3 percent that extends into the wetland.

4.4 Streams

The streams within the Project study area range from the ephemeral and intermittent streams flowing from the forested hills on the west edge of the Project study corridor to the perennial tributaries of the Chehalis River. Because the NHD provides mapping of only perennial and some intermittent streams, all other streams within the study corridor were also mapped and evaluated. Stream locations mapped by the NHD were generally inaccurate and thus aerial photos and GPS were used to map their locations more accurately. Each stream was at or above OHWM water levels. However, characteristics distinguishing ephemeral, intermittent, and perennial flow were generally visible. The ephemeral streams were characterized by weak stream channels lacking hydrophytes. These streams were typically channeling runoff on steep slopes or were along roadsides where they become vegetated ditches in some areas. The intermittent streams were typically found within the Chehalis River valley and were tributaries to the perennial streams and the Chehalis River.

A total of 3 perennial streams (Garrard Creek main stem, Davis Creek, and South Fork Garrard Creek), 5 intermittent streams, and 5 ephemeral streams were mapped within the Project study corridor and are described in Table 7. Each stream crosses the Project study corridor once with the exception of South Fork Garrard Creek which crosses the Project corridor 4 times. The streams on the slopes were at ordinary high flow levels during the site visit and the streams in the valley were at high levels or were over flooding their banks. Some were inaccessible due to a combination of flooding, swift current and steep embankments and were thus evaluated from a safe distance. Many poles proposed for replacement were not located within the stream buffers, but streams crossing the project study corridor were mapped regardless because buffer widths were not calculated until after the wetland rating application was conducted. Table 8 provides details of the streams within the project study corridor and Table 9 provides the wetland ratings and corresponding buffer widths. Irregularities in wetland identification letters are a due to Project boundary reductions resulting in some delineated streams being removed from the report.

Table 8. Streams Delineated within Project Study Corridor

Stream ID	Fig. #	Photo #	Near-by Pole #	Avg. channel width (feet) at OHWM	Avg. channel depth (inches) to OHWM	Ephemeral, intermittent, or perennial?	Stream Channel Characteristics
I	4-1, 4-3, 4-4	1, 11, 12, 13	1, 2, 4, 6	30	96 (est.)	Perennial	**USACE jurisdictional** (South Fork Garrard Creek). This creek meanders, draining north to Garrard Creek, and crosses into the Project corridor in 4 areas. Mapped as spawning and rearing habitat for Coho salmon by Washington StreamNet. 12 feet to TOB. Channelized in places; channel bottom is gravel, cobble and boulders in portions; likely sediment bottom in other areas. Swift current during site visit.
J	4-2	14	3	5	36 (est.)	Intermittent	**Likely USACE jurisdictional** stream; has surface water connection with S. Fork Garrard Cr. 6 feet to TOB; incised. Riparian: Himalayan and evergreen blackberry, reed canarygrass, red alder shrub; pasture beyond west side of road; forested to the east side of road.
K	4-18	15	9	10	72 (est.)	Perennial	**Likely USACE jurisdictional** (Davis Creek). Runs parallel to road in vicinity of Pole 9 before flowing east via 36-inch culvert under S. Bank Rd. Riparian: blackberry, reed canarygrass, red alder, big-leaf maple. Stream is mapped by StreamNet as winter steelhead spawning and rearing habitat.
L	4-17	16	10	3	24	Ephemeral	**Likely USACE non-jurisdictional** stream; drains roadside ditch on west side S. Bank Rd. Flow exits culvert on steep embankment; 2.5 feet to TOB. Drains towards riparian area of Chehalis R. Sword fern, Oregon grape, reed canarygrass, Scotch broom, red alder, western redcedar community.
M	4-16	17	11	3	24	Ephemeral	**Likely USACE non-jurisdictional;** stream; drains roadside ditch on west side S. Bank Rd. 1.5 feet to TOB. Flow exits culvert on steep embankment. Gully drains towards riparian area of Chehalis R. Sword fern, red alder community.

Stream ID	Fig. #	Photo #	Near-by Pole #	Avg. channel width (feet) at OHWM	Avg. channel depth (inches) to OHWM	Ephemeral, intermittent, or perennial?	Stream Channel Characteristics
N	4-13	18	N/A	5	24	Ephemeral	**Likely USACE non-jurisdictional;** stream; drains roadside ditch on west side S. Bank Rd. 3 feet to TOB. Flow exits culvert flows to Chehalis R. Sword fern, salmonberry community.
O	4-12	19	16	3	24	Ephemeral	**Likely USACE non-jurisdictional**. Flows southeast from forested hillslope under road via culvert and joins Garrard Creek offsite approx 200 feet.
P	4-11	5, 20	17, 18	2	18	Intermittent	**Likely USACE jurisdictional** due to surface water connection with Garrard Creek (and adjacent Wetland H) and sustained seasonal flow. Flows from forested hillslope across a partially mowed grassy yard, under driveway via wood culvert, then under S. Bank Rd. via culvert to Wetland H. Not mapped as stream by NGD.
Q	4-10	21	19, 20	5	24	Intermittent	**Likely USACE jurisdictional;** surface water connection with Garrard Cr. 2.5 feet to TOB. Flows from forested hillside under Garrard Cr. Rd. through farm; most of riparian trees removed; scattered red alder and western redecedar trees.
R	4-9	22	21, 22, 23, 24	1	6	Ephemeral	**Likely USACE non-jurisdictional;** forested/scrub-shrub. 1 foot to TOB. Flows as roadside ditch on north side of road for 200 feet then under road via 12-inch cement culvert; drains to Wetland I.
S	4-7	23, 24	26, 27, 28	12	36 (est.)	Intermittent	**Likely USACE jurisdictional;** drains from forested slopes through 36-inch culvert to become channelized ditch for approx. 500 feet; flows to Garrard Creek. about 4 feet to TOB. Red osier dogwood, red alder, English holly, common snowberry, blackberry, and stinging nettle in forested portion; reed canarygrass, and blackberry along ditched portion.

Stream ID	Fig. #	Photo #	Near-by Pole #	Avg. channel width (feet) at OHWM	Avg. channel depth (inches) to OHWM	Ephemeral, intermittent, or perennial?	Stream Channel Characteristics
T	4-7	25	29	5	36 (est.)	Intermittent	**Likely USACE jurisdictional;** 4 feet to TOB. Leads from forested slopes, across farm, through 48-inch culvert, across a second farm eventually to Garrard Creek. Large red alder tree, reed canarygrass, scotchbroom, and snowberry on banks.
U	4-6	26	30	30	120 (est)	Perennial	**USACE Jurisdictional** (Garrard Creek); tributary to Chehalis River. Flow exceeded OHWM during site visit. Stream is mapped by StreamNet as winter steelhead rearing and migration habitat and coho salmon spawning and rearing habitat. Red alder trees, Himalayan blackberry, red osier dogwood, willow, and snowberry riparian. 12 feet to TOB estimated.

4.4.1 Stream Classification

Streams in both Grays Harbor and Lewis Counties are classified in accordance with the Washington Department of Natural Resources (DNR) and provided in each of the counties' Critical Areas code. Table 9 provides the stream classification definitions and Table 10 provides the classification for the streams with the Project study corridor and respective buffers required under County code.

Table 9. DNR Stream Classification Definitions

Stream Type	Description
S	Designated Shoreline of the State including – usually large named rivers or creeks – and periodically inundated areas of their associated wetlands.
F-A	Streams, lakes and ponds that are not Type S waters that are used by fish, amphibians, wildlife, and for drinking water. Have defined channel greater than 10 feet wide; includes periodically inundated areas of their associated wetlands.
F-B	Natural waters that are not Type S waters that contain fish habitat including associated wetlands with off-channel fish habitat. Defined channels are less than 10 feet in width .
Np	Non-fish perennial flow streams; has year-round surface and/or below surface flow.
Ns	Non-fish seasonal flow streams with surface water connection with Type S, F, or Np waters.

Table 10. Stream Classification for Streams within Project Study Corridor

Stream ID	Figure #	Photo #	Stream Classification	County	Required Buffer Width (feet) for Utility Projects
I	4-1, 4-3	1, 11, 12, 13	S	Lewis	150*
I	4-4	N/A	S	Grays Harbor	68
J	4-2	14	Ns	Lewis	75
K	4-18	15	S	Grays Harbor	68
L	4-17	16	Ns	Grays Harbor	17
M	4-16	17	Ns	Grays Harbor	17
N	4-13	18	Ns	Grays Harbor	17
O	4-12	19	Ns	Grays Harbor	17
P	4-11	5, 20	Ns	Grays Harbor	17
Q	4-10	21	Ns	Grays Harbor	17
R	4-9	22	Ns	Grays Harbor	17
S	4-7	23, 24	Ns	Grays Harbor	17
T	4-7	25	Ns	Grays Harbor	17
U	4-6	26	S	Grays Harbor	68

* Stream I occurs in both Lewis and Grays Harbor Counties.

5.0 CONCLUSIONS

A total of 11 wetlands and 13 streams were delineated within or adjacent to the Project study corridor with one stream, South Fork Garrard Creek, crossing the corridor 4 times. Each of these features is regulated as "waters of the state" by the WDOE and as Critical Areas by Grays Harbor and Lewis Counties. Six of the delineated wetlands and 8 of the delineated streams within the Project study corridor meet the definition of "waters of the U.S." and are therefore, assumed to be jurisdictional by the USACE.

No impacts to wetland or other waters mapped within the Project boundary are anticipated however, and thus, Section 404, State Shoreline, and Hydraulic Project Approval permits are not required. Impacts to the avoidance/protective buffers of wetland and waters under the county Critical Areas codes will be calculated. It is anticipated that due to the minimal impacts proposed in the buffers, County exemptions and/or buffer averaging will avoid the need for buffer mitigation. However, consultation with Grays Harbor and Lewis Counties is required.

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FIGURES

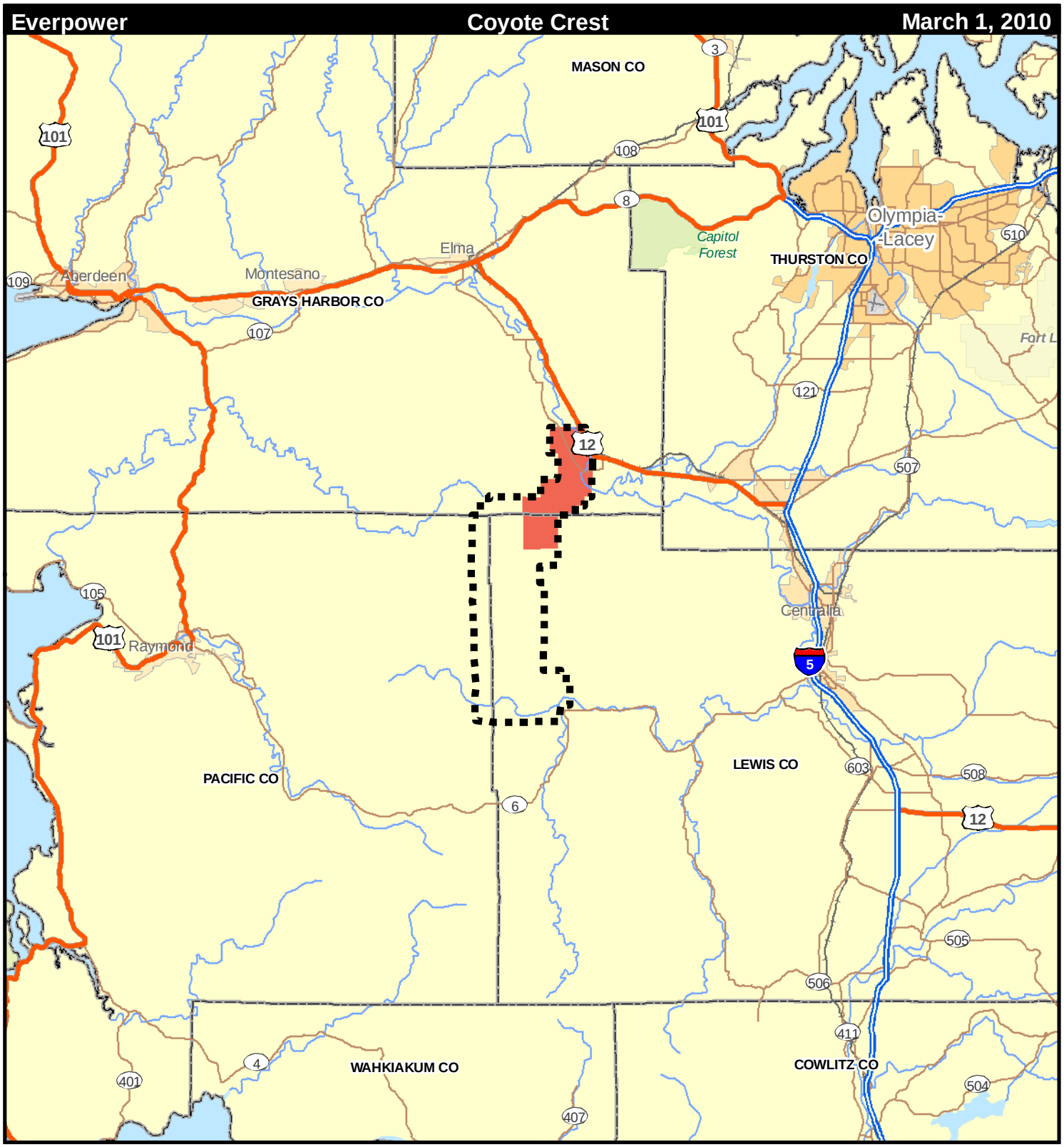


Figure 1

Vicinity Map

Grays Harbor and Lewis Counties, WA

1:500,000

NAD 83 UTM 10N

0 5 10

Miles

Wind Project Boundary

Pole Replacement Project Boundary

County Boundary

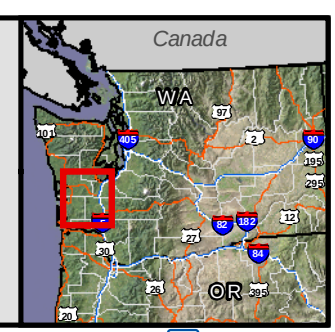
Rivers

Interstate

Highway

Major Road

DATA SOURCE: ESRI Streetmap 2007



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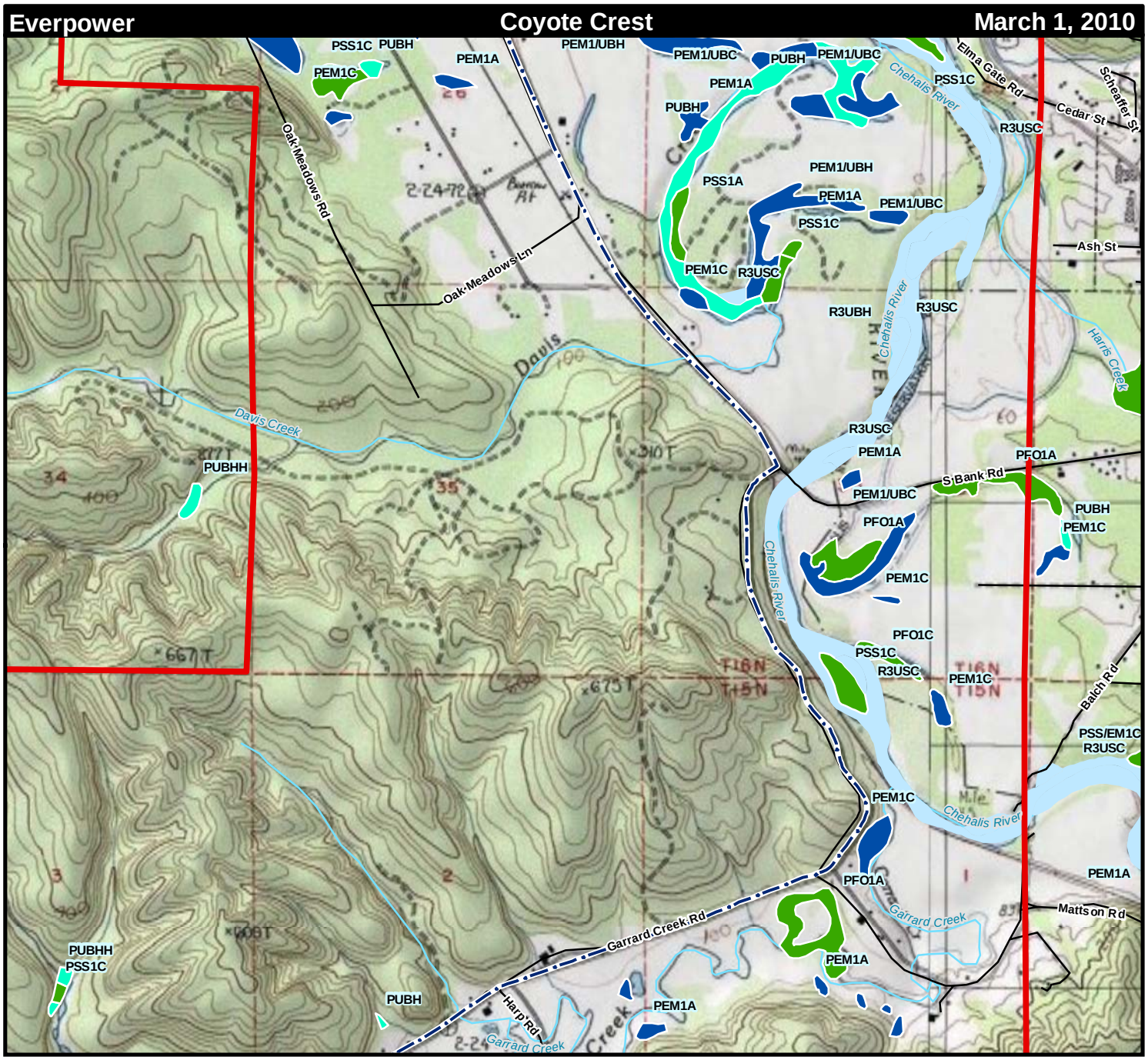

NWI Wetland Units

PEM1/UBC: Palustrine Emergent Persistent Unconsolidated Bottom Seasonally Flooded
PEM1/UBH: Palustrine Emergent Persistent Unconsolidated Bottom Permanently Flooded
PEM1A: Palustrine Emergent Persistent Temporarily Flooded
PEM1C: Palustrine Emergent Persistent Seasonally Flooded
PFO/EM1A: Palustrine Forested Emergent Persistent Temporarily Flooded
PFO/SS1A: Palustrine Forested Scrub-Shrub Broad-Leaved Deciduous Temporarily Flooded
PFO/SS1C: Palustrine Forested Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded
PFO1A: Palustrine Forested Broad-Leaved Deciduous Temporarily Flooded
PFO1C: Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded
PSS/EM1C: Palustrine Scrub-Shrub Emergent Persistent Seasonally Flooded
PSS1A: Palustrine Scrub-Shrub Broad-Leaved Deciduous Temporarily Flooded
PSS1C: Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded
PUBH: Palustrine Unconsolidated Bottom Permanently Flooded
PUBKHx: Palustrine Unconsolidated Bottom Artificially Flooded Permanently Flooded Excavated
R3UBH: Riverine Upper Perennial Unconsolidated Bottom Permanently Flooded
R3USC: Riverine Upper Perennial Unconsolidated Shore Seasonally Flooded

Figure 2-1 North

National Wetlands Inventory

Grays Harbor and Lewis Counties, WA

1:24,000
NAD 83 UTM 10N

0 0.25 0.5
Miles

Pole Replacement Project Boundary
Transmission Line
Local Roads
County Boundary
NHD Perennial Stream
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine

DATA SOURCE: ESRI Streetmap/NHD 2007, National Geographic Society 2009, NWI 2009

Project Boundary Index

TETRA TECH EC,INC

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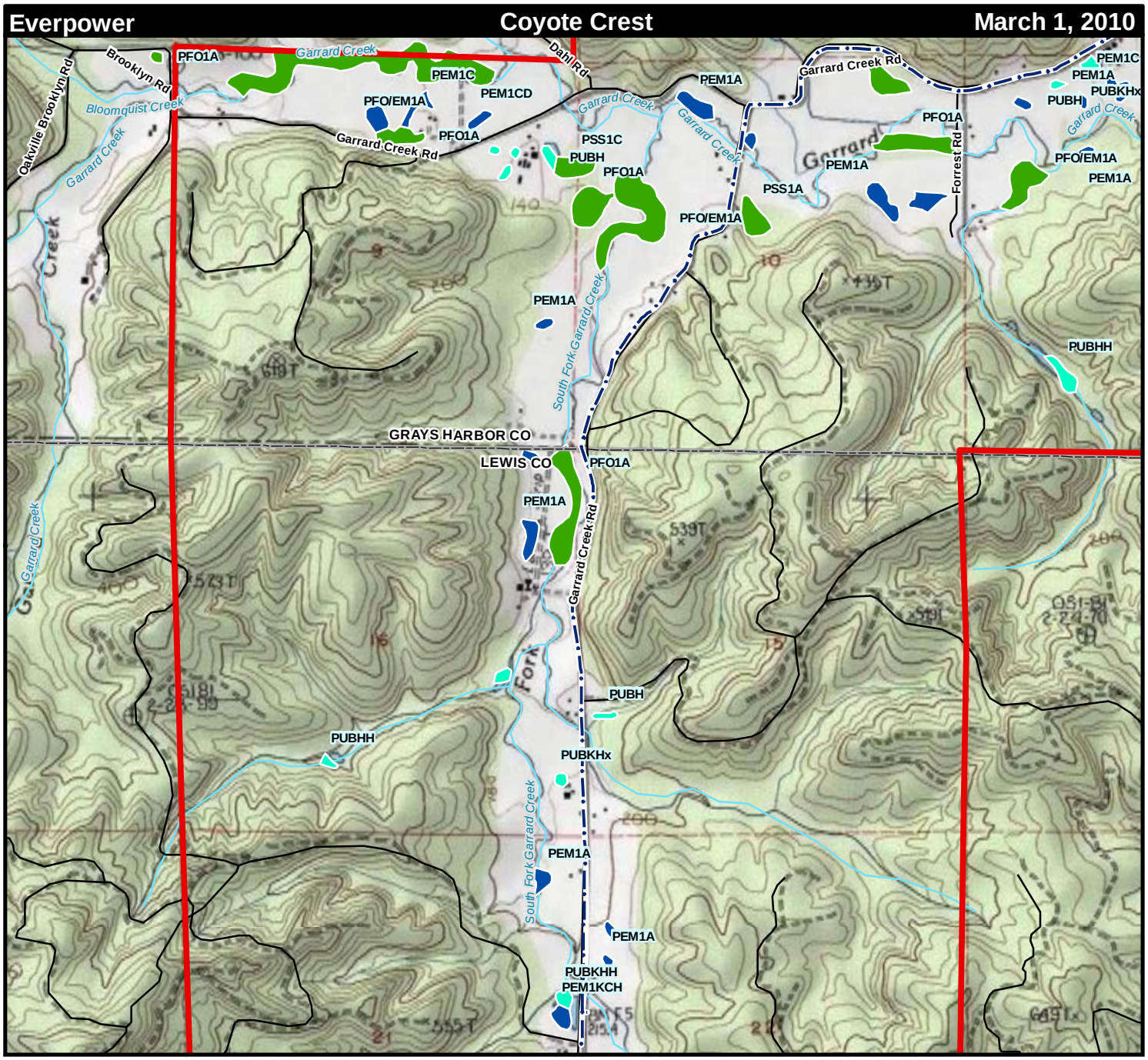
Everpower | Coyote Crest | March 1, 2010



NWI Wetland Units

PEM1/UBC: Palustrine Emergent Persistent Unconsolidated Bottom Seasonally Flooded
PEM1/UBH: Palustrine Emergent Persistent Unconsolidated Bottom Permanently Flooded
PEM1A: Palustrine Emergent Persistent Temporarily Flooded
PEM1C: Palustrine Emergent Persistent Seasonally Flooded
PFO/EM1A: Palustrine Forested Emergent Persistent Temporarily Flooded
PFO/SS1A: Palustrine Forested Scrub-Shrub Broad-Leaved Deciduous Temporarily Flooded
PFO/SS1C: Palustrine Forested Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded
PFO1A: Palustrine Forested Broad-Leaved Deciduous Temporarily Flooded
PFO1C: Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded
PSS/EM1C: Palustrine Scrub-Shrub Emergent Persistent Seasonally Flooded
PSS1A: Palustrine Scrub-Shrub Broad-Leaved Deciduous Temporarily Flooded
PSS1C: Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded
PUBH: Palustrine Unconsolidated Bottom Permanently Flooded
PUBKHx: Palustrine Unconsolidated Bottom Artificially Flooded Permanently Flooded Excavated
R3UBH: Riverine Upper Perennial Unconsolidated Bottom Permanently Flooded
R3USC: Riverine Upper Perennial Unconsolidated Shore Seasonally Flooded

Figure 2-2 South

National Wetlands Inventory

Grays Harbor and Lewis Counties, WA

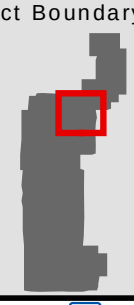
1:24,000
NAD 83 UTM 10N

0 0.25 0.5
Miles

Pole Replacement Project Boundary
Transmission Line
Local Roads
County Boundary
NHD Perennial Stream
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine

DATA SOURCE: ESRI Streetmap/NHD 2007, National Geographic Society 2009, NWI 2009

Project Boundary Index



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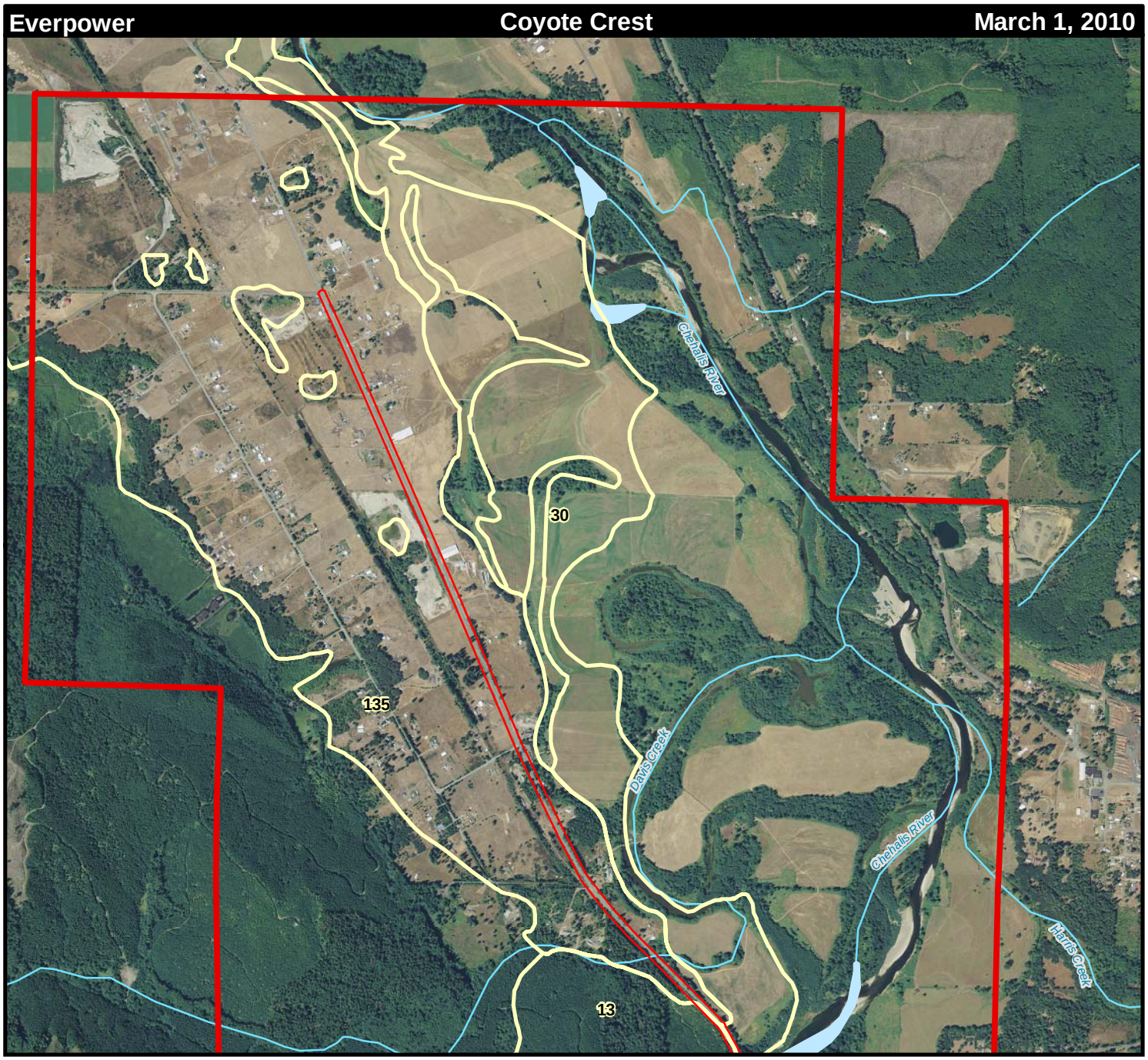
Everpower | Coyote Crest | March 1, 2010



Grays Harbor County Soil Units Within Project Study Corridor

13, Buckpeak silt loam, 8 to 30 percent slopes

135, Spanaway very gravelly sandy loam, 1 to 8 percent slopes

30, Chehalis silt loam

Figure 3-1

NRCS Soils

Grays Harbor County, WA

1:24,000

NAD 83 UTM 10N

0 0.25 0.5

Miles

Pole Replacement Project Boundary

100ft Survey Corridor

Soil Map Unit Boundary

NHD Perennial Stream

Soil Map Unit Symbol

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009, USDA/NRCS 2009

Project Boundary Index

TETRA TECH EC,INC

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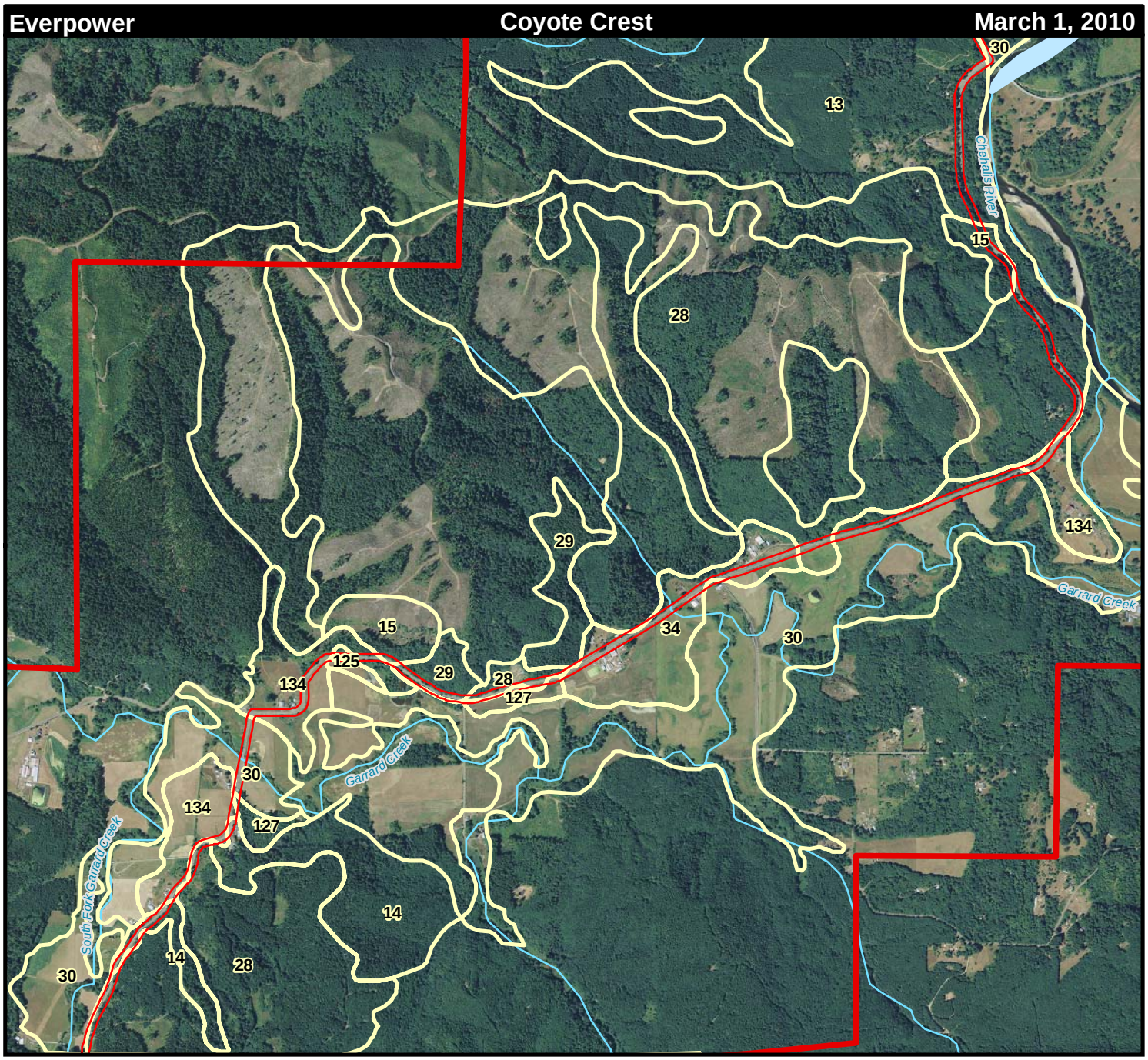
Everpower | Coyote Crest | March 1, 2010



Grays Harbor County Soil Units Within Project Study Corridor

125, Rennie silty clay loam
127, Salzer silty clay
13, Buckpeak silt loam, 8 to 30 percent slopes
134, Skamo silt loam, 0 to 8 percent slopes
14, Buckpeak silt loam, 30 to 65 percent slopes
15, Buckpeak silt loam, 65 to 90 percent slopes
28, Centralia loam, 8 to 30 percent slopes
29, Centralia loam, 30 to 65 percent slopes
30, Chehalis silt loam
34, Copalis silt loam, 30 to 65 percent slopes

Figure 3-2

NRCS Soils

Grays Harbor County, WA

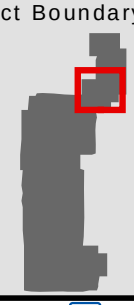
1:24,000
NAD 83 UTM 10N

0 0.25 0.5
Miles

Pole Replacement Project Boundary
100ft Survey Corridor
Soil Map Unit Boundary
NHD Perennial Stream
Soil Map Unit Symbol

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009, USDA/NRCS 2009

Project Boundary Index



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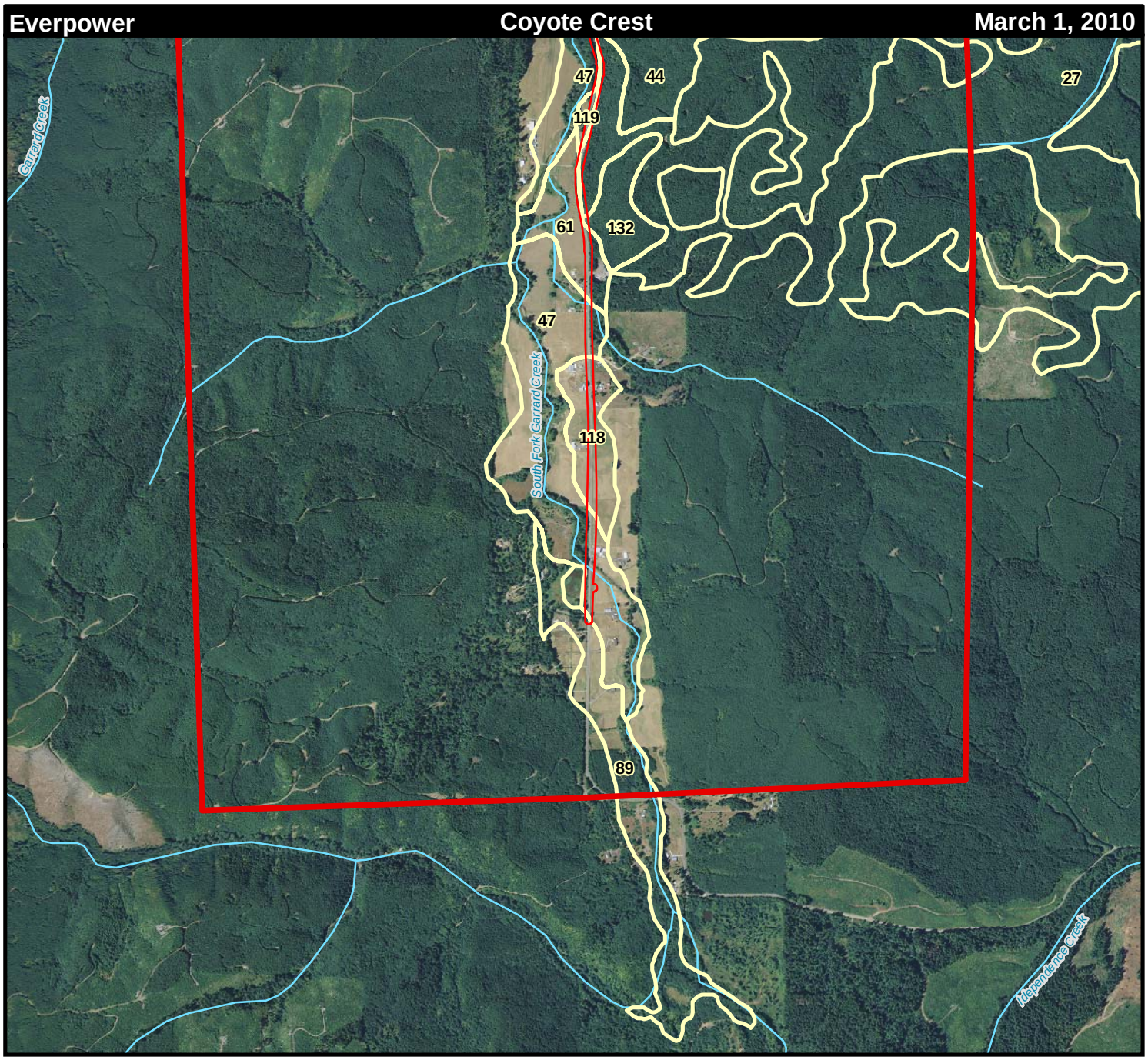


Lewis County Soil Units Within Project Study Corridor

118, Lacamas silt loam, 0 to 3 percent slopes

119, Lacamas silt loam, 3 to 8 percent slopes

132, Melbourne loam, 15 to 30 percent slopes

27, Buckpeak silt loam, 30 to 65 percent slopes

44, Centralia loam, 15 to 30 percent slopes

47, Chehalis silt loam

61, Cloquato silt loam

89, Galvin silt loam, 0 to 8 percent slopes

Figure 3-3

NRCS Soils

Lewis County, WA

1:24,000

NAD 83 UTM 10N

0 0.25 0.5

Miles

Pole Replacement Project Boundary

100ft Survey Corridor

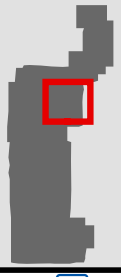
Soil Map Unit Boundary

NHD Perennial Stream

Soil Map Unit Symbol

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009, USDA/NRCS 2009

Project Boundary Index



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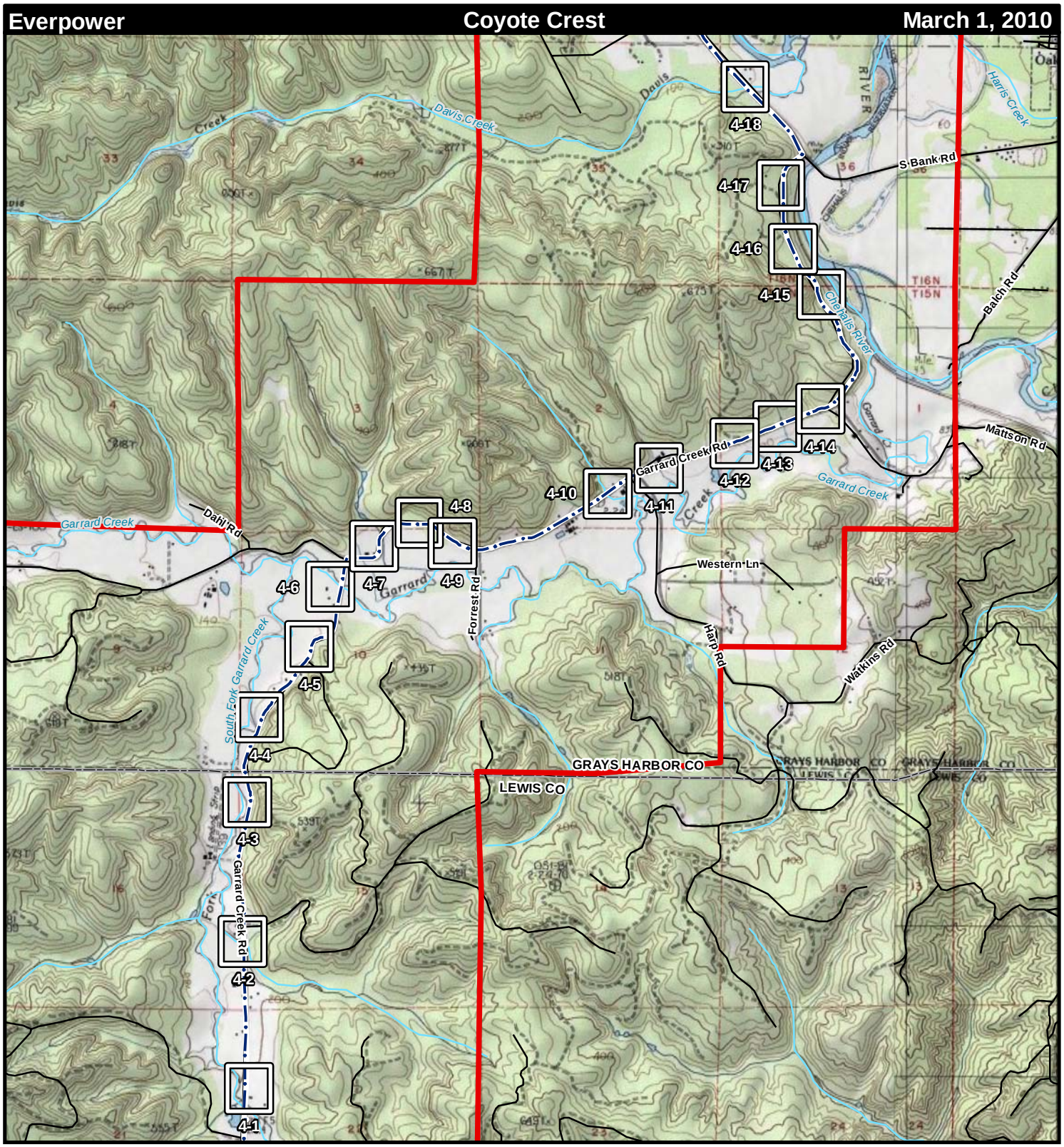

Figure 4

Overview

Grays Harbor and Lewis Counties, WA

1:36,000

NAD 83 UTM 10N

0 0.25 0.5 0.75

Miles

Figure 4 Index Tiles

Pole Replacement Project Boundary

Transmission Line

Local Roads

NHD Perennial Stream

County Boundary

DATA SOURCE: ESRI Streetmap/NHD 2007, National Geographic Society 2009

Project Boundary Index

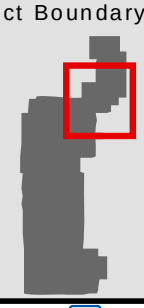

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Figure 4-1
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

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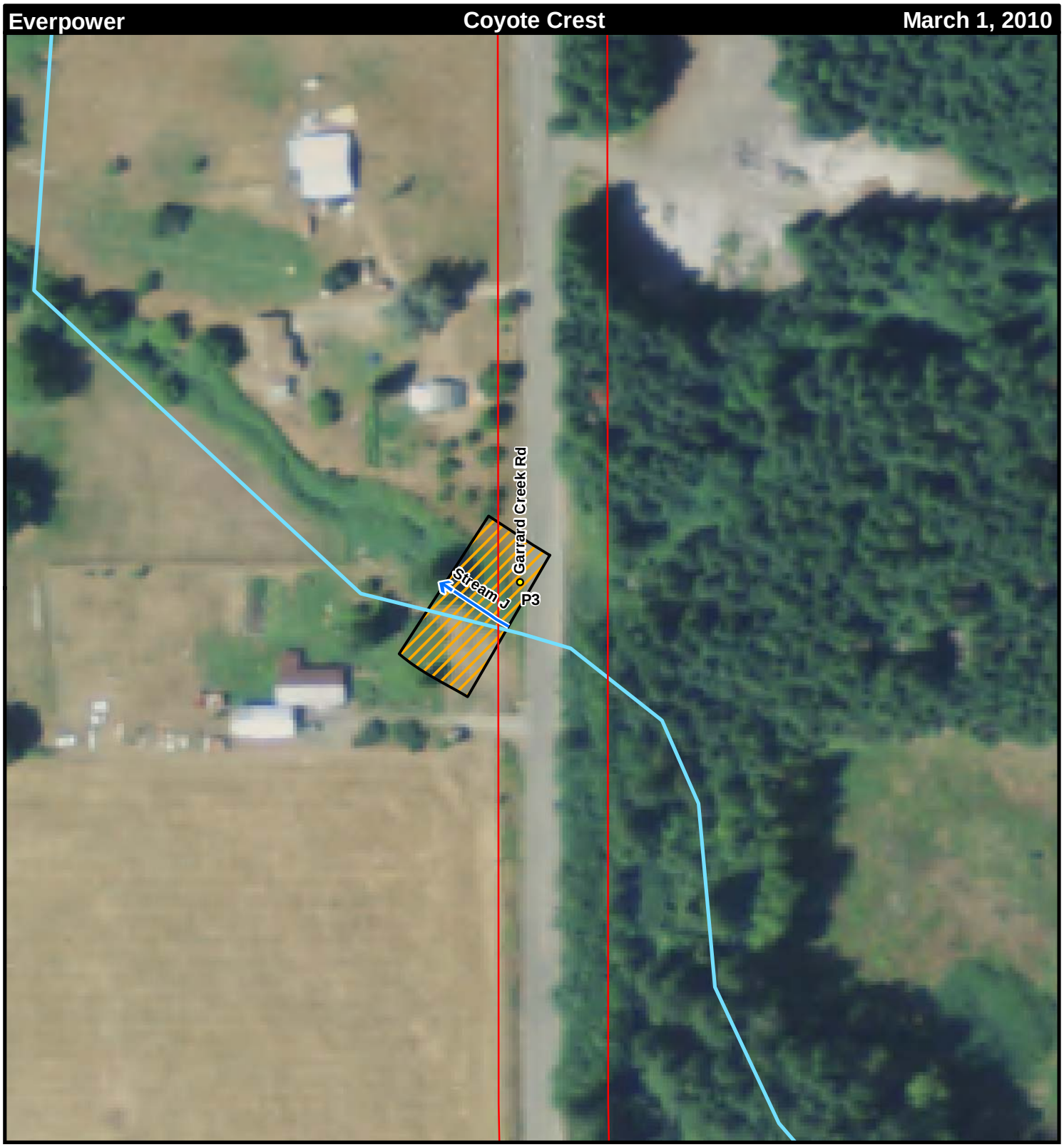

Figure 4-2
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

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Figure 4-3
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

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Figure 4-4
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

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Figure 4-5
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

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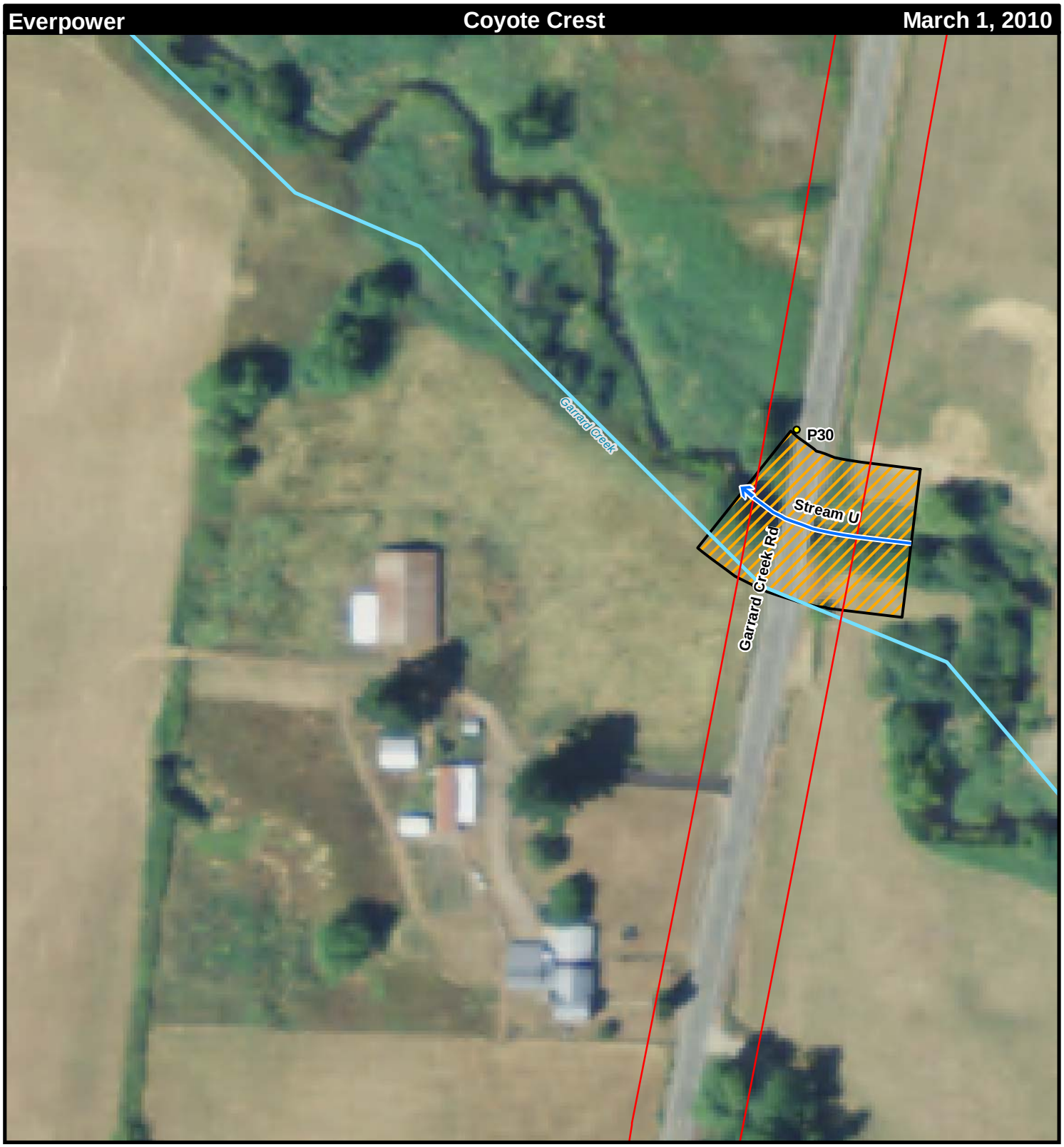


Figure 4-6
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

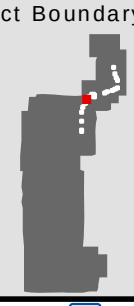
1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index



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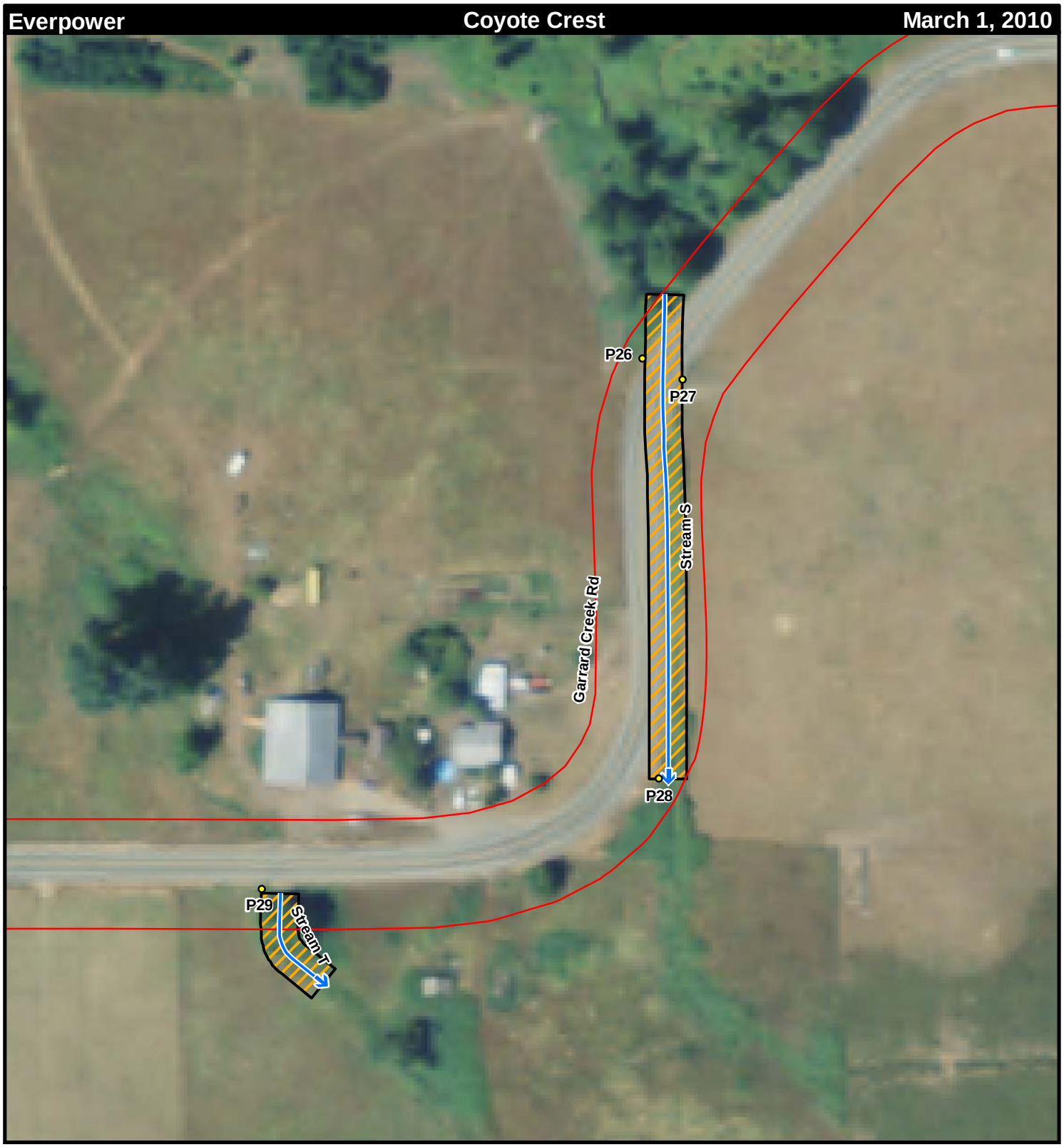

Figure 4-7
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

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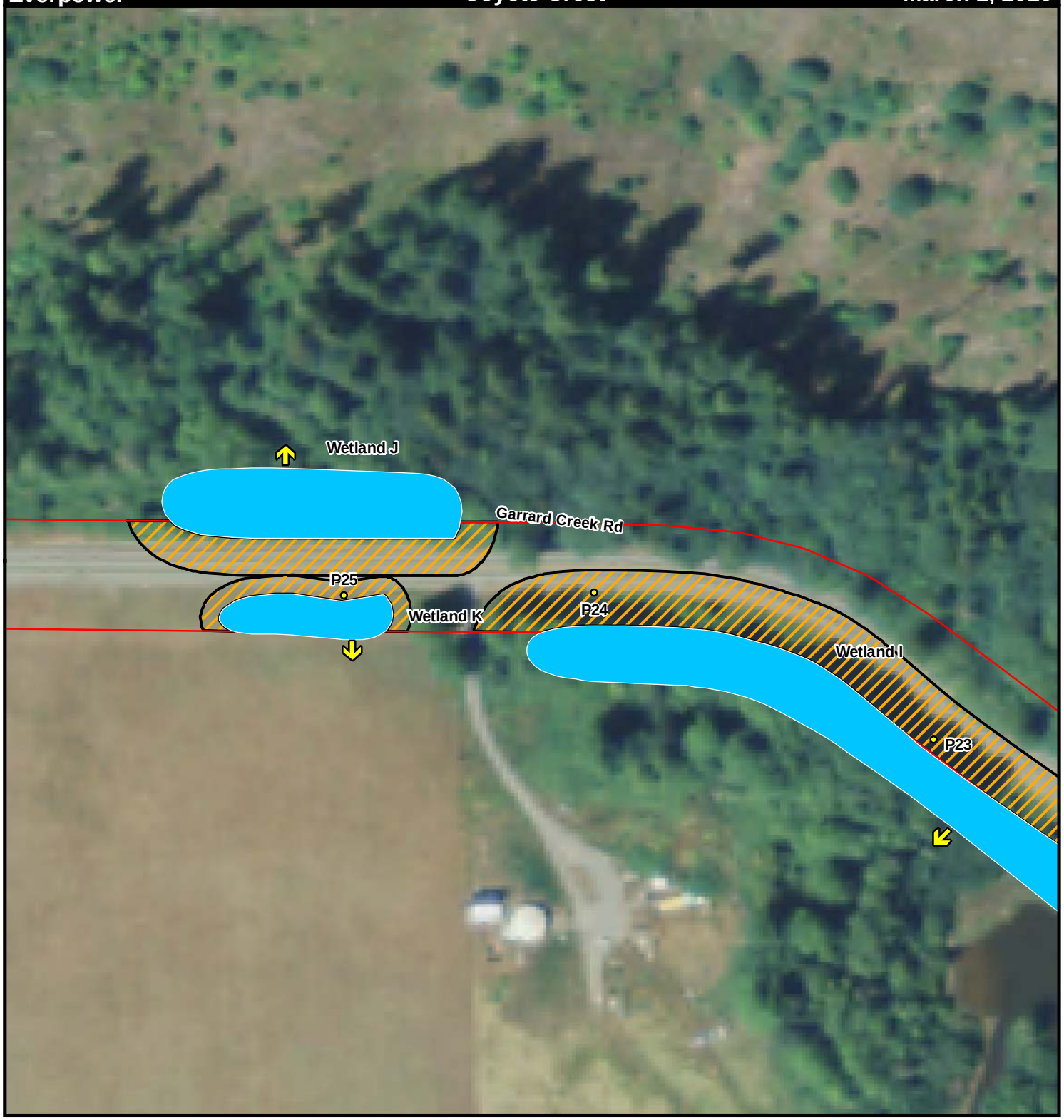

Figure 4-8
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

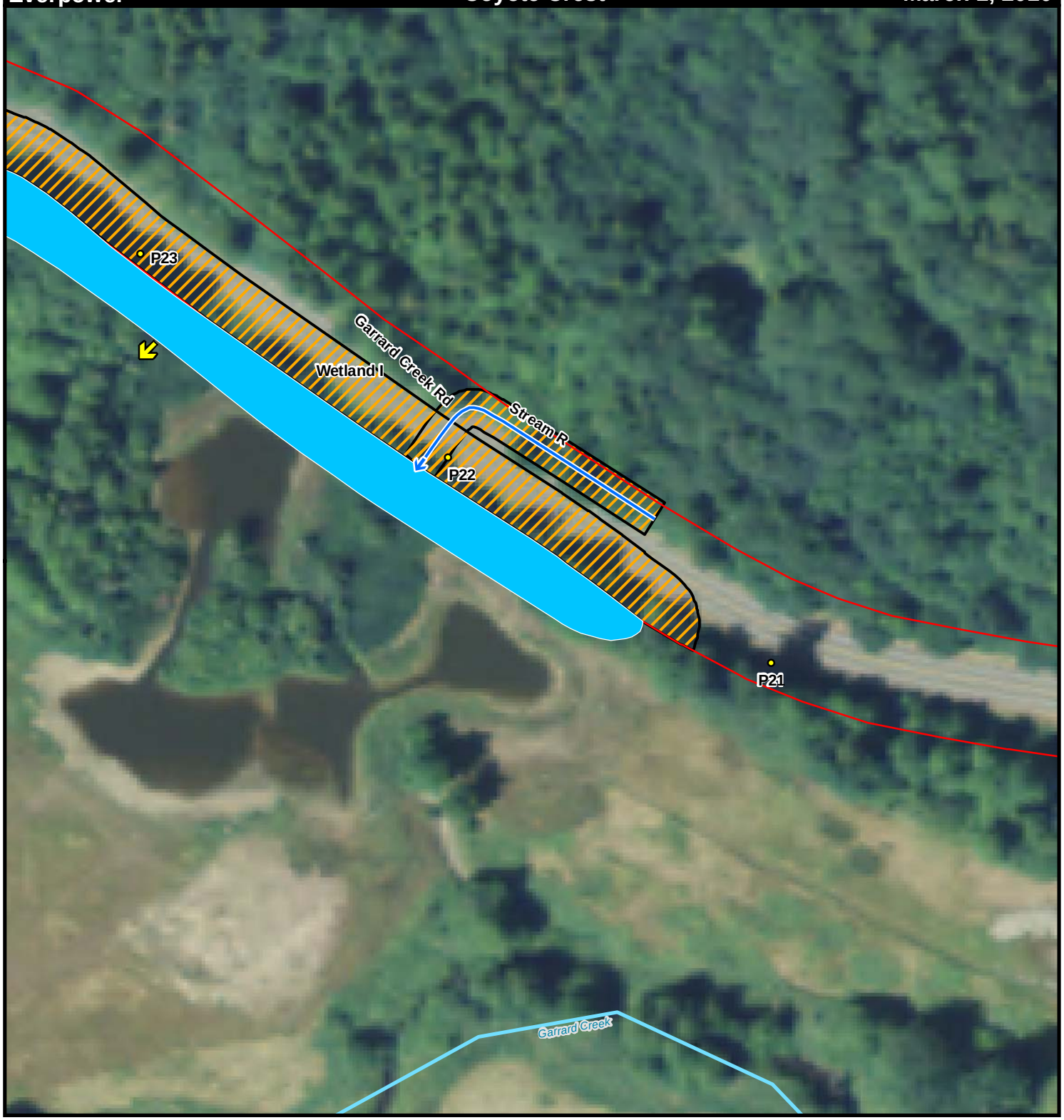

Figure 4-9
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

Figure 4-10
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

TETRA TECH EC,INC

Figure 4-11
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

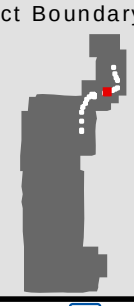

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Figure 4-12
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

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Figure 4-13
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

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Figure 4-14
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

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Figure 4-15
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

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Figure 4-16
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

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Figure 4-17
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

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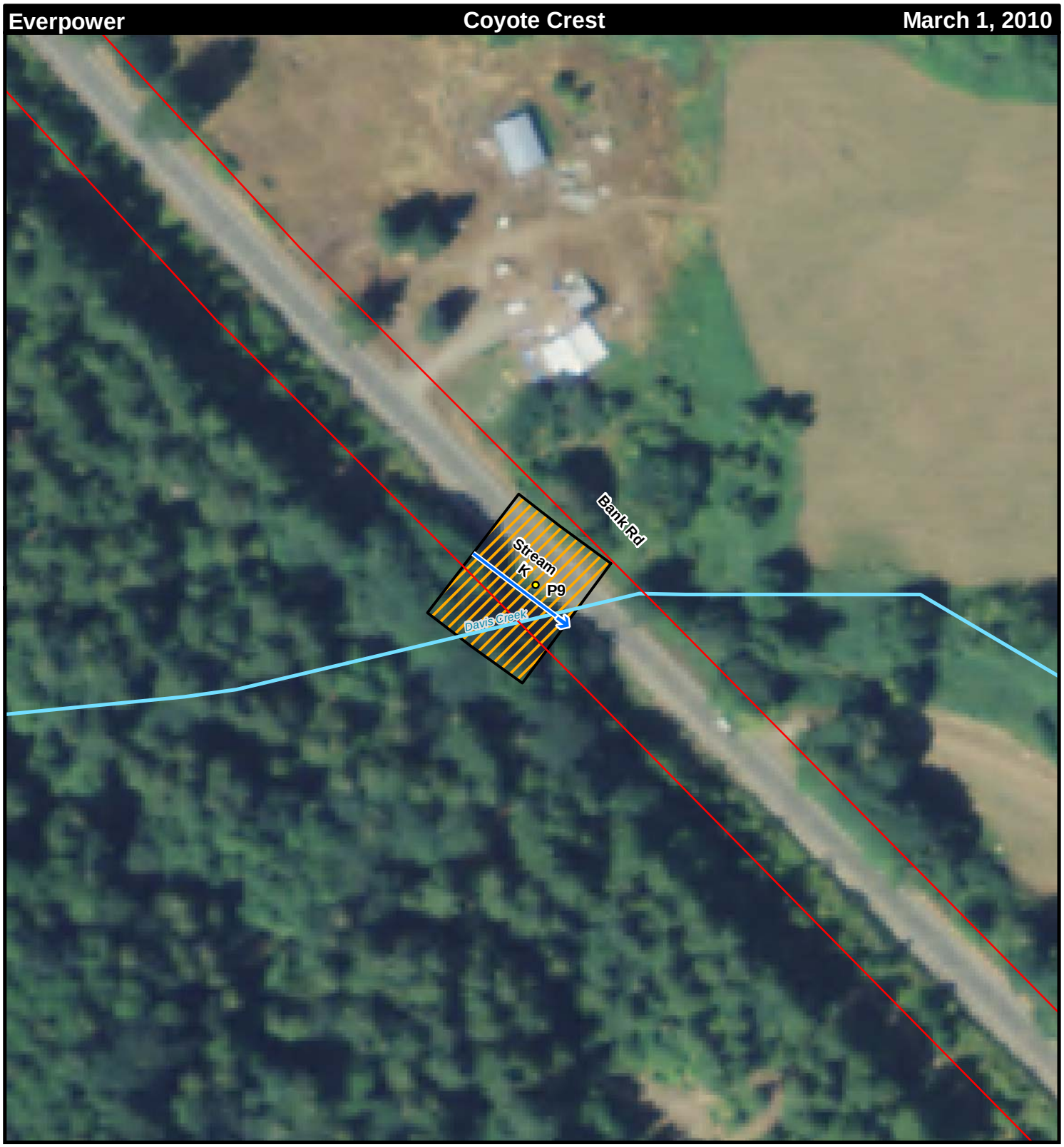

Figure 4-18
Delineation of Wetlands and Other Waters
Grays Harbor and Lewis Counties, WA

1:1,500
NAD 83 UTM 10N

0 50 100 150
Feet

Delineated Stream Segment
TtEC Surveyed Wetland
Wetland/Stream Buffer
Wetland Continues Off Site
T-Line Pole
NHD Perennial Stream

DATA SOURCE: ESRI Streetmap/NHD 2007, NAIP 2009

Project Boundary Index

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APPENDIX A

Site Photographs

APPENDIX B

Wetland Data Forms

APPENDIX C

Wetland Rating Forms