

Preliminary Critical Areas Report
For
Anchor Point Long Term Planning
Kelso, Washington

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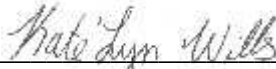
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The information and data in this report were compiled and prepared under the supervision and direction of the undersigned.



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INTRODUCTION

Ecological Land Services, Inc. (ELS) has completed this preliminary critical areas report including wetland delineation at the request of TransDevelopment Group, for use in the preliminary planning process. The site consists of Cowlitz County Tax Parcels; 24092, 24100, and 24386 through 24393; located west of Old Pacific Hwy South, accessed by a gravel construction road in Kelso, Washington within portions of Sections 11, 12, 13 and 14 in Township 7N, and Range 2W of the Willamette Meridian (Figure 1). This report summarizes preliminary findings of critical areas onsite in accordance with the City of Kelso Municipal Code (KMC), *Title 17 Unified Development Code Chapter 17.26 Environmentally Sensitive Areas, Chapter 17.030 Shorelines* (2016), and with the City of Kelso Shoreline Master Program (SMP), *Appendix C, Shorelines Critical Areas Regulations, Chapter 1.3 General Provisions* (2016).

SITE DESCRIPTION AND ALTERATIONS

The approximately 600-acre study site consists of 10 parcels zoned as industrial. The site contains multiple habitats including; unvegetated industrial, ruderal upland grass/forb¹, forested and herbaceous wetland, forested upland, and riparian. A large portion of the study site is historically filled with sandy dredge spoils removed from the Cowlitz and Columbia Rivers since 1980. The US Army Corps of Engineers (Corps) maintains permits to dredge 0.5 to 2.2 million cubic yards annually sediment from the mouth of the Cowlitz River for flood control. The dredge spoils then are dewatered using a permitted temporary outfall structure and placed on Parcels 24100 and 24393. Since 1998, the Owl Creek Sand Company, who holds a DNR mining permit, has been selling the dredged material from a quarry on the site. An approximately 2-acre man-made pond is located south east of the sand quarry within Parcels 24393 and 24392. The pond was constructed in 1990 for aesthetics and as a water hazard for a previously proposed development of a golf course. The property is primarily vacant except for two structures; one of which being a weigh station in current use located in the southeast corner of Parcel 24100, and the second being a dilapidated tower structure located in the southern portion of Parcel 24388. There are numerous existing gravel access roads throughout the property. A BNSF railway was constructed more than 30 years ago which also created an unnamed slough that parallels it along the northeastern and eastern site boundary in-between Parcel 24390 and the rest of the site. Interstate 5 forms the eastern site boundary as it parallels the railway on the eastern edge of Parcel 24390. The addition of the railway and freeway likely altered the hydrology and connectivity between the wetlands onsite and those to the east. The Cowlitz River forms the northwestern site boundary and Carrolls Channel of the Columbia River forms the southwestern site boundary (Figure 2).

METHODOLOGY

Critical Areas Delineation

The wetland delineation followed the Routine Determination Method according to the U.S. Army Corps of Engineers, *Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western*

¹ Ruderal: Weedy vegetation growing on compacted, plowed, or otherwise disturbed ground an showing a preference for this type of habitat. Source: <http://www.biology-online.org/dictionary/Ruderal>

Mountains, Valleys and Coast Region (Version 2.0) (U.S. Army Engineer Research and Development Center 2010).

The Routine Determination Method examines three parameters—vegetation, soils, and hydrology—to determine if wetlands exist in a given area. Hydrology is critical in determining what is wetland, but is often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or ground water 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 are regulated as “Waters of the United States” by the Corps and as “Waters of the State” by the Washington Department of Ecology (Ecology), and locally by *KMC Chapter 17.26 and 17.030*.

Six wetlands (Wetlands A1 and A through E) and one man-made pond were delineated onsite on July 27, August 4, 22, and 30 2016 using multiple teams of ELS biologists. Vegetation, soil, and hydrology information was collected from 49 test plots to determine the location and extent of the wetlands on the site (Appendix A). Wetland boundaries were flagged onsite with consecutively numbered, pink flagging and mapped with a hand-held GPS unit with sub-meter accuracy. Test plot locations were also flagged and GPS coordinates taken. The centerline of Owl Creek was identified onsite and the centerline of the unnamed slough was identified offsite and both were mapped via aerial imagery. Additionally the ordinary high water mark (OHWM) of the Columbia and Cowlitz Rivers was identified using existing LIDAR data from the Puget Sound LiDAR Consortium (PSLC) 2016. The elevation designated as the OHWM was determined to be 14.6-feet above sea level. Gibbs & Olsen surveyed the OHWM onsite and determined it to be 14.23-feet above sea level.

VEGETATION

Wetlands

Vegetation found in the wetland test plots consists primarily of **trees:** black cottonwood (*Populus balsamifera*, FAC), red alder (*Alnus rubra*, FAC), and Oregon ash (*Fraxinus latifolia*, FACW); and **saplings/shrubs:** Oregon ash, scotch broom (*Cytisus scoparius*, UPL), baldhip rose (*Rosa gymnocarpa*, FACU), Nootka rose (*Rosa nutkana*, FAC), common snowberry (*Symphoricarpos albus*, FACU), Evergreen blackberry (*Rubus laciniatus*, FACU), trailing blackberry (*Rubus ursinus*, FACU), Pacific willow (*Salix lasiandra*, FACW), Hooker’s willow (*Salix hookeriana*, FACW), Sitka willow (*Salix sitchensis*, FACW), red-osier dogwood (*Cornus sericea*, FACW); and **herbs:** stinging nettle (*Urtica dioica*, FAC), birdsfoot trefoil (*Lotus corniculatus*, FAC), Canada thistle (*Cirsium arvense*, FAC), water foxtail (*Alopecurus geniculatus*, OBL), reed canarygrass (*Phalaris arundinacea*, FACW), creeping bentgrass (*Agrostis stolonifera*, FAC), American willowherb (*Epilobium ciliatum*, FACW), toad rush (*Juncus bufonius*, FACW), yellow parentucellia (*Parentucellia viscosa*, FAC), yellow-pond lily (*Nuphar lutea*, OBL), hairy cat’s ear (*Hypochaeris radicata*, FACU), maple leaf currant (*Ribes acerifolium*, FACU), slough sedge (*Carex obnupta*, OBL), soft rush (*Juncus effuses*, FACW),

creeping buttercup (*Ranunculus repens*, FAC); and **woody vines**: Himalayan blackberry (*Rubus armeniacus*, FAC).

Uplands

Vegetation found in the upland test plots is dominated by **trees**: black cottonwood, Oregon ash, red alder; **shrubs**: black cottonwood, Oregon ash, red-osier dogwood, common snowberry, red elderberry (*Sambucus racemosa*, FACU), scotch broom, trailing blackberry; **herbs**: sword fern (*Polystichum munitum*, FACU), stinging nettle, sweet vernal grass (*Anthoxanthum odoratum*, FACU), colonial bentgrass (*Agrostis capillaris*, FAC), velvetgrass (*Holcus lanatus*, FAC), sheep sorrel (*Rumex acetosella*, FACU), Canada thistle, bull thistle (*Cirsium vulgare*, FACU), meadow foxtail (*Alopecurus pratensis*, FAC), oxeye daisy (*Leucanthemum vulgare*, FACU), field horsetail (*Equisetum arvense*, FAC), yellow parentucellia, reed canarygrass, slough sedge; and **woody vines**: Himalayan blackberry. Percentages of cover of vegetation observed during the site visit are recorded on the attached wetland determination data forms (Appendix A).

The indicator status, following the scientific names, indicates the likelihood of the species to be found in wetlands. Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

SOILS

The National Resources Conservation Service (NRCS) map depicts four soil units onsite: Caples silty clay loam, 0 to 3 percent slopes (17), Clato silty loam, 0 to 3 percent slopes (32), Lithic Haplumbrepts, 50 to 100 percent slopes (109), and Newberg fine sandy loam, 0 to 3 percent slopes (141) (Figure 3). NRCS maps depict hydric soil (17) is the dominant soil type and is depicted across the majority of the site. Some wetlands were delineated within non-hydric soils, and likely exist in these areas due to topographical restrictions, leading to surface ponding. Additionally the placement of dredge spoils on this site has greatly altered the soil type throughout the site. The NRCS soil survey data is summarized in Table 1 below.

Wetlands

Evaluated wetland soils consisted of sandy clay loams, clay loams, silty clay loams, sand, loamy sand, sandy loams, silty loams and silt with gray (10YR6/1, 5/1, and 7.5YR5/1), grayish brown (10YR5/2), dark grayish brown (10YR4/2), dark gray (10YR4/1), dark yellowish brown (10YR3/6), very dark grayish brown (10YR3/2), black (10YR2/1, 7.5YR2.5/1, Gley1 2.5/N), dark brown (7.5YR3/4) and greenish black (Gley1 2.5/10Y) hues. Redoximorphic concentrations

observed in pore linings and root channels consisted of brownish yellow (10YR6/8), light yellowish brown (10YR6/4), yellowish brown (10YR5/8, 5/6), dark yellowish brown (10YR4/8, 3/6), strong brown (7.5YR4/6), and dark brown (7.5YR3/4). Most wetland test plots meet one of the hydric soil indicators F3 Depleted Matrix, F6 Redox Dark Surface, or S5 Sandy Redox.

Uplands

Evaluated upland soils included clay loams, silty clay loams, sand, sandy loams, and silty loams with light gray (10YR7/2), grayish brown (10YR5/2), gray (10YR5/1), dark grayish brown (10YR 4/2), dark gray (10YR4/1), dark brown (10YR3/3), very dark grayish brown (10YR3/2) and very dark gray (10YR3/1) hues. Redoximorphic concentrations were observed in various upland test plots and consisted of brownish yellow (10YR6/8), yellowish brown (10YR5/8), dark yellowish brown (10YR4/6 and 3/6). A few upland test plots met hydric soil indicators F3 Depleted Matrix or F6 Redox Dark Surface. Specific soil information is recorded on the attached wetland determination data forms (Appendix A).

Table 1. Summary of NRCS Soil Survey Data

Soil Series	Unit Symbol	Percent Slope	Hydrologic Soil Group	Drainage Class	Hydric Soil
Caples silty clay loam	17	0-3	C/D	Somewhat poorly drained	Yes
Clato silty loam	32	0-3	B	Well drained	No
Lithic Haplumbrepts	109	50-100	C	Well drained	No
Newberg fine sandy loam	141	0-3	A	Well drained	No

HYDROLOGY

Site topography is generally elevated centrally, directing drainage patterns west, east, north, and south toward 7 wetland areas: Wetlands A1, A, B, C, D, E, and F. All of the wetlands onsite lie within the 100-year floodplain.

Wetlands A1 and A

Wetlands A1 and A receive the majority of their hydrology from a seasonally high groundwater table, precipitation, surface runoff from surrounding uplands, and from overbank flooding from the Cowlitz River. An approximately 3-foot high perched 24-inch culvert connects Wetland A to Wetland A1 allowing primarily one way flow. Hydroperiods of Wetland A1 consist of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. Hydroperiods of Wetland A consist of permanently flooded, seasonally flooded, and saturated only. During the site visit, the primary hydrology indicator was present within the Wetland A1 test plot; Other (Wetland hydrology is assumed during the wet season due to hydrophytic vegetation, hydric soils and secondary hydrology indicators), as well as the secondary hydrology indicator; Geomorphic Position (D2). During the site visit, surface water was present in Wetland A as well as the following primary hydrology indicators were present within the test plots; Surface Water (A1), High Water Table (A2), Saturation (A3), Inundation Visible on Aerial Imagery (B7), Hydrogen Sulfide Odor (C1), and Other (Wetland hydrology is assumed during the wet season due to hydrophytic vegetation, hydric soils and secondary hydrology indicators), as well as the secondary hydrology indicators; Dry-Season Water Table

(C2), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2) and FAC-Neutral Test (D5).

Wetlands B and C

Wetlands B, C, and E receive the majority of their hydrology from a seasonally high groundwater table, precipitation, surface runoff from surrounding uplands, and from overbank flooding from the Carrols Channel of the Columbia River. Hydroperiods of Wetlands B and C consist of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. During the site visit, the primary hydrology indicators were present within the wetland test plots; Surface Soil Cracks (B6), Oxidized Rhizospheres (C3), and Other (Wetland hydrology is assumed during the wet season due to hydrophytic vegetation, hydric soils and secondary hydrology indicators), as well as the secondary hydrology indicators; Geomorphic Position (D2) and FAC-Neutral Test (D5).

Wetland D

Wetland D receives the majority of its hydrology from a seasonally high groundwater table, precipitation, surface runoff from surrounding uplands, and from overbank flooding from Owl Creek and an unnamed slough. Wetland D also receives hydrology from three 12-inch culverts that convey water from the east side of Interstate 5 into Wetland D. Hydroperiods of Wetland D consist of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream in the wetland. During the site visit, the primary hydrology indicators were present within the wetland test plots; Saturation (A3), Hydrogen Sulfide Odor (C1), Oxidized Rhizospheres (C3), and Other (Wetland hydrology is assumed during the wet season due to hydrophytic vegetation, hydric soils and secondary hydrology indicators), as well as the secondary hydrology indicators; Geomorphic Position (D2) and FAC-Neutral Test (D5).

Wetland E

Wetland E receives the majority of its hydrology from overbank flooding from the Carrols Channel of the Columbia River, a seasonally high groundwater table, precipitation, and surface runoff from surrounding uplands. Hydroperiods of Wetland E consists of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. During the site visit, the primary hydrology indicators were present within the wetland test plots; Oxidized Rhizospheres (C3), and Other (Wetland hydrology is assumed during the wet season due to hydrophytic vegetation, hydric soils and secondary hydrology indicators), as well as the secondary hydrology indicators; Geomorphic Position (D2) and FAC-Neutral Test (D5).

Non-Jurisdictional Man-Made Pond

The man-made pond receives hydrology from a seasonally high groundwater table, surface runoff, and precipitation and likely holds water as a result of the original soils comprising the unconsolidated bottom rather than sand fill like surrounding soils.

NATIONAL WETLANDS INVENTORY

The National Wetlands Inventory (NWI) map indicates wetlands on the subject property (Figure 4). The NWI depicts a PSSA¹ and a PEM1J² in the approximate location of Wetland A, a PSSA, PEM1J and PEM1C³ in the approximate location of Wetlands B and C, a PSSA, PEM1C, R2UBHx⁴ in the approximate location of Wetland D, a PSSA, PEM1R⁵, PSSR⁶, and R1USQ⁷ in the approximate location of Wetland E, and a PSSA and a PEM1C in the approximate location of man-made pond. Additionally, NWI maps other wetlands onsite in areas of identified uplands. ELS observations were not necessarily consistent with the NWI mapping within the subject property likely due to the NWI inventory being mapped prior to historic dredge spoil fill in the site vicinity. NWI maps are typically used to gather wetland information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

CRITICAL AREAS SUMMARY

Wetlands

Seven jurisdictional wetlands (Wetlands A1 and A through E) and one man-made pond were delineated within the study area. Wetland categories and rating scores are preliminary and are for long term planning purposes. Table 2 below summarizes the wetlands onsite.

Wetland A1 (0.15-acres)

Wetland A1, an emergent, scrub/shrub, depressional and riverine wetland, was delineated in the northern most portion of the site. The wetland area onsite is dominated by trailing blackberry, and reed canarygrass. Wetland A1 receives the majority of its hydrology from a seasonally high groundwater table, precipitation, surface runoff from surrounding uplands, and from overbank flooding from the Cowlitz River. Hydroperiods of Wetland A1 consist of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. The wetland provides flood storage and delay and groundwater recharge functions. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update*; Wetland A is a Category IV wetland scoring 7 points for water quality functions, 3 points for hydrologic functions, and 5 points for habitat functions for a total of 15 point. Buffer width is listed in Table 2 below.

Wetland A (83.77-acres)

Wetland A, an aquatic bed, emergent, scrub/shrub, forested and depressional wetland, was delineated along the northeastern portion of the site that continues offsite to the north. The wetland was bordered by an obvious change in elevation and vegetation. The wetland area onsite is dominated by black cottonwood, Oregon ash, trailing blackberry, red alder, Hooker's

¹ P=Palustrine, SS=Scrub-Shrub, A=Temporary Flooded

² P=Palustrine, EM=Emergent, 1=Persistent, J=Intermittently Flooded

³ P=Palustrine, EM=Emergent, 1=Persistent, C=Seasonally Flooded

⁴ R=Riverine, 2=Lower Perennial, UB=Unconsolidated Bottom, H=Permanently Flooded

⁵ P=Palustrine, EM=Emergent, 1=Persistent, R=Seasonally Flooded-Tidal

⁶ P=Palustrine, SS=Scrub-Shrub, R=Seasonally Flooded-Tidal

⁷ R=Riverine, 1=Tidal, US=Unconsolidated Shore, Q=Regularly Flooded

willow, reed canarygrass, hairy cat's ear, and yellow pond lily. Wetland A receives the majority of its hydrology from a seasonally high groundwater table, precipitation, surface runoff from surrounding uplands. Hydroperiods of Wetland A consist of permanently flooded, seasonally flooded, and saturated only. The wetland provides flood storage and delay and groundwater recharge functions as well as wildlife habitat and water quality improvement. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update*; Wetland A is a Category III wetland scoring 7 points for water quality functions, 4 points for hydrologic functions, and 5 points for habitat functions for a total of 16 points. Buffer width is listed in Table 2 below.

Wetland B (115.85-acres)

Wetland B, an emergent, scrub/shrub, forested, depressional and riverine wetland, was delineated in the southern central portion of the site. The wetland was bordered by an obvious change in elevation and vegetation. The wetland area onsite is dominated by black cottonwood, Oregon ash, red alder, Nootka rose, red-osier dogwood, common snowberry, trailing blackberry, reed canarygrass, maple leaf currant, creeping buttercup, and slough sedge. Wetland B receives the majority of its hydrology from a seasonally high groundwater table, precipitation, and surface runoff from surrounding uplands. Additionally the fringe portion of Wetland B along Carrolls Channel of the Columbia River experiences occasional overbank flooding. Hydroperiods of Wetland B consist of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. The wetland provides flood storage and delay and groundwater recharge functions as well as wildlife habitat and water quality improvement. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update*; Wetland B is a Category IV wetland scoring 6 points for water quality functions, 3 points for hydrologic functions, and 6 points for habitat functions for a total of 15 points. Buffer width is listed in Table 2 below. Due to the site visits being during the dry season, ELS recommends additional test plots during the wet season in this area to further delineate any areas of upland.

Wetland C (66.85-acres)

Wetland C, an emergent, scrub/shrub/forested, depressional and riverine wetland, was delineated in the southeastern portion of the site that continues offsite to the south. The wetland was bordered by an obvious change in elevation and vegetation. The wetland area onsite is dominated by black cottonwood, Oregon ash, red alder, Nootka rose, red-osier dogwood, common snowberry, trailing blackberry, reed canarygrass. Wetland C receives the majority of its hydrology from a seasonally high groundwater table, precipitation, and surface runoff from surrounding uplands. Additionally the fringe portion of Wetland C along Carrolls Channel of the Columbia River experiences occasional overbank flooding. Hydroperiods of Wetland C consist of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. The wetland provides flood storage and delay and groundwater recharge functions as well as wildlife habitat and water quality improvement. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update*; Wetland A is a Category III wetland scoring 7 points for water quality functions, 4 points for hydrologic functions, and 6 points for habitat functions for a total of 17 points. Buffer width is listed in Table 2 below.

Wetland D (5.82-acres)

Wetland D, an emergent, forested, depressional and riverine wetland, was delineated east of the railroad tracks in the eastern most portion of the site. The wetland was bordered by an obvious change in elevation and vegetation. The wetland area onsite is dominated by Oregon ash, red alder, red-osier dogwood, Sitka willow, Nootka rose, reed canarygrass, and Himalayan blackberry. Wetland D receives the majority of its hydrology from a seasonally high groundwater table, precipitation, and surface runoff from surrounding uplands. Hydroperiods of Wetland D consist of seasonally flooded, occasionally flooded, and saturated only. Three culverts convey stormwater from the east side of Interstate 5 into the east side of the wetland. The wetland provides flood storage and delay and groundwater recharge functions as well as wildlife habitat and water quality improvement. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update*; Wetland D is a Category III wetland scoring 7 points for water quality functions, 4 points for hydrologic functions, and 5 points for habitat functions for a total of 16 points. Buffer width is listed in Table 2 below.

Wetland E (16.50-acres)

Wetland E, an emergent, scrub/shrub, forested, and riverine wetland, was delineated along the southwestern site boundary along the Carrolls Channel of the Columbia River. The wetland was bordered by an obvious change in elevation and vegetation. The wetland area onsite is dominated by Pacific willow, red-osier dogwood, trailing blackberry, and reed canarygrass. Wetland E receives the majority of its hydrology from overbank flooding from the Carrolls Channel of the Columbia River, a seasonally high groundwater table, precipitation, and surface runoff from surrounding uplands. Hydroperiods of Wetland E consists of seasonally flooded, occasionally flooded, saturated only, and a permanently flowing stream adjacent to the wetland. The wetland provides flood storage and delay and groundwater recharge functions. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update*; Wetland E is a Category III wetland scoring 7 points for water quality functions, 5 points for hydrologic functions, and 6 points for habitat functions for a total of 18 points. Buffer width is listed in Table 2 below.

Non-Jurisdictional Man-Made Pond (3.81-acres)

An approximately 2-acre man-made pond was located southeast of the sand quarry within Parcels 24393 and 24392. The pond was constructed in 1990 for aesthetics and as a water hazard for a previously proposed development of a golf course. The pond was bordered by an obvious change in elevation and vegetation. Vegetation within the pond and around the immediate perimeter was dominated by red alder, scotch broom, evergreen blackberry, American willowherb, toad rush, creeping bentgrass, slough sedge, birdsfoot trefoil, and Himalayan blackberry. The pond receives hydrology from a seasonally high groundwater table, surface runoff, and precipitation and likely holds water as a result of the original soils comprising the unconsolidated bottom rather than sand fill like surrounding soils. According to KMC and Appendix C of the SMP, maintenance of intentionally created artificial wetlands or surface water systems such as landscape or ornamental amenities is excluded from critical area requirements (*Chapter 17.26.050 and SMP Chapter 1.2(A7)*) (Kelso 2016). KMC and the SMP also designate any activities occurring in nonregulated or non-jurisdictional wetlands, exempt from regulations.

Additionally, in the Environmental Protection Agency’s (EPA) Clean Water Rule, small ornamental waters created by excavating for primarily aesthetic reasons are proposed for exclusion from the Clean Water Act (Federal Register 2015). Ultimate authority regarding the jurisdictional determination of this wetland will be decided by the regulatory agencies.

Table 2. Summary of Wetlands.

Wetland	Category ¹ /HGM Class ² /Cowardin Class ³	Buffer Width ⁴
Wetland A1	IV ⁵ /Depressional and Riverine/Emergent, Scrub-Shrub	50 feet
Wetland A	III ⁵ /Depressional/Aquatic Bed, Emergent, Scrub-Shrub, Forested	50 feet
Wetland B	IV ⁵ /Depressional and Riverine/ Emergent, Scrub-Shrub, Forested	50 feet
Wetland C	III ⁵ /Depressional and Riverine/ Emergent, Scrub-Shrub, Forested	50 feet
Wetland D	III ⁵ / Riverine/Emergent, Forested	50 feet
Wetland E	III ⁵ /Riverine/ Emergent, Scrub-Shrub, Forested	50 feet
Man-Made Pond	Not Applicable	Non-Jurisdictional/Exempt ⁶

Other Aquatic Resources

Four aquatic resources were identified within or bordering the study area. Table 3 below summarizes the aquatic resources onsite.

Cowlitz River

The Cowlitz River, a Type S (Shoreline of the State) fish-bearing stream, is located along the northwest boundary of the study site. The Cowlitz River, which is tidally influenced, contains stretches both up and downstream of the study site that are on the Ecology 303(d) List for temperature and arsenic (Ecology 2016). The Cowlitz is diked beginning miles upstream in Castle Rock and extending to the confluence with the Columbia River, which is located at the western most point of the study site. The Washington Department of Fish and Wildlife (WDFW) Salmonscape website documents the presence of spring and fall Chinook, coho, fall chum, and steelhead in this reach of the Cowlitz (WDFW 2013). The City of Kelso’s Shoreline Master Plan designates the Cowlitz River as a “Shoreline of Statewide Significance”. The shoreline jurisdiction extends 200-feet from the OHWM (Figure 2). The Cowlitz River is also considered a Classification 1, Fish and Wildlife Habitat Conservation Area according to the KMC and is regulated under *KMC 17.26.060*. The SMP designates a riparian habitat area (RHA) of 150-feet from the OHWM along this stretch of the Cowlitz River (Kelso 2016).

¹ Hruby 2014

² NRCS 2008

³ Cowardin et al. 1979

⁴ Buffer widths are preliminary and are based on application of buffer reduction or other measures to reduce wetland buffer size

⁵ Wetland Category is preliminary

⁶ Ultimate authority regarding the jurisdictional determination of this wetland will be decided by the regulatory agencies

Carrolls Channel

Carrolls Channel of the Columbia River, a Type S (Shoreline of the State) fish-bearing stream, is located along the southern boundary of the study site. Carrolls Channel, which is tidally influenced, is identified on the Ecology 303(d) List for temperature and bisphthalate (Ecology 2016). The Washington Department of Fish and Wildlife (WDFW) Salmonscape website documents the presence of Chinook, coho, fall chum, steelhead, sockeye, and bull trout in this reach of the Columbia (WDFW 2013). The City of Kelso's Shoreline Master Plan designates the Columbia River, including Carrolls Channel, as a "Shoreline of Statewide Significance". The shoreline jurisdiction extends 200-feet from the OHWM (Figure 2). Carrolls Channel is also considered a Classification 1, Fish and Wildlife Habitat Conservation Area according to the KMC and is regulated under *KMC 17.26.060*. The SMP designates a riparian habitat area (RHA) of 150-feet from the OHWM along this stretch of the Columbia River (Kelso 2016).

Owl Creek

The centerline of Owl Creek, a Type F (fish-bearing perennial) stream was mapped using existing aerial images from Google Earth. The stream flows from the northern part of Wetland D south through the wetland where it converges with the unnamed slough and runs west where it discharges into Carrolls Channel. Owl Creek becomes a Type S (Shoreline of the State) fish-bearing stream at the confluence with the slough. The stream channel ranges from 4 to 15-feet wide and 4 to 10-feet deep with steep banks. The water level was approximately 6 to 12 inches at the time of the site visit. The OHWM was assessed at the top of bank throughout. The Washington Department of Fish and Wildlife (WDFW) Salmonscape website indicates the presumed presence of fall Chinook and coho and a documented presence of winter steelhead in this reach of Owl Creek (WDFW 2013). The Type S portion of the stream is considered a Classification 1, Fish and Wildlife Habitat Conservation Area according to the KMC and is regulated under *KMC 17.26.060*. The SMP designates a riparian habitat area (RHA) of 150-feet from the OHWM along this stretch of Owl Creek (Kelso 2016).

Unnamed Slough

The centerline of an unnamed slough, Type Ns (non-fish bearing seasonal) was mapped using existing aerial images from Google Earth. The slough flows along the eastern edge of the BNSF railway along the eastern site boundary. The slough channel ranges from 12 inches to 10 feet wide with dry areas throughout the southern portion. The inundated parts of the slough were approximately 6-inches to 4-feet deep during the site visit. The SMP designates a riparian habitat area (RHA) of 50-feet from the OHWM along the unnamed slough (Kelso 2016).

Table 3. Summary of Aquatic Resources.

Aquatic Resource	Water Type and Classification¹	Buffer/Shoreline Jurisdiction/Habitat Management Plan²
Cowlitz River	Type S (fish-bearing) Water, Classification 1 Shoreline of Statewide Significance	150 feet/200 feet/250 feet
Carrolls Channel	Type S (fish-bearing) Water, Classification 1 Shoreline of Statewide Significance	150 feet/200 feet/250 feet
Owl Creek	Type F/Type S (fish-bearing) Water, Classification 1 Shoreline of Statewide Significance	150 feet/200 feet/250 feet
Unnamed Slough	Type Ns (non-fish-bearing, seasonal) Water, Classification 5 Water of the State	50 feet

Other Critical Areas

Nests

An active bald eagle nest was identified onsite during site visits. According to KMC and SMP, A habitat management plan is required if a regulated activity is proposed to occur within 250-feet of a Classification 1 habitat area or within 1,000-feet of a point location such as a priority nest or den 17.26.060.C.1. The U.S. Fish and Wildlife Service may also be consulted regarding activities near bald eagle nests. Table 4 below summarizes other critical areas onsite.

Table 4. Summary of Other Critical Areas.

Critical Area	Description	Habitat Management Plan¹
Nest	Active Bald Eagle	1,000-feet from nest

ADDITIONAL INFORMATION

Shoreline Jurisdiction

The Shoreline Management Act designates all lands extending landward for 200-feet in all direction from the OHWM and all associated wetlands as within Shoreline Jurisdiction RCW90.58.030. The SMP requires a shoreline permit (Shoreline Substantial Development Permit or Shoreline Conditional Use Permit) if development is proposed within a jurisdictional shoreline area or its critical areas buffer Chapter 8.2.F. Additionally the City may request a technical assessment addressing how any proposed development incorporates best available science to reduce critical area impacts.

Habitat Management Plan

According to KMC and the SMP, A habitat management plan is required if a regulated activity is proposed to occur within 250-feet of a Classification 1 habitat area or within 1,000-feet of a point location such as a priority nest or den. The habitat management plan must be prepared by a qualified expert (ELS) and will be sent to the Washington Department of Fish and Wildlife (WDFW) for comment.

¹ Preliminary buffer width based on KMC and SMP 2016

² Preliminary buffer width based on KMC and SMP 2016

Frequently Flooded Areas

KMC and the SMP designate all lands within the 100-year floodplain are considered “frequently flooded areas” 17.26.070.C.1.a. If development is proposed to occur within frequently flooded areas, it must comply with *Chapter 17.26.070 Frequently Flooded Critical Areas* in KMC which includes certification by a registered professional engineer or architect that floodproofing methods meet the criteria in *Section 17.26.070.D.3*.

Wetland Mitigation Requirement

KMC and/or the SMP require mitigation for any wetland, stream or buffer impacts due to proposed development. The designated wetland mitigation ratios based on wetland category rating are listed in Table 5 below and are more detailed in *Chapter 17.26.050.G.1 Table 2: Wetland Mitigation Ratios* and in *Table 2. Wetland Mitigation Ratios within the Jurisdiction of Shoreline Management* in Appendix C of the SMP.

Table 5. Wetland Mitigation Standards.

Wetland Category	Minimum Ratio of Mitigation: Impact
Category I	4:1
Category II	3:1
Category III	2:1
Category IV	1.5:1

LIMITATIONS

ELS personnel base the conclusions contained within this report on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with the findings presented in this report. However, information in this report should be considered preliminary and used at your own risk for planning purposes only until it has been reviewed and approved in writing by the appropriate regulatory agencies.

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. There are no other warranties, express or implied. The services performed were consistent with our agreement with our client. This report is prepared solely for the use of our client and may not be used or relied upon by a third party for any purpose. Any such use or reliance will be at such party’s risk.

The opinions and recommendations contained in this report apply to conditions existing when services were performed. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report. ELS does not warrant the accuracy of supplemental information incorporated in this report that was supplied by others.

REFERENCES

- City of Kelso. 2016. Kelso Municipal Code, *Title 17 Unified Development Code Chapter 17.26 Environmentally Sensitive Areas*.
- City of Kelso, 2016. Shoreline Master Plan Update, *Appendix C, Shorelines Critical Areas Regulations*.
- Cowardin, L.M., C. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-78/31. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington D.C.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1. U.S. Army Corps of Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- Federal Register, 2015. *Clean Water Rule: Definition of “Waters of the United States”; Final Rule*, 80 Federal Register 124 (29 June 2015).
- Hruby, T. 2014. *Washington State Wetland Rating System for Western Washington – 2014 Update*. Washington State Department of Ecology Publication #04-06-025.
- LiDAR Bare Earth ASCII [computer file]. (2005). US Department of Interior. Available: Puget Sound LiDAR Consortium, Seattle, WA
<http://pugetsoundlidar.ess.washington.edu/index.htm> [September 28th, 2016].
- Munsell Color. 2000. *Munsell Soil Color Charts*. New Windsor, NY: Gretagmacbeth.
- U.S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-13. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Fish & Wildlife Service (USFWS). Electronic Reference. National Wetlands Inventory. <<http://www.wetlandsfws.er.usgs.gov/NWI/index.html>>. Website accessed October 2016.
- U.S.D.A. Natural Resource Conservation Service (NRCS). 2008. *Hydrogeomorphic Wetland Classification System: An Overview and Modification to Better Meet the Needs of the Natural Resources Conservation Service*. United States Department of Agriculture Technical Note, #190-8-76.
- U.S.D.A. Natural Resource Conservation Service (NRCS). Electronic Reference. Cowlitz County Area. <http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html>. Website accessed October 2016.

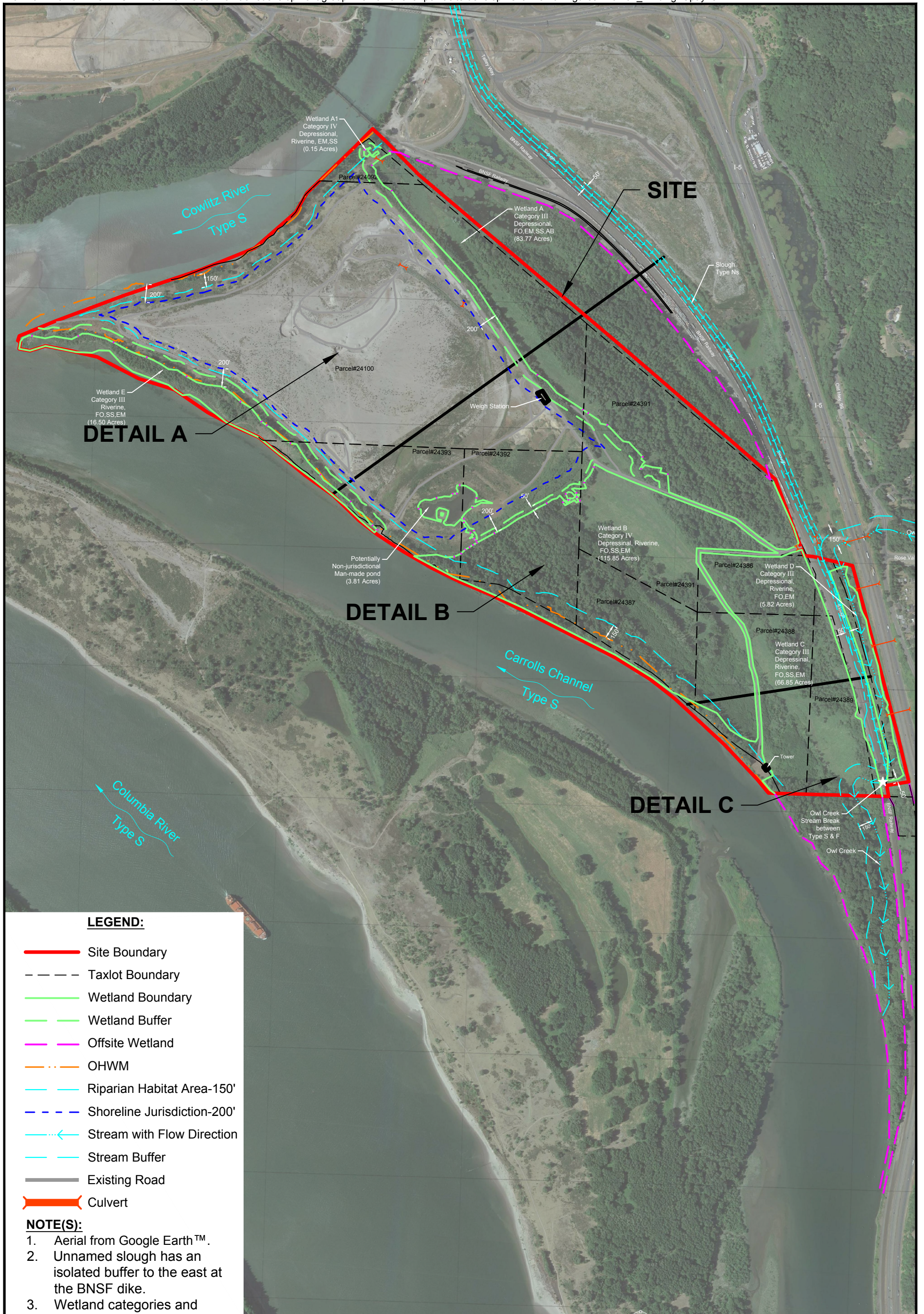
U.S.D.A. Natural Resources Conservation Service (NRCS). Electronic Reference. Hydric Soils List for Washington. <<http://soils.usda.gov/use/hydric/lists/state.html>>. Website accessed October 2016.

Washington Department of Fish and Wildlife (WDFW). Electronic Reference. SalmonScape. <http://apps.wdfw.wa.gov/salmonscape/>. Website accessed October 2016.

Washington Department of Fish and Wildlife (WDFW). Electronic Reference. PHS on the Web. <http://wdfw.wa.gov/mapping/phs>. Website accessed October 2016.

Washington Department of Natural Resources (WDNR). Electronic Reference. Forest Practices Application Review System. <https://fortress.wa.gov/dnr/protectiongis/fpamt/index.html#>. Website accessed October 2016.

Washington State Department of Ecology. Electronic Reference. Water Quality Assessment and 303(d) List. <http://www.ecy.wa.gov/programs/wq/303d/index.html>. Website accessed October 2016.

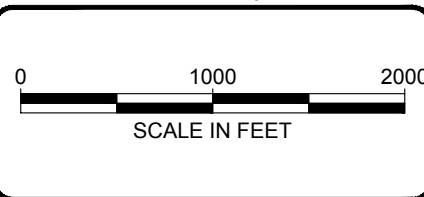


LEGEND:

- Site Boundary
- - - Taxlot Boundary
- Wetland Boundary
- - - Wetland Buffer
- Offsite Wetland
- · - · OHWM
- Riparian Habitat Area-150'
- - - Shoreline Jurisdiction-200'
- > Stream with Flow Direction
- Stream Buffer
- Existing Road
- Culvert

NOTE(S):

1. Aerial from Google Earth™.
2. Unnamed slough has an isolated buffer to the east at the BNSF dike.
3. Wetland categories and buffer widths are preliminary.



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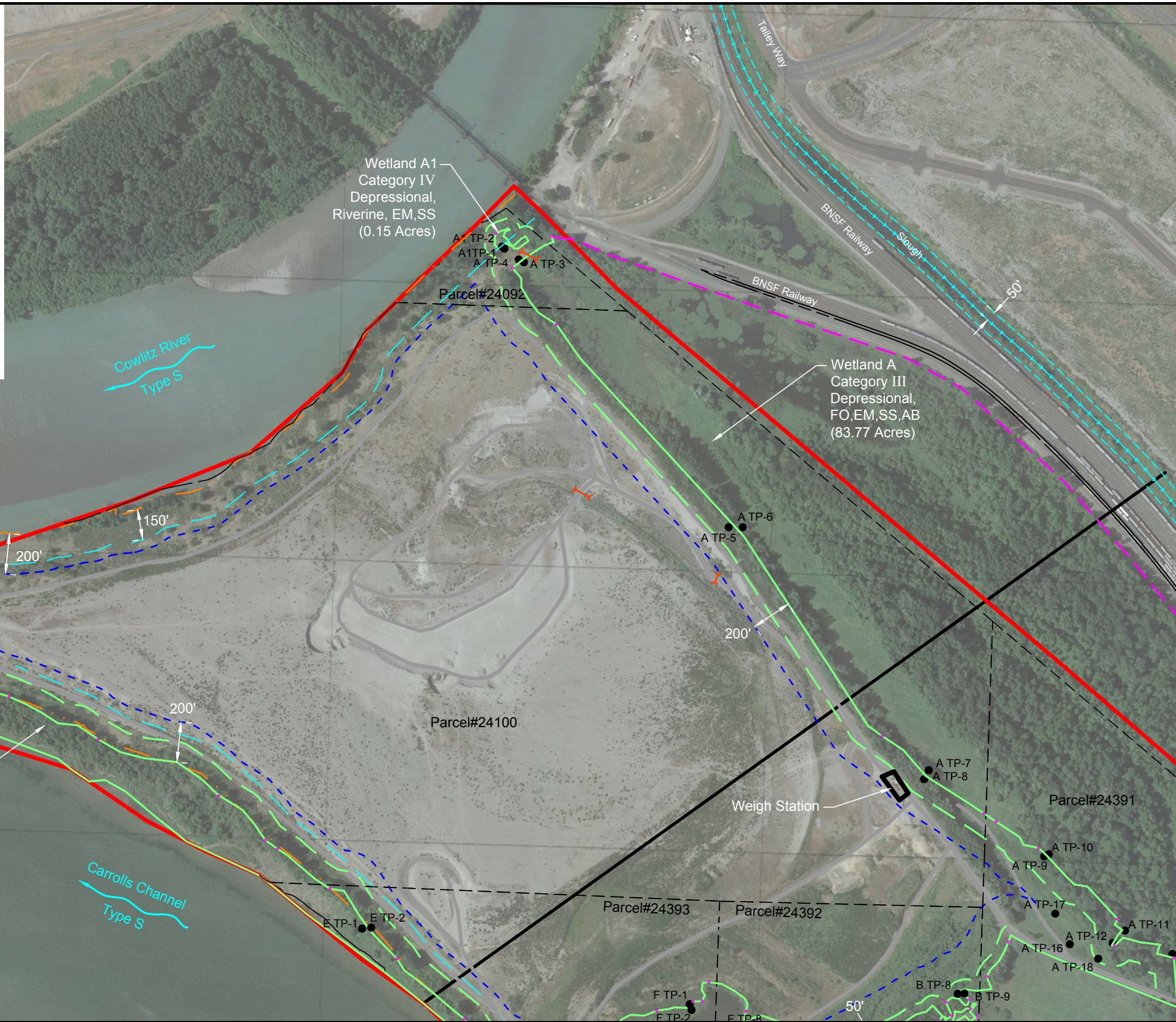
DATE: 7/31/17
 DWN: CDP
 REQ. BY: KT
 PRJ. MGR: TH
 CHK:
 PROJECT NO:
 2404.01

Figure 2
SITE OVERVIEW MAP
 Anchor Point Long Term Planning Preliminary Site Assessment
 TransDevelopment Group
 City of Kelso, Cowlitz County, Washington
 Section 14, Township 7N, Range 2W, W.M.

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LEGEND:

- Site Boundary
- - - Taxlot Boundary
- Wetland Boundary
- - - Wetland Buffer
- Wetland Flag Marker
- Offsite Wetland (approx.)
- - - OHWM
- Riparian Habitat Area-150'
- - - Shoreline Jurisdiction-200'
- ← Stream with Flow Direction
- TP-1 ● Test Plot Location
- Existing Road
- = Culvert

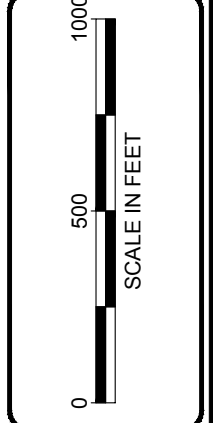


NOTE(S):
 1. Aerial from Google Earth™.

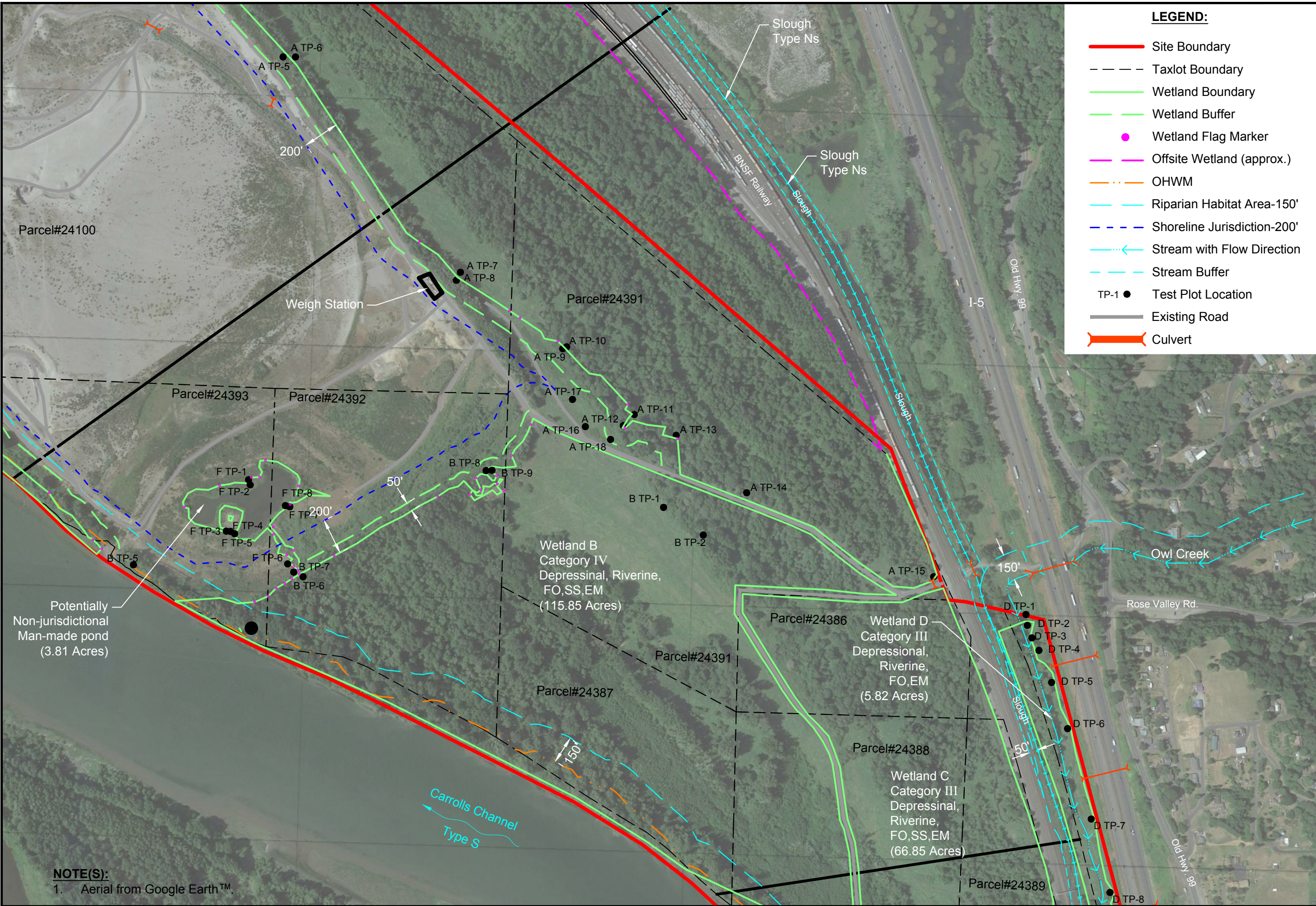
Figure 3
SITE MAP DETAIL-A
 Anchor Point Long Term Planning Preliminary Site Assessment
 TransDevelopment Group
 City of Kelso, Cowlitz County, Washington
 Section 14, Township 7N, Range 2W, W.M.

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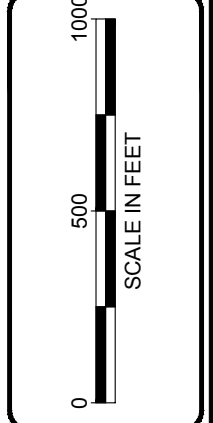
LEGEND:

- Site Boundary
- - - Taxlot Boundary
- Wetland Boundary
- - - Wetland Buffer
- Wetland Flag Marker
- Offsite Wetland (approx.)
- · - · OHWM
- - - Riparian Habitat Area-150'
- - - Shoreline Jurisdiction-200'
- Stream with Flow Direction
- - - Stream Buffer
- TP-1 Test Plot Location
- Existing Road
- Culvert

Figure 4
 SITE MAP DETAIL- B
 Anchor Point Long Term Planning Preliminary Site Assessment
 TransDevelopment Group
 City of Kelso, Cowlitz County, Washington
 Section 14, Township 7N, Range 2W, W.M.

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NOTE(S):
 1. Aerial from Google Earth™.

Parcel#24100

Weigh Station

Parcel#24391

Parcel#24393

Parcel#24392

Wetland B
 Category IV
 Depressional, Riverine,
 FO,SS,EM
 (115.85 Acres)

Parcel#24386
 Wetland D
 Category III
 Depressional,
 Riverine,
 FO,EM
 (5.82 Acres)

Parcel#24387

Parcel#24388
 Wetland C
 Category III
 Depressional,
 Riverine,
 FO,SS,EM
 (66.85 Acres)

Parcel#24389

Potentially
 Non-jurisdictional
 Man-made pond
 (3.81 Acres)

Carrolls Channel
 Type S

Slough
 Type Ns

BNSF Railway
 Slough

I-5

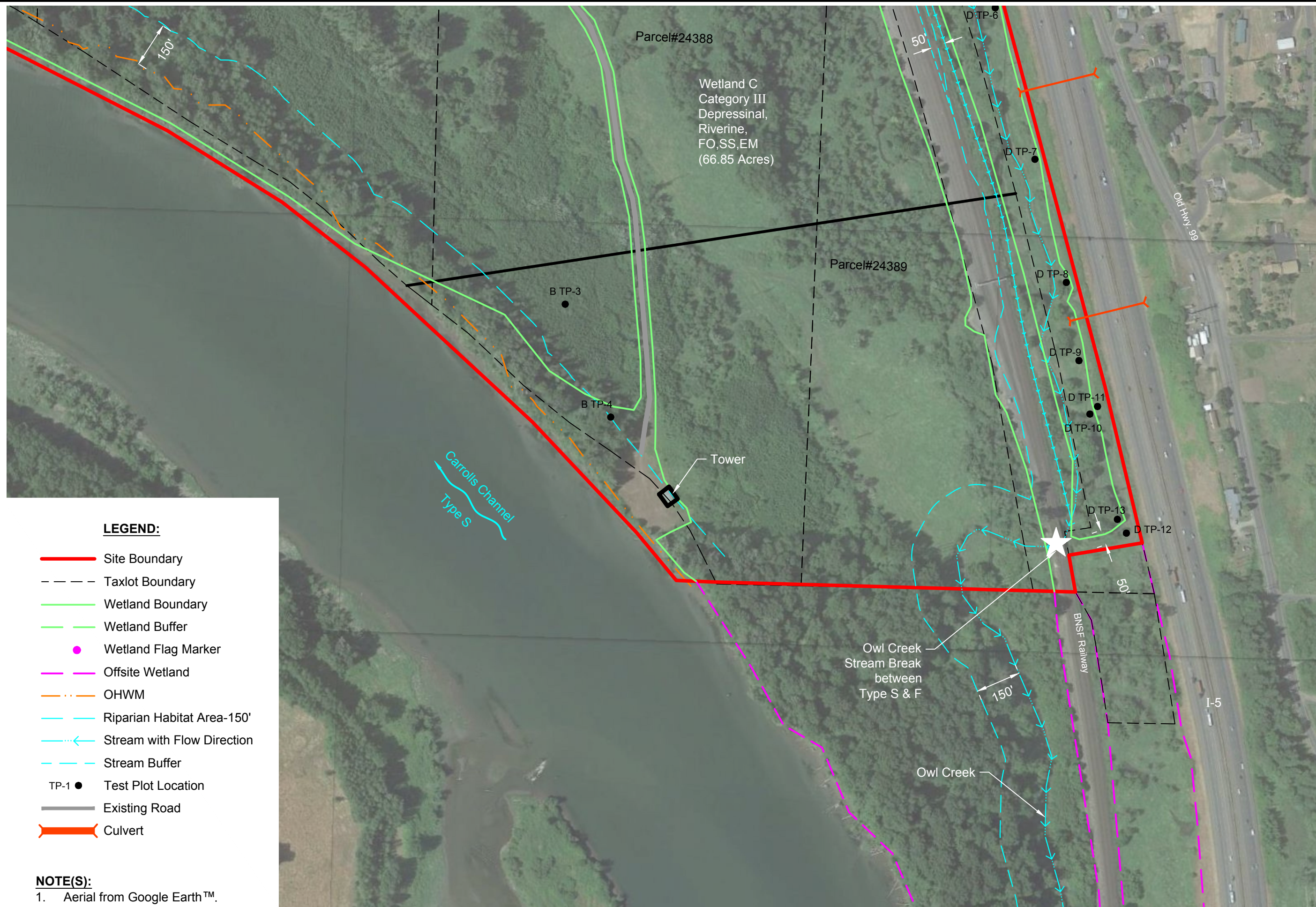
Old Hwy 99

Owl Creek

Rose Valley Rd.

Old Hwy 99

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LEGEND:

- Site Boundary
- - - Taxlot Boundary
- Wetland Boundary
- - - Wetland Buffer
- Wetland Flag Marker
- - - Offsite Wetland
- · - · - OHWM
- - - Riparian Habitat Area-150'
- - - Stream with Flow Direction
- - - Stream Buffer
- TP-1 ● Test Plot Location
- Existing Road
- ⇄ Culvert

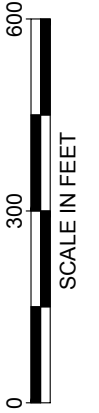
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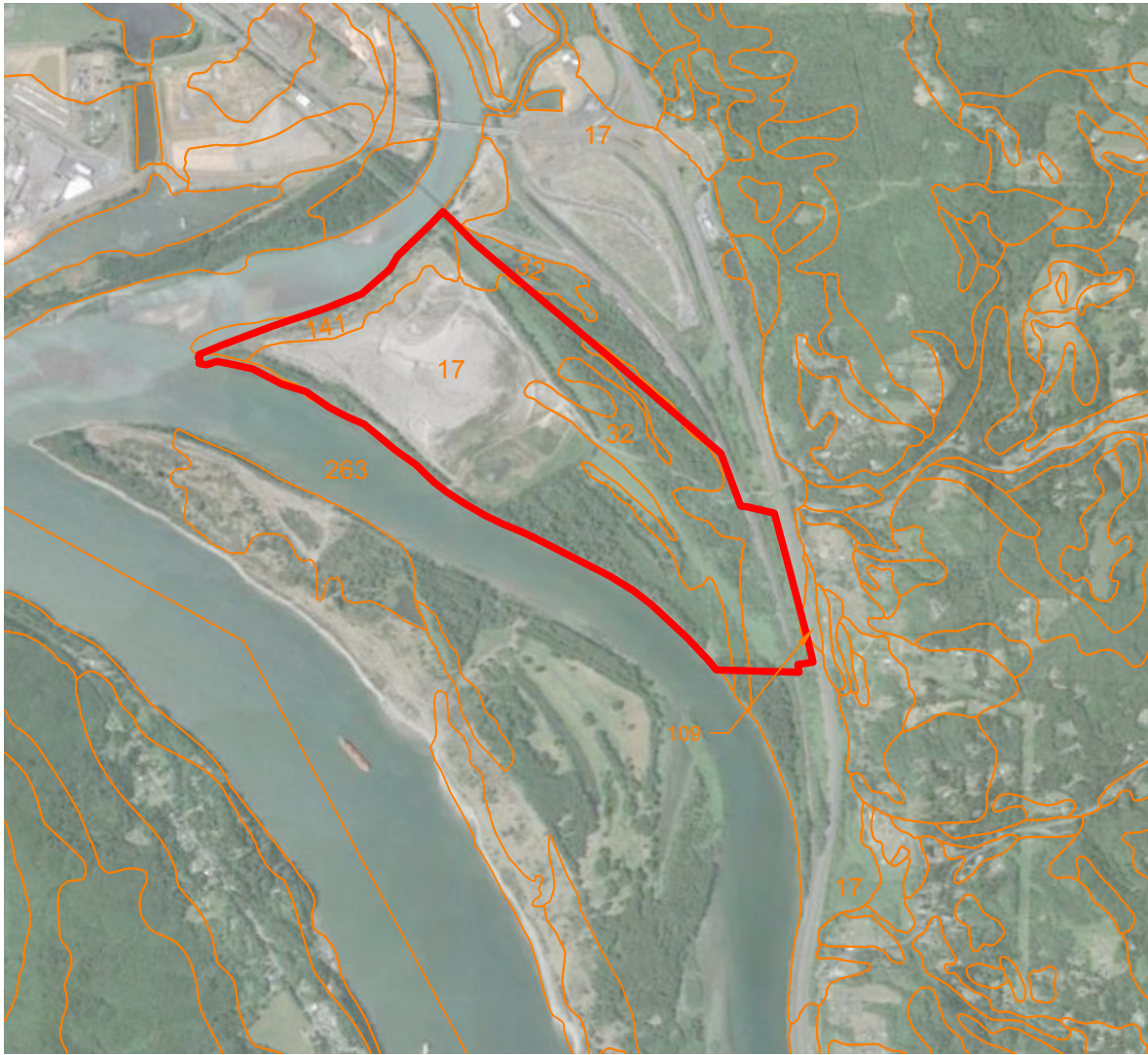
1. Aerial from Google Earth™.

Figure 5
 SITE MAP DETAIL- C
 Anchor Point Long Term Planning Preliminary Site Assessment
 TransDevelopment Group
 City of Kelso, Cowitz County, Washington
 Section 14, Township 7N, Range 2W, W.M.

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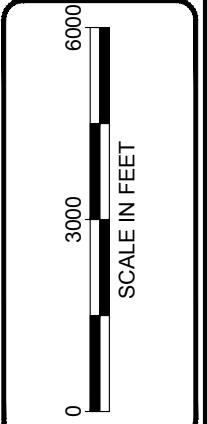


LEGEND:

- 17** Caples silty clay loam, 0 to 3 percent slopes. **Hydric.**
- 32** Clato silt loam, 0 to 3 percent slopes. Not hydric.
- 109** Lithic Haplumbrepts, 50 to 100 percent slopes. Not hydric.
- 141** Newberg fine sandy loam, 0 to 3 percent slopes. Not hydric.

NOTE(S):

1. Map provided on-line by NRCS at web address:
<http://websoilsurvey.nrcs.usda.gov/app/>

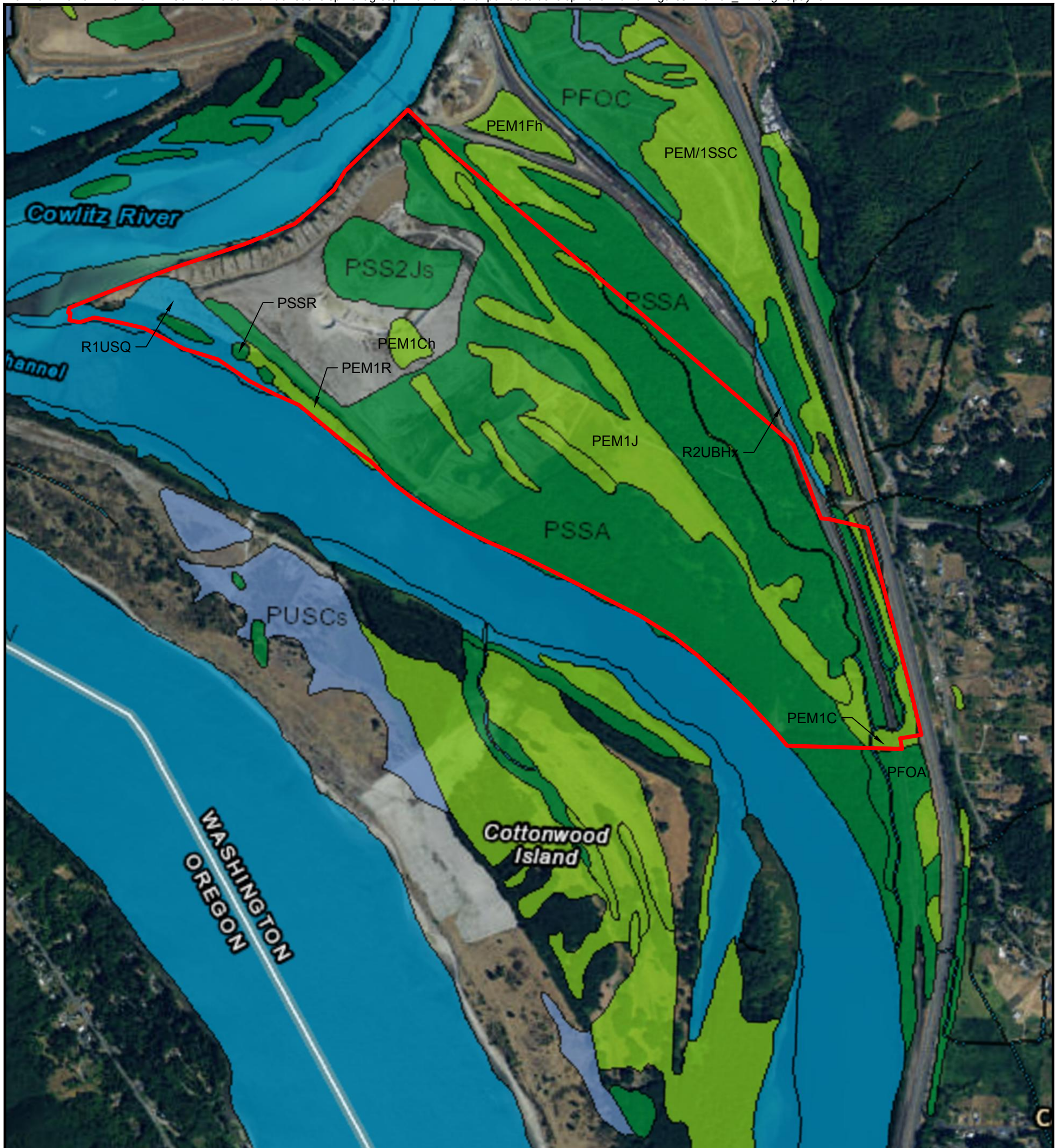


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Land Services**

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Figure 6
SOIL SURVEY MAP
Anchor Point Long Term Planning Preliminary Site Assessment
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City of Kelso, Cowlitz County, Washington
Section 14, Township 7N, Range 2W, W.M.



Mapped wetlands indicated onsite by US Fish & Wildlife Service.

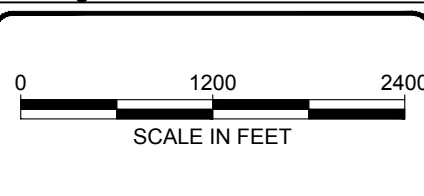
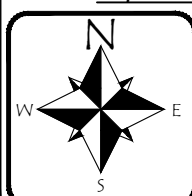
LEGEND:

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Pond
- Lake
- Riverine
- Other

- PEM1/SSC** Palustrine, emergent, persistent, scrub-shrub, seasonally flooded.
- PEM1Fh** Palustrine, emergent, persistent, semi-permanently flooded, diked/impounded.
- PEM1J** Palustrine, emergent, persistent, intermittently flooded.
- PEM1C** Palustrine, emergent, persistent, seasonally flooded.
- PEM1R** Palustrine, emergent, persistent, seasonally flooded-tidal.
- PEM1Ch** Palustrine, emergent, persistent, seasonally flooded, diked/impounded.
- PFOC** Palustrine, forested, seasonally flooded.
- PSSR** Palustrine, scrub-shrub, seasonally flooded, tidal.
- PSS2Js** Palustrine, scrub-shrub, needle-leaved deciduous, intermittently flooded, spoil.
- PSSA** Palustrine, scrub-shrub, temporary flooded.
- PFOA** Palustrine, forested, temporary flooded.
- R1USQ** Riverine, tidal, unconsolidated shore, regularly flooded.
- R2UBHx** Riverine, lower perennial, unconsolidated bottom, permanently flooded, excavated.

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address:
<http://www.fws.gov/wetlands/data/index.html>




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Figure 7
NATIONAL WETLANDS INVENTORY MAP
 Anchor Point Long Term Planning Preliminary Site Assessment
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