



HABITAT MANAGEMENT AND BUFFER ENHANCEMENT PLAN

Revised August 2, 2022



*Mid I-5 Industrial Park
Kelso, Washington*

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INTRODUCTION

Ecological Land Services, Inc. (ELS) completed this Habitat Management and Buffer Enhancement Plan (Plan) on behalf of Trammell Crow Portland Development, Inc. for the proposed Mid 1-5 Industrial Park, a light industrial development project, that will occur on property within the City of Kelso. The subject property, previously referred to as the Segale Properties, totals approximately 120 acres and consists of Cowlitz County Tax Parcels 24095, 24385, and 439101. The parcels are located at the end of Talley Way in Kelso, Cowlitz County, Washington within Sections 12 and 13, Township 7N, Range 2W, W.M., (Figures 1 and 2). The study area for the project totals just over 93 acres and includes all of parcel 24095, extending into the northern portion of parcel 24385 (Figures 3 and 4). An assessment and delineation of critical areas within the study area was completed by ELS in late 2021. Findings are summarized in the *Critical Areas Report for the Mid 1-5 Industrial Park (CAR)* prepared by ELS on Revised August 2, 2022. The Kelso Municipal Code (KMC) *Chapter 17.26.060 Fish and Wildlife Habitat Conservation Areas*, Section 17.26.060.C.2 states that a habitat management plan shall be required if a regulated activity is within 250 feet of a Classification 1 habitat area.

PROJECT DESCRIPTION

PROPOSED DEVELOPMENT

Proposed development of the site includes construction of a 1,406,885 square foot industrial building with loading dock, parking for employees and semi-trucks, and interior access ways around the building to accommodate semi-truck maneuvering for loading, offloading, a circular delivery pattern, and fire safety (Figure 5). There will be approximately 5 acres of new impervious surface and approximately 79 acres of overall ground disturbance. Stormwater will be collected and treated in an underground facility where it will then be fully infiltrated. A portion of the parking area will be designated for emergency stormwater overflow storage. Stormwater will not be released to the wetland that borders the property to the east, south, and west.

SITE DESCRIPTION

The study area consists of approximately 15- to 20-foot depth of dredged material placed following the eruption of Mt. Saint Helens in 1980. The filled area is generally flat with side slopes at an approximate 1:1 slope. A utility easement extends along the eastern study area boundary with access points to utility poles approximately 10 feet lower in elevation than the top of the dredged material. Fill around the utility poles is gravel dominated and the easement is regularly maintained. Low-lying areas surrounding the dredged material are within the 100-year floodplain of the Cowlitz, Coweeman, and Columbia rivers. The confluence of the Coweeman and Cowlitz rivers is approximately 1,000 feet north of the study area, and the confluence of the Cowlitz with the Columbia rivers is located approximately one mile to the west.

Vegetation beyond on the dredged material slopes began establishing when dredge spoil placement ceased in approximately 1990 and is dominated by red alder (*Alnus rubra*) saplings and trees, Scot's broom (*Cytisus scoparius*), and mosses. Side slopes along the eastern boundary are predominantly vegetated by blackberries (*Rubus spp.*) with other native shrubs intermingled. Utility pole maintenance access points consist of maintained grasses. The southern fill slope is

similarly dominated by blackberries and other native shrubs. A small, forested area lies along the base southwestern fill slope, dominated by mature red alder with a moderately dense understory typical of floodplain forests. The fill slope north of this area is dominated by blackberries, Scot’s broom, and grasses with native shrubs in a narrow strip near the base.

A large Category II wetland system is located along the base of the fill slope along the eastern, western, and southern perimeters of the study area. The wetland is confined to a channel on the eastern perimeter between the dredged material and the I-5 on-ramp and is also confined to a channel on the western perimeter between the dredged material and BNSF railroad berm. The western wetland channel connects to the Coweeman River approximately 1,000 feet north of the study area, and the eastern wetland channel dead-ends near the northeast property boundary. The western channel was essentially left unfilled as a dewatering channel connection with the Coweeman River to the north. The eastern wetland channel was likely similarly left open as a dewatering channel or as stormwater conveyance for I-5 and State Route (SR) 432. The wetland unit extends south connecting with Owl Creek approximately 3,800 feet south of the study area.

Salmonids are present within Owl Creek and the Coweeman River so the wetland may provide off-channel habitat for juvenile salmonids and other fish species and is therefore also considered a Classification 1 habitat area (KMC 17.26.060.). Wetland characteristics are summarized in Table 1 below with additional details in the CAR (ELS 2022a).

Table 1. Wetland Summary.

Wetland	Size in Study Area	Local Designation ¹ /Category ² /HGM Class ³ /Cowardin Class ⁴	Habitat Score ⁵	Buffer Width ⁶
A	7.58 acres	Classification 1 Habitat Area/ Category II/ Depressional and Riverine / Aquatic Bed, Emergent, and Scrub-Shrub	7	50 feet
¹ KMC 17.26.060 ² Hruby 2014 ³ NRCS 2008 ⁴ Cowardin et al. 1979 ⁵ Washington State Wetland Rating System for Western Washington: 2014 Update ⁶ KMC 17.26.050.D.7				

HABITAT MANAGEMENT PLAN

Section 17.26.060.C.2 of the KMC states that a habitat management plan shall be required if a regulated activity is within 250 feet of a Classification 1 habitat area or identified within one thousand feet of a point location (nests, dens, etc.). KMC 17.26.060.D lists the required information for habitat management plans. Items 1 through 8 in Section 17.26.060.D are listed below in italics followed by a discussion demonstrating compliance with the code in regular font:

At a minimum, the habitat management plan shall typically contain the following information. Technical justification shall be provided where the qualified expert does not deem any information applicable.

1. A description of state or federally designated endangered, threatened or sensitive fish or wildlife species, or species of local importance, onsite or adjacent to the subject property within a distance typical of the normal range of the species.

Table 2 below lists state and federally listed species, priority habitats, and habitats/species of local importance that are mapped on or near the site. The list was determined through a reconnaissance of habitat onsite, review of current and historic aerial photographs, and an assessment of species listing websites prepared by National Marine Fisheries Service (NMFS 2020), U.S. Fish and Wildlife Service (USFWS 2022), Washington Department of Fish and Wildlife (WDFW 2021), and Washington Department of Natural Resources (WDNR 2022).

Table 2. Federal and State Designated Endangered, Threatened or Sensitive Fish or Wildlife Species, or Species of Local Importance, Present on or Near the Site.

Species/Priority Habitat	State Status	Federal Status	Preferred Habitat In Vicinity?
<i>Fish</i>			
Chinook Salmon (<i>Onchorhynchus tshawytscha</i>)			
Lower Columbia River Chinook ESU ²	Candidate	Threatened	Yes
Chum Salmon (<i>Onchorhynchus keta</i>)			
Columbia River Chum Salmon ESU	Candidate	Threatened	Yes
Coho Salmon (<i>Onchorhynchus kisutch</i>)			
Lower Columbia River Coho Salmon ESU	Candidate	Threatened	Yes
Steelhead (<i>Onchorhynchus mykiss</i>)			
Lower Columbia River Steelhead DPS ³	Threatened	Threatened	Yes
Eulachon (Columbia River Smelt) Southern DPS (<i>Thaleichthys pacificus</i>)			
	Candidate	Threatened	No
<i>Birds</i>			
Streaked Horned Lark (<i>Eremophila alpestris strigata</i>)			
	Endangered	Threatened	No
Yellow-billed Cuckoo – Western DPS² (<i>Coccyzus americanus</i>)			
	Endangered	Threatened	No
<i>Mammals</i>			
Columbian White-Tailed Deer (<i>Odocoileus virginianus leucurus</i>)			
	Endangered	Endangered	
<i>Plants</i>			
Soft-leaved Willow (<i>Salix sessilifolia</i>)			
	Sensitive	None	No
<i>Priority Habitats/Habitats of Local Importance</i>			
Freshwater Wetlands			
Instream			
Riparian			
¹ Washington State Priority Habitats and Species website listing			
² Evolutionarily significant unit			
³ Distinct population segment.			

2. A description of the critical wildlife habitat for the identified species known or expected to be located onsite or immediately adjacent to the subject property.

Owl Creek originates in the hills east and south of the site and is connected to Wetland A at the southern end of the site. Wetland A flows into the Coweeman River near its confluence with the Cowlitz River north of the site. The Cowlitz and Columbia rivers have documented presence of

Chinook, chum, and coho ESUs listed in the table above, with these species listed as presumed present in Owl Creek (WDFW 2022a). All systems have documented presence of the Lower Columbia Steelhead DPS, with the Coweeman River also being listed as rearing habitat for steelhead. These species may utilize Wetland A for migration, rearing, or seasonally for refuge during periods of high water.

Documented occurrences of streaked horned larks are located approximately 2,000 feet west of the project site, west of the railroad tracks (WDFW 2021). Preferred lark habitat includes large expanses of bare or thinly vegetated land with sparse, low-growing vegetation including airport grasslands, remnant prairies, and dredge spoil islands in the lower Columbia River, (WDFW 2022b). While the uplands onsite may have provided suitable lark habitat historically, the ground is now densely covered with various mosses, and contains sparse to dense cover of scrub-shrub and herbaceous vegetation.

Preferred habitat for the yellow-billed cuckoo includes deciduous riparian woodland, especially dense stands of cottonwood and willow along the Columbia River (WDFW 2022c). This habitat may be present within the wetland unit farther south away from project activities and to the west/southwest of the project site in riparian forested areas along the Columbia River. Large, dense stands of deciduous forest are not present in the study area or within 250 feet of activities. There is a small stand of deciduous trees along the southwest corner of the project site that will be avoided.

Columbian white-tailed deer are known to occur south and west of the project site (WDFW 2021). Their suitable habitat includes lightly wooded bottomlands, grasslands, and pastures along the Columbia River (WDFW 2022d). Suitable habitat for the Columbian white-tailed deer may occur within the wetland unit farther south, away from project activities as the study area would not be considered lightly wooded or grassland.

Soft-leaved willow habitat consists of wet lowland habitats, including silty or sandy riverbanks, riparian forests, dredge spoils, sandy beaches and may occur onsite along the fill slope edge (WNHP 2022); however, this species would have had to become established after placement of the dredge spoils. Project activities will not occur within 50 feet of the wetland boundary, which includes side slopes of the fill where this species may potentially be located. Soft-leaved willow are not likely to be located on top of the fill where grading activities/disturbance will occur.

3. A site plan that clearly identifies and delineates critical fish and wildlife habitats found onsite or immediately adjacent to the property.

Figures 2 through 4 are the existing conditions and proposed conditions maps showing fish and wildlife habitat on and in the vicinity of the project site.

4. An evaluation of the project's effects on critical fish and wildlife habitat both on and adjacent to the subject property.

A 50-foot buffer has been proposed for the wetland onsite in accordance with KMC 17.26.050.D.7. See also the *Mid I-5 Industrial Park Wetland Buffer Justification Memo* (ELS 2022b). The project will not affect habitat for the yellow-billed cuckoos, streaked horned lark, Columbian white-tailed deer, or soft-leaved willow as these species do not contain suitable

habitat within the area proposed for development/disturbance. Potential effects from noise or activities generated during construction or by the completed project that could extend offsite will not be greater than ambient noise or activity levels from I-5, the railroad, or SR 432, which are immediately adjacent to the site. Stormwater generated by the completed project will be fully treated and infiltrated onsite and will not discharge to the wetland; therefore, will not affect fish that may be present in the wetland or downstream in the Coweeman River, Cowlitz River, or Owl Creek.

Buffer enhancement activities will eventually improve shading to the wetland, will provide large and small woody material to the wetland, create a visual barrier to site development, and improve habitat opportunity for wildlife adapted to urban settings.

5. *A summary of any federal, state, or local management recommendations that have been developed for the critical fish or wildlife species or habitats located at the site.*

Fish and wildlife species or habitats that are located within the study area include various salmonids, freshwater wetlands, and riparian areas. Federal and state management recommendations for salmonids and riparian areas are located in Appendix A. Wetland area recommendations are below.

Recommendations for management of wetland areas from local, state, and federal agencies generally includes avoidance and minimization. The overall project was designed to avoid all permanent impacts to the wetland and buffer. Only temporary grading impacts may occur within the wetland buffer that will be restored to pre-project condition following construction. Additionally, measures listed in *Table 1-B Required measures to minimize impacts to wetlands* in KMC 17.26.050.D will be followed to the greatest extent practical. These measures are fully described in the *Mid I-5 Industrial Park Wetland Buffer Justification Memo* (ELS 2022b).

6. *A statement of measures proposed to preserve existing habitats and restore areas degraded as a result of proposed activities.*

Best management practices (BMPs) will be in place prior to construction including vividly demarcating clearing limits and areas not to be disturbed. Stormwater runoff is not expected during construction due to the excessively drained nature of the dredge spoils.

There may be temporary grading impacts within the 50-foot wetland buffer that will be restored to pre-project condition with a native seed mix and plantings. No permanent impacts will occur within the wetland or buffer. A buffer enhancement plan has been developed and will involve removing invasive species within the 50-foot buffer and installing trees and shrubs to improve the overall buffer habitat. Signage stating “Critical Area and Buffer, Please Retain in Natural State” or similar wording will be posted every 200 feet around the perimeter of the buffer. The buffer enhancement area will be maintained and monitored for five years following plant installation. Buffer enhancement plan details are described below.

7. *A description of proposed measures that mitigate the impacts of the project.*

No permanent impacts are anticipated from the proposed project. Temporary impacts from grading will be restored to pre-project condition with a native seed mix and plantings. A buffer enhancement plan has been developed to ensure consistency with KMC 17.26.050.D.7.

8. *An evaluation of ongoing management practices which will protect critical fish and wildlife habitat after the project site has been fully developed, including proposed monitoring and maintenance programs of the subject property.*

The buffer enhancement area will develop into a native forested and scrub-shrub community that will help screen the wetland from future activities onsite and provide additional wildlife habitat. Signage stating “Wetland Buffer, Please Retain in Natural State” or similar wording will be posted every 200 feet around the perimeter of the buffer to raise awareness of the critical area and deter use by humans. The buffer enhancement area will be maintained and monitored for five years following plant installation to ensure establishment. Buffer enhancement plan details are described below.

BUFFER ENHANCEMENT PLAN

Enhancement of the 50-foot buffer is proposed to ensure consistency with KMC 17.26.050.D.7. The *Mid I-5 Industrial Park Wetland Buffer Justification Memo* (ELS 2022a) provides rationale for the 50-foot buffer. In particular, the buffer enhancement plan addresses 17.26.050.D.3 which states, “The standard buffer widths assume that the buffer is vegetated with a native plant community appropriate for the ecoregion. If the existing buffer is unvegetated, sparsely vegetated, or vegetated with invasive species that do not perform needed functions, the buffer should either be planted to create the appropriate plant community, or the buffer should be widened to ensure that adequate functions of the buffer are provided.” The existing buffer is generally sparsely vegetated by a combination of native and invasive species that have established since placement of dredge spoils following the 1980 eruption of Mt. Saint Helens ended in approximately 1990 as described above. Buffer enhancement will consist of invasive species removal followed by planting of native trees and shrubs adapted to sandy soils, meeting this condition of the code. Enhancement plantings will be maintained and monitored for a 5-year period following installation with annual reports submitted to the City of Kelso.

ENHANCEMENT STRATEGY

The existing 50-foot buffer is vegetated with both native and invasive species. Invasive species, mainly non-native blackberries and Scot’s broom will be removed from the buffer either by pulling out by the roots during grading, spraying, or a combination of both. A spray appropriate for use near wetlands will be used. Following invasive species removal and grading activities, a native seed mix will be applied to disturbed/bare areas containing a developed topsoil layer. Areas that do not contain topsoil are expected to vegetate with mosses, which provide ground cover over most of the site. A variety of trees and shrubs will be planted throughout the buffer amongst existing native vegetation. Planting amounts are based on a 4.25-acre area (approximately half of the 50-foot buffer), which accounts for existing native species coverage and the portion of the eastern buffer within a powerline easement where trees and shrubs cannot be installed. Signage stating, “Critical Area and Buffer – Please Retain in a Natural State”, or similar wording, will be posted every 200 feet along buffer. Buffer enhancement measures are summarized in Table 3 below and will provide an overall ecological lift of buffer function than currently exists onsite.

Table 3. Summary of Proposed Buffer Enhancement Measures.

Location	Proposed Enhancement Measures
Wetland A Buffer	<ul style="list-style-type: none"> ▪ Remove invasive species, namely blackberries and Scot’s broom within 50-foot buffer ▪ Seed bare/disturbed areas within buffer containing a developed topsoil layer ▪ Install native trees and shrubs throughout approximately 4.25 acres of the buffer ▪ Install signage around buffer perimeter

PLANTING PLAN

Invasive species will be removed within the enhancement area followed by applying a native seed mix to disturbed areas containing a developed topsoil layer. Areas that do not contain topsoil will not be seeded and are expected to vegetate with mosses, which have readily established over the ground in most areas. Trees and shrubs will be installed between late fall and early spring following removal of invasive species when the site conditions are wettest, and the plants are dormant. Plantings will be installed with tree protection tubes and will be surrounded by mulch to discourage herbivory and increase the survivability. The overall amount of plantings will be increased by 10 percent to allow for up to 10 percent mortality during the first growing season. Species proposed for installation are adapted to sandy soil conditions.

Table 4 below summarizes the plant species, spacing, and quantities for the enhancement area. Table 5 details the proposed native seed mix. Figure 6 details the enhancement area planting plan.

Table 4. Plant Specifications.

Common Name	Scientific Name	Stock	Spacing (on-center)	Quantity ¹
<i>Enhancement Area 4.25 acres</i>				
Douglas-fir	<i>Pseudotsuga menziesii</i>	Bare-root	15 feet	125
Red alder	<i>Alnus rubra</i>		15 feet	125
Shore pine	<i>Pinus contorta</i>		15 feet	125
Evergreen huckleberry	<i>Vaccinium ovatum</i>		7 feet	550
Kinnikinnick	<i>Arctostaphylos uva-ursi</i>		7 feet	550
Oceanspray	<i>Holodiscus discolor</i>		7 feet	550
Snowberry	<i>Symphoricarpos albus</i>		7 feet	500
Tall Oregon grape	<i>Mahonia aquifolium</i>		7 feet	550
			Total	3075
¹ Includes approximate 10% increase to account for potential Year 1 mortalities. A total of 2,083 plants are needed for a 4.25-acre area at the above listed spacing.				

Table 5. Seed Mix Specifications.

Native Dry Area Seed Mix (from PT Lawn Seed)			
Species	Composition	Rate	Quantity
Native red fescue (<i>Festuca rubra</i>)	50%	1 lb/ 1,000 sq. ft	60 lbs
California brome (<i>Bromus carinatus</i>)	20%		
Blue wildrye (<i>Elymus glaucus</i>)	20%		
Large leaf lupine (<i>Lupinus polyphyllus</i>)	10%		
Total	100%		

PLANTING AND PLANT MATERIAL SPECIFICATIONS

Planting Implementation

- Plant the specified trees and shrubs in late fall to early spring (October-March) in accordance with specifications listed in Table 4. Space the plants somewhat irregularly and in groups to create heterogeneity in the density and appearance.
- Install plants with a tree shovel or comparable tool.
- Remove the plant from the pot and work the roots free from majority of potted soil (if using gallon stock).
- Place the potted or bare-root plant species in the planting holes so that their roots can extend down entirely and do not bend upward or circle inside the hole (no “J” or “U” roots).
- Position the root crowns so that they are at or slightly above the level of the surrounding soil.
- Compact the soil around the planted species to eliminate air spaces.

Bare-root Stock

- Bare-root species will be purchased from a native plant nursery.
- Plants will be protected until installation by being refrigerated, covered with damp burlap, and placed in moist sand, peat, or other method of keeping the roots cool and moist.
- Plants will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- No damaged or desiccated roots or diseased plants will be accepted. In particular, bare-root trees must not have damaged or “J-rooted” taproots.
- Unused bare-root stock must be properly stored at the end of each planting day to prevent the roots from desiccating.
- The environmental consultant will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

Goal: Establish a forested native plant community within the wetland buffer

To accomplish this goal, the following objectives and performance standards are appropriate to ensure the success of the buffer enhancement area.

Objective 1. Remove and control invasive species within the wetland buffer

Performance Standard 1a: Document invasive species removal in the as-built report.

Performance Standard 1b: In all years, non-native blackberries and Scot's broom will not exceed 20 percent aerial cover within enhancement area. Percent cover of invasive species will be documented in annual monitoring reports.

Performance Standard 1c: In all years, county and state-listed noxious weed cover will not exceed 10 percent within enhancement area. Percent cover of county and state-listed noxious weeds will be documented in annual monitoring reports.

Objective 2. Establish a native forested and scrub-shrub community within the wetland buffer

Performance Standard 2a: Install native trees and shrubs as specified in Table 4 of the enhancement plan, overplanting by approximately 10 percent to allow for up to 10 percent mortality in the first year of establishment. Document installed species types and amounts in the as-built report.

Performance Standard 2b: In Year 1, planted species will achieve 90 percent survival as measured in monitoring plots. If dead plants are replaced, this performance standard will be met. Document survival in the annual monitoring report.

Performance Standard 2c: In Year 2, planted species will achieve 85 percent survival as measured in monitoring plots. Document in the annual monitoring report.

Performance Standard 2d: In Year 3, woody species will achieve at least 15 percent cover as measured in monitoring plots. Document in the annual monitoring report.

Performance Standard 2e: In Year 5, planted species will achieve at least 25 percent cover as measured in monitoring plots. Document in annual monitoring report.

Objective 3. Provide long-term protection for enhancement area buffer.

Performance Standard 3a: Signage reading, "Critical Area and Buffer – Please Retain in a Natural State", or similar wording, will be posted every 200 feet along the buffer. Signs will be replaced if they become missing or illegible. This performance standard will be met when signs are documented to be in place in the final monitoring report.

Performance Standard 3b: A conservation covenant or similar legal document will be established on the buffer enhancement area protecting it in perpetuity. This performance standard will be met when the document is recorded at Cowlitz County and included provided to the City of Kelso.

MONITORING, MAINTENANCE, AND CONTINGENCY MEASURES

Monitoring and maintenance of the enhancement area will occur for a 5-year period with annual monitoring and reporting occurring in Years, 1, 2, 3, and 5. Monitoring will be conducted by the applicant unless otherwise assigned. At least 10 monitoring plots approximately 700 square feet

in size will be established following plant installation and species will be identified and counted to determine baseline conditions. Monitoring plot locations will be shown on the as-built report. Additionally, photo stations will be established, one at each monitoring plot and at least three overall stations, to photo-document vegetation establishment over time. Photo station location and the direction in which the picture is taken will also be recorded on the as-built and included in annual monitoring reports.

The goal of monitoring will be to determine if the previously stated performance standards are being met. Monitoring reports will be submitted to the permitting agencies by December 31st of each monitoring year. At minimum, the following items will be included in the report:

- Location map and as-built drawing, including any changes.
- Historic description of project, including dates of plant installation, current year of monitoring, and remedial actions taken (if any).
- Description of monitoring methods.
- Documentation of performance standards and overall development of plant communities.
- Assessment of invasive plant species and recommendations for management.
- Photographs from established photopoints.
- Observations of wildlife, including, amphibians, invertebrates, reptiles, birds, and mammals. If photographs are taken, they will be included.
- Summary of maintenance and contingency measures completed for the past year and proposed for the next year.

Vegetation

Monitoring will occur annually during the growing season, preferably during the same two-week period to better compare data. The following information will be gathered within the established monitoring plots:

- Percent survival of installed species in Years 1 and 2.
- Percent cover of woody species in Years 3 and 5.
- Percent cover of non-native, invasive species in all monitoring years.
- General health of plants in the monitoring plots and overall enhancement area, noting specific problems and potential causes.
- Photographic documentation of vegetative changes over time from established photopoints.

Maintenance

Maintenance will occur during the growing season and will include the following:

- Irrigating planting areas as needed in the dry season for the first three years. Tapering watering in Years 2 and 3.
- Removing competing herbaceous species as needed within a 3-foot radius of planted trees and shrubs and re-apply mulch as needed.
- Weed-eating, spraying, or mowing invasive species as needed during the growing season.
- Replace dead or failed plants as described for the original installation to meet the minimum performance standards.

Contingency Plan

If the performance standards are not met by Year 3, steps will be taken to correct the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

- Identify the cause(s) of the failure or potential failure.
- Identify the extent of the failure or potential failure.
- Implement corrective actions such as irrigating, fertilizing, and replanting.
- Document the activities and include this data in the monitoring reports.
- If a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.
- Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

Funding for corrective actions will be the responsibility of the applicant.

IMPLEMENTATION SCHEDULE

The following schedule reflects anticipated tasks and timing for completing project elements. Some tasks may occur currently or be modified by the contractor.

- Demarcate clearing limits.
- Complete interior site grading.
- Remove invasive species from the enhancement area
- Seed disturbed areas/bare areas within enhancement area.
- Construct project elements
- Install enhancement plantings the following late October through March construction completion.
- Complete as-built report.
- Complete annual maintenance activities June through October.
- Complete annual monitoring activities between July and September.
- Submit annual monitoring report by December 31st.

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

REFERENCES

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FIGURES

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WASHINGTON



Latitude: 46.1036°
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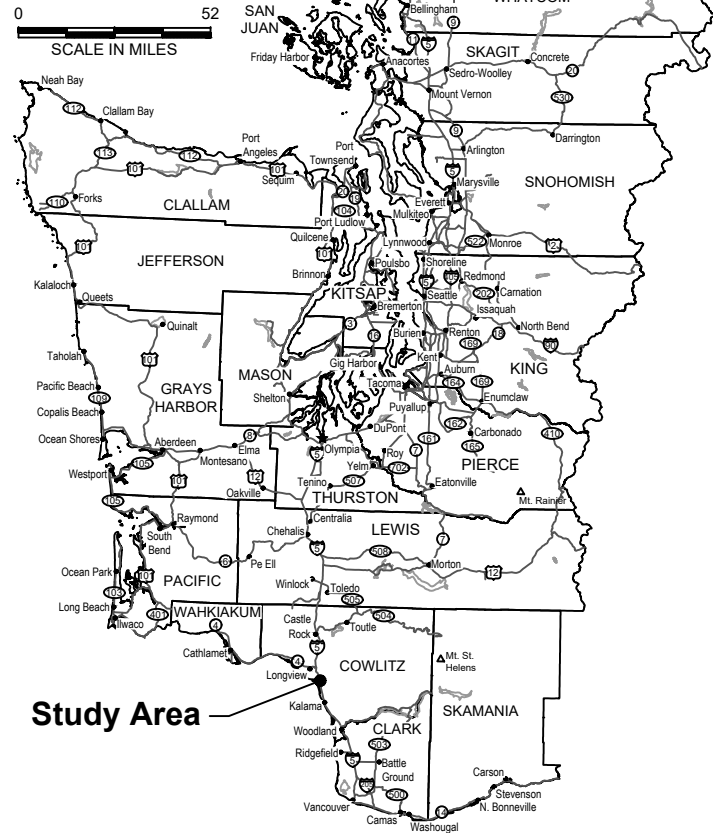
LOCATION MAP

R 2 W

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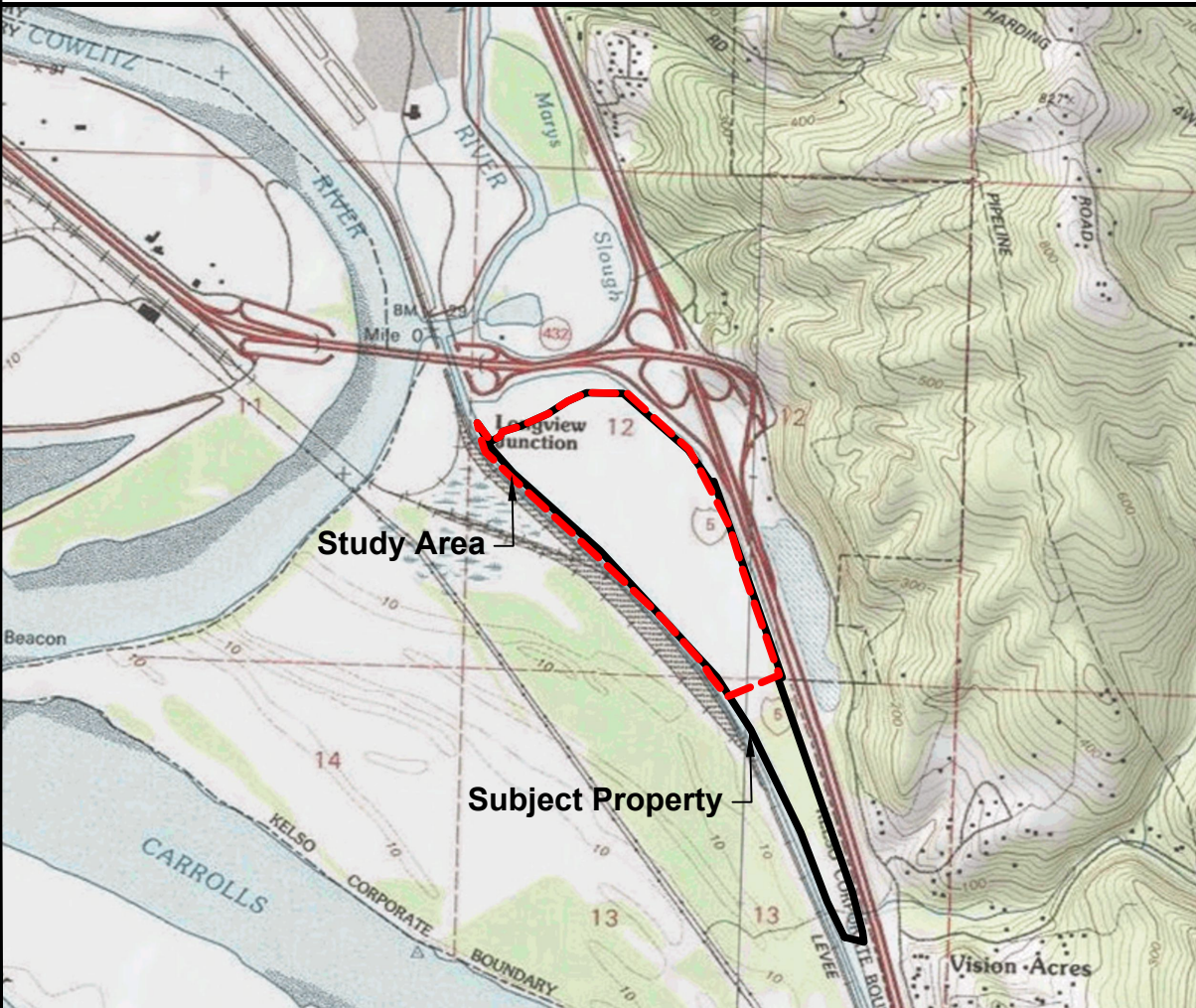
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PROJECT VICINITY MAP



Study Area

NOTE:
Quadrangle topographic map from USGS.



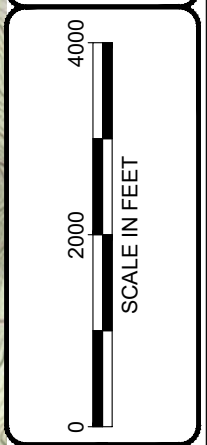
Study Area

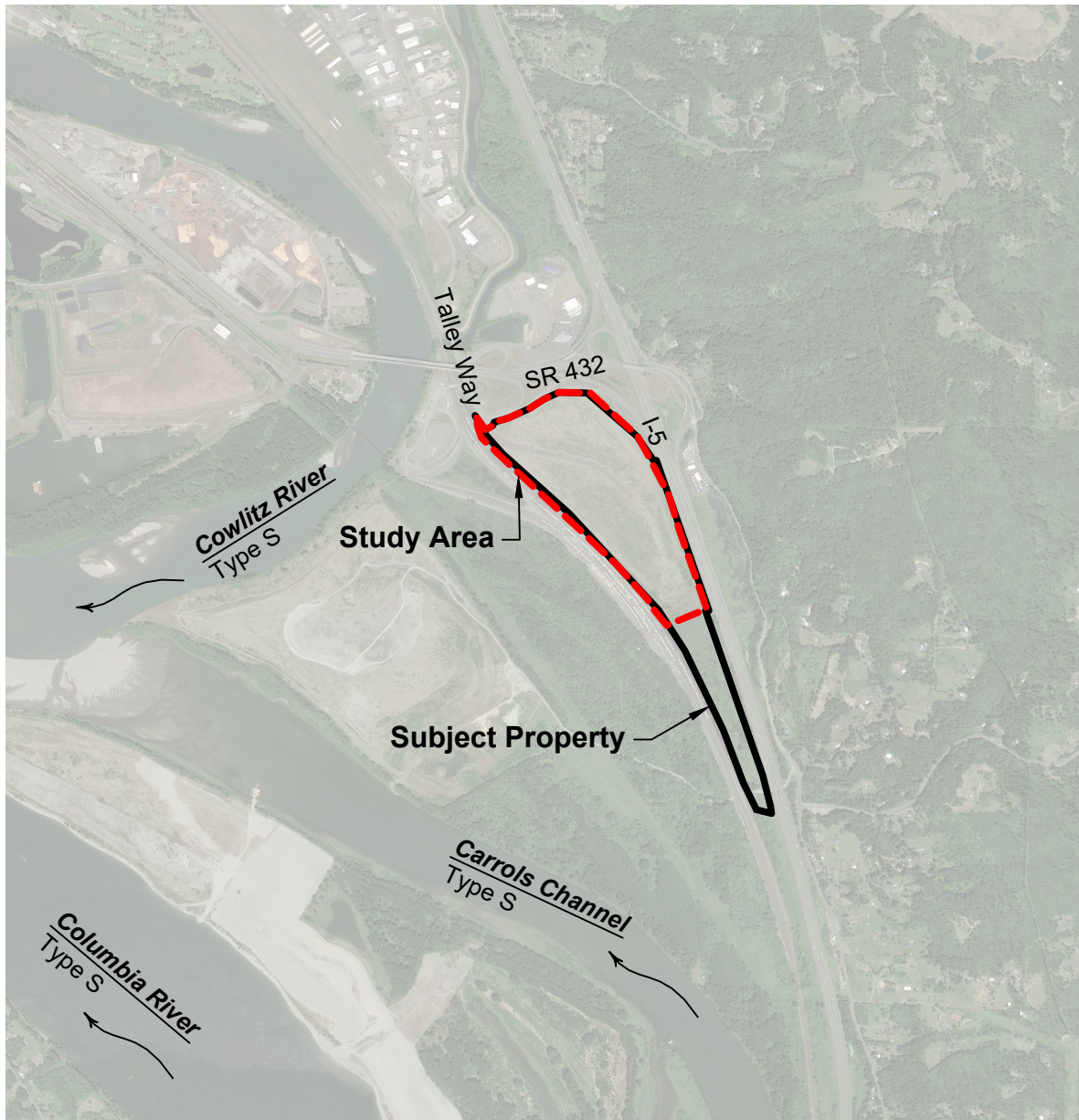
Subject Property

Figure 1
VICINITY MAP
Mid I-5 Industrial Park HMP and Buffer Enhancement Plan
Trammell Crow Portland Development, Inc.
City of Kelso, Cowlitz County, WA
Section 12 & 13, Township 7N, Range 2W, W.M.

DATE: 8/2/22
DWN: JJK
REQ. BY: ST
PRJ. MGR: ST
CHK: ST
PROJECT NO:
3665.02

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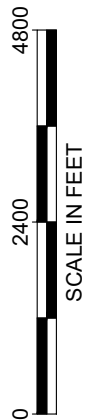
LEGEND:

— Subject Property

— Study Area

NOTE(S):

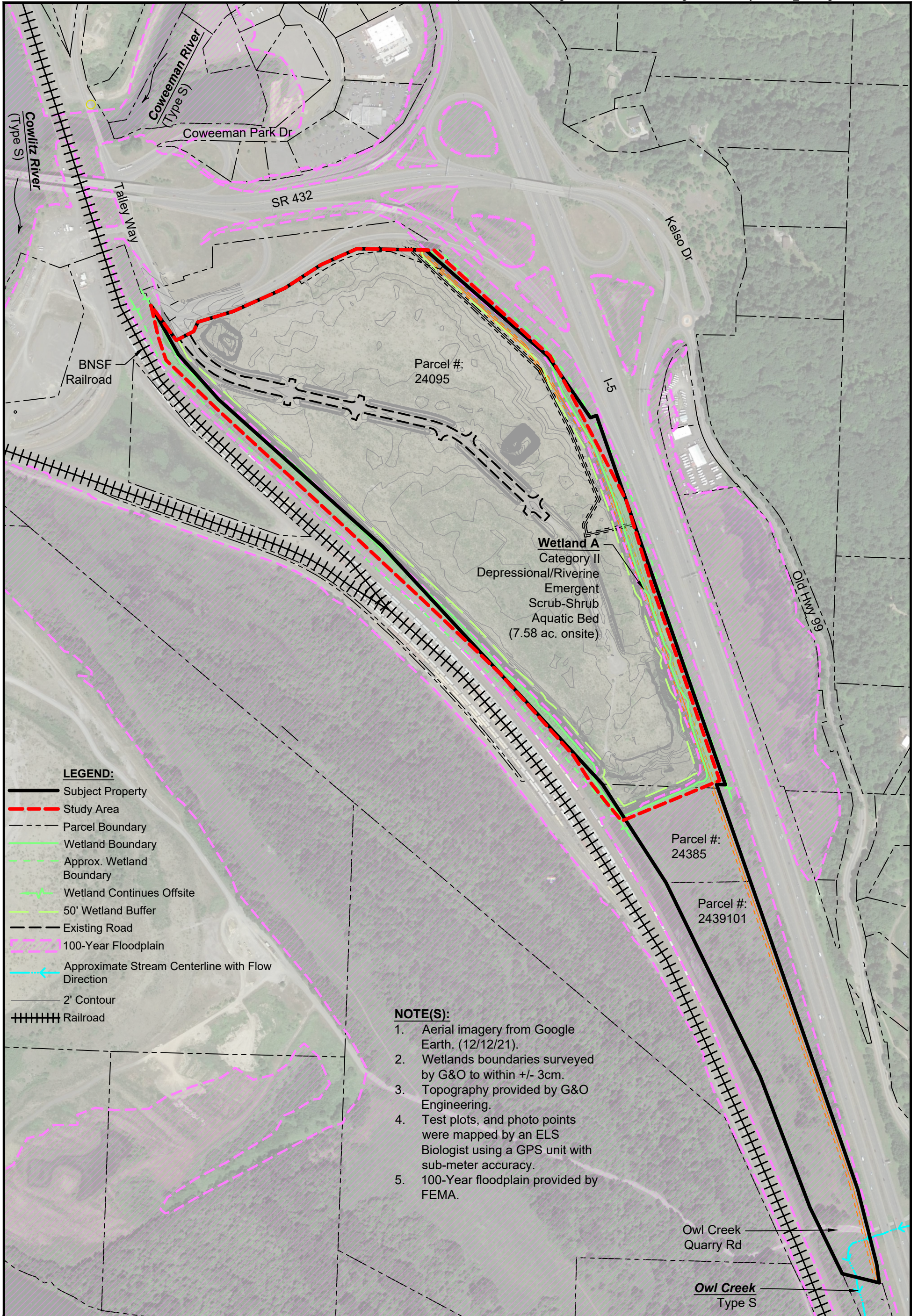
1. Aerial photography (6/18/2021) from Google Earth™.



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Figure 2
AERIAL OVERVIEW
 Mid I-5 Industrial Park HMP and Buffer Enhancement Plan
 Trammell Crow Portland Development, Inc.
 City of Kelso, Cowlitz County, WA
 Section 12 & 13, Township 7N, Range 2W, W.M.

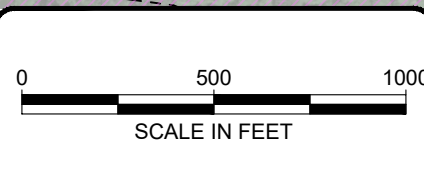
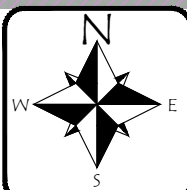


LEGEND:

- Subject Property
- Study Area
- Parcel Boundary
- Wetland Boundary
- Approx. Wetland Boundary
- Wetland Continues Offsite
- 50' Wetland Buffer
- Existing Road
- 100-Year Floodplain
- Approximate Stream Centerline with Flow Direction
- 2' Contour
- Railroad

NOTE(S):

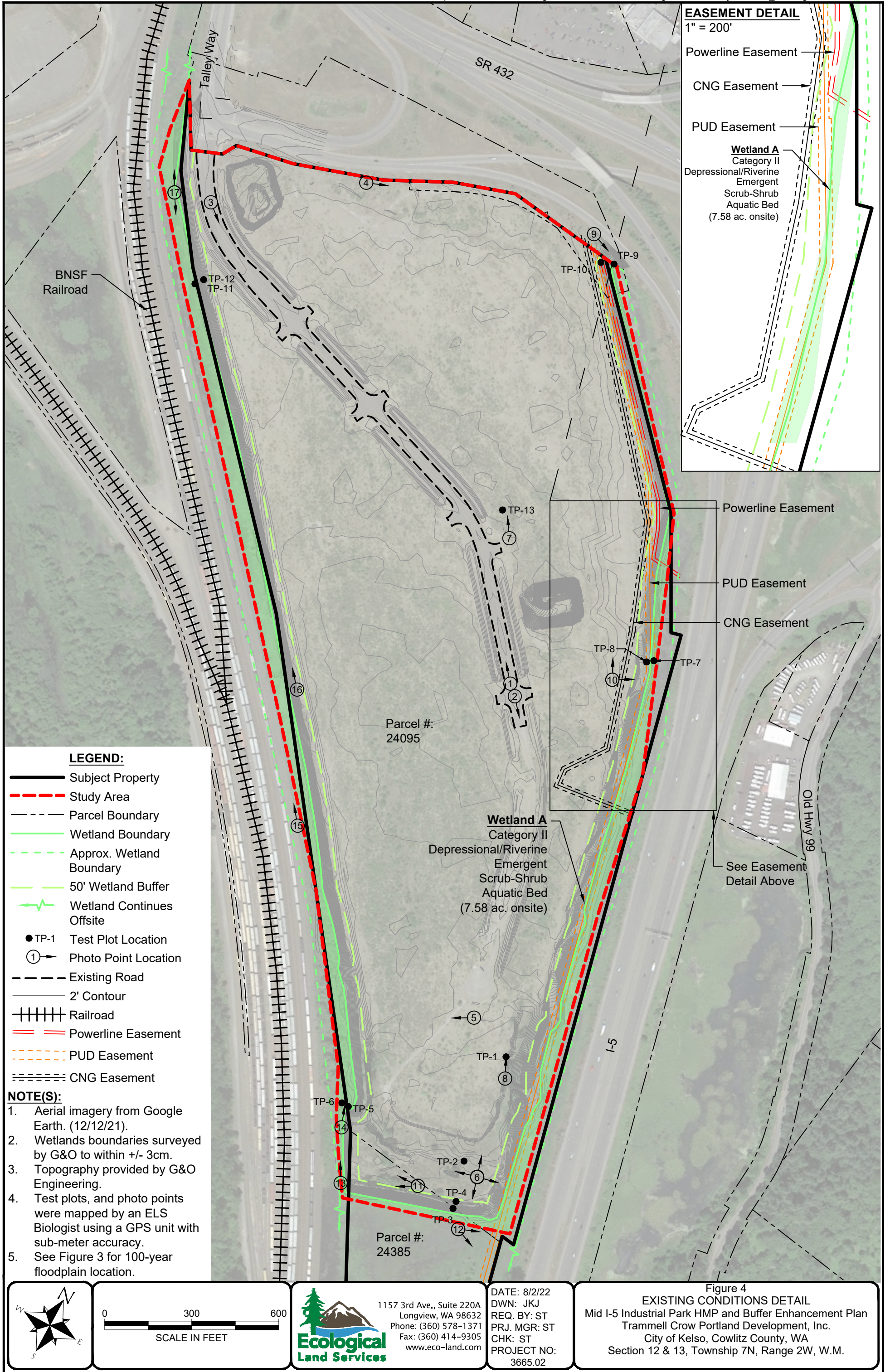
1. Aerial imagery from Google Earth. (12/12/21).
2. Wetlands boundaries surveyed by G&O to within +/- 3cm.
3. Topography provided by G&O Engineering.
4. Test plots, and photo points were mapped by an ELS Biologist using a GPS unit with sub-meter accuracy.
5. 100-Year floodplain provided by FEMA.



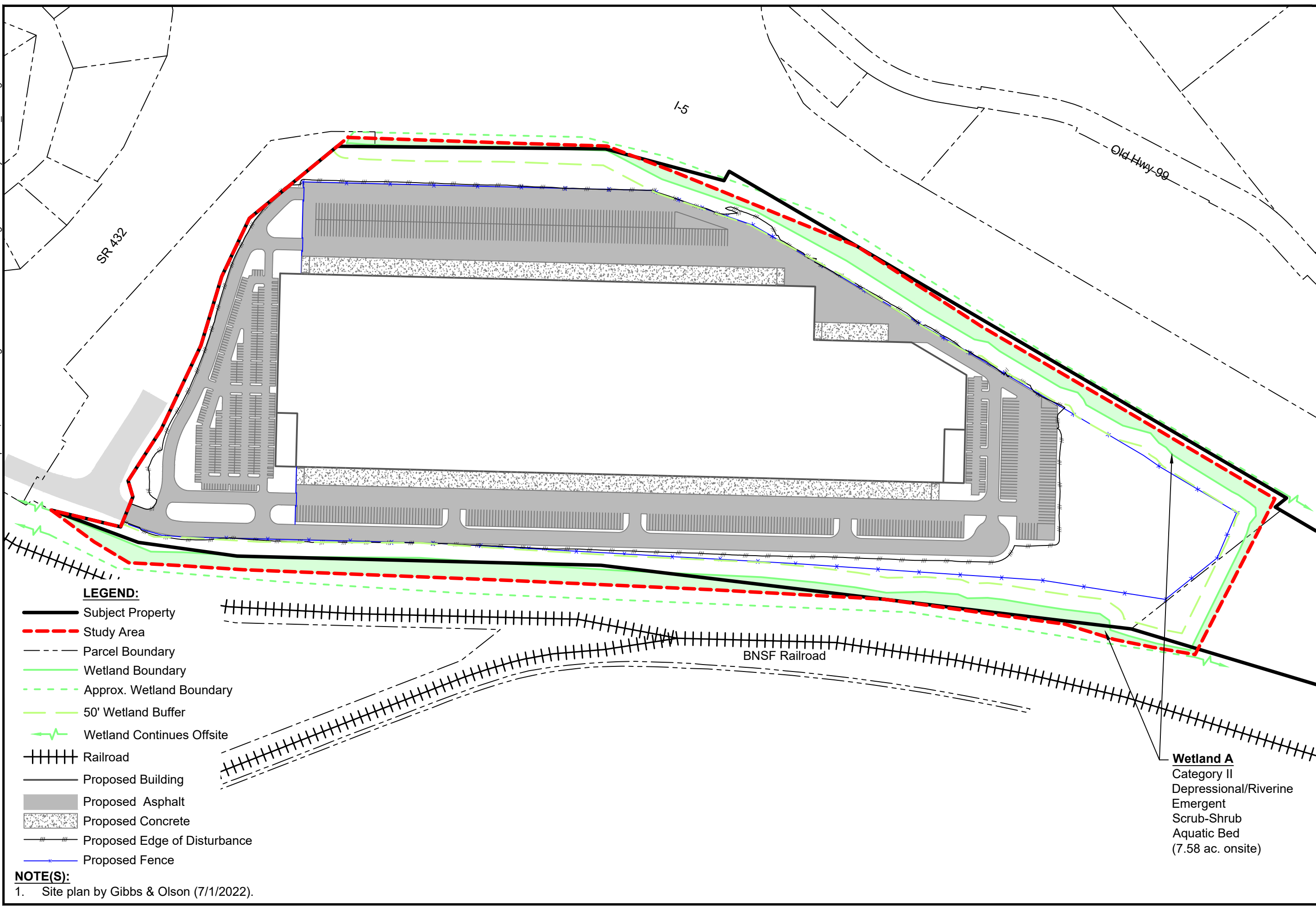
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Figure 3
EXISTING CONDITIONS
 Mid I-5 Industrial Park HMP and Buffer Enhancement Plan
 Trammell Crow Portland Development, Inc.
 City of Kelso, Cowlitz County, WA
 Section 12 & 13, Township 7N, Range 2W, W.M.



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LEGEND:

- Subject Property
- Study Area
- Parcel Boundary
- Wetland Boundary
- Approx. Wetland Boundary
- 50' Wetland Buffer
- Wetland Continues Offsite
- Railroad
- Proposed Building
- Proposed Asphalt
- Proposed Concrete
- Proposed Edge of Disturbance
- Proposed Fence

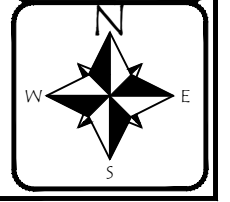
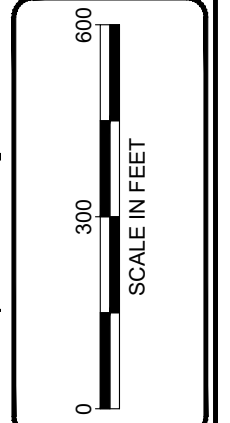
NOTE(S):

1. Site plan by Gibbs & Olson (7/1/2022).

Figure 5
PROPOSED CONDITIONS
 Mid I-5 Industrial Park HMP and Buffer Enhancement Plan
 Trammell Crow Portland Development, Inc.
 City of Kelso, Cowlitz County, WA
 Section 12 & 13, Township 7N, Range 2W, W.M.

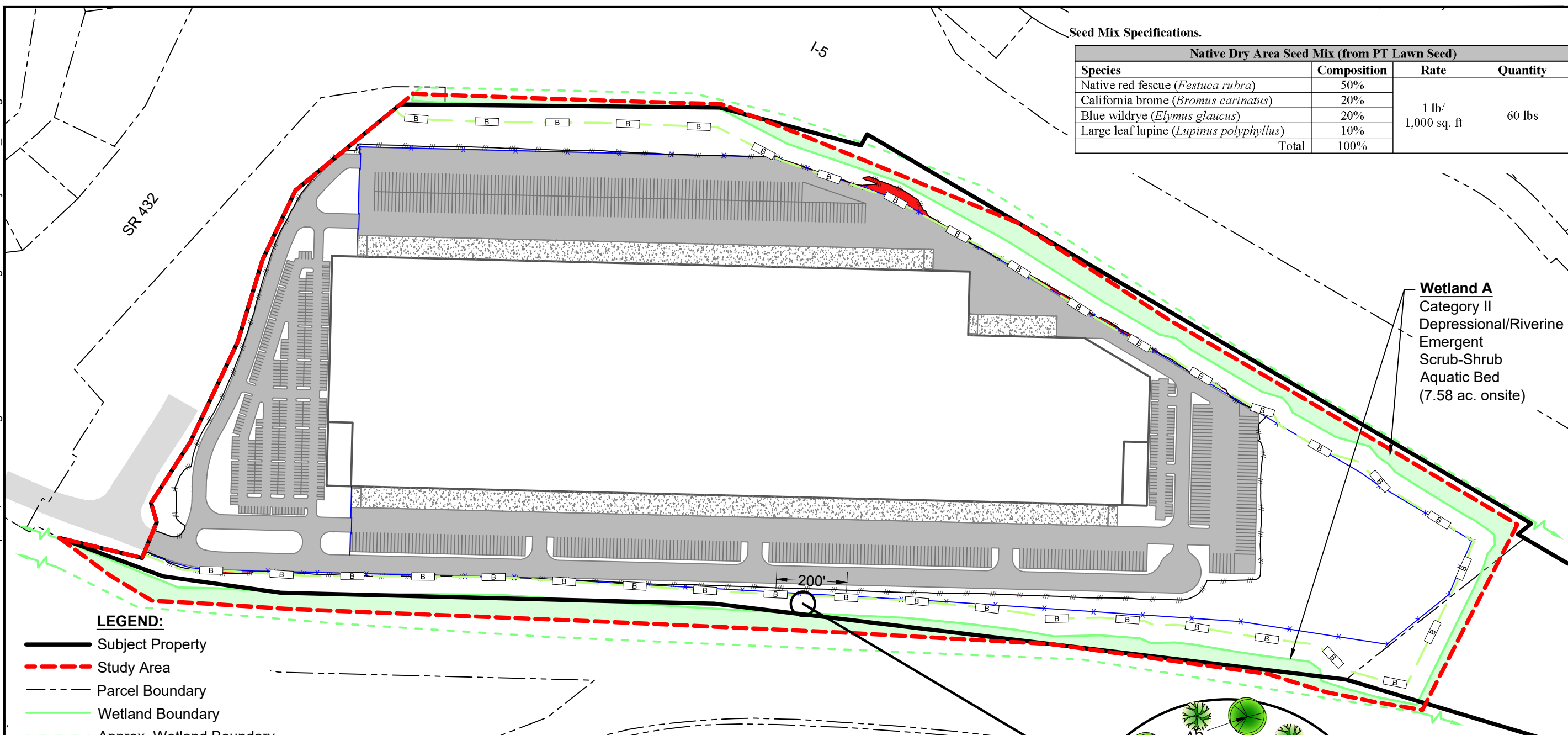
DATE: 8/2/22
 DWN: JJK
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Wetland A
 Category II
 Depressional/Riverine
 Emergent
 Scrub-Shrub
 Aquatic Bed
 (7.58 ac. onsite)

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Seed Mix Specifications.

Native Dry Area Seed Mix (from PT Lawn Seed)			
Species	Composition	Rate	Quantity
Native red fescue (<i>Festuca rubra</i>)	50%	1 lb/ 1,000 sq. ft	60 lbs
California brome (<i>Bromus carinatus</i>)	20%		
Blue wildrye (<i>Elymus glaucus</i>)	20%		
Large leaf lupine (<i>Lupinus polyphyllus</i>)	10%		
Total	100%		

Wetland A
Category II
Depressional/Riverine
Emergent
Scrub-Shrub
Aquatic Bed
(7.58 ac. onsite)

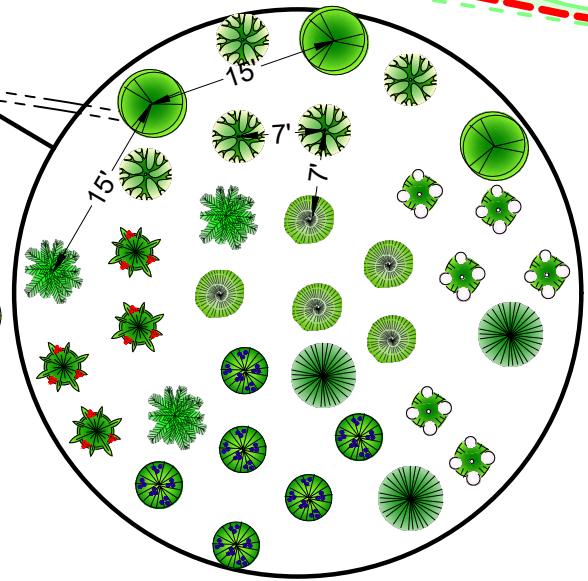
LEGEND:

- Subject Property
- Study Area
- Parcel Boundary
- Wetland Boundary
- Approx. Wetland Boundary
- 50' Wetland Buffer
- Wetland Continues Offsite
- Proposed Building
- Proposed Asphalt
- Proposed Concrete
- Proposed Edge of Disturbance
- Proposed Fence
- Temporary Buffer Impact
(0.26 ac./11,136 sq. ft.)
- Proposed Buffer Sign

Plant Specifications.

Common Name	Scientific Name	Stock	Spacing (on-center)	Quantity ¹
<i>Enhancement Area 4.25 acres</i>				
Douglas-fir	<i>Pseudotsuga menziesii</i>	Bare-root	15 feet	125
Red alder	<i>Alnus rubra</i>		15 feet	125
Shore pine	<i>Pinus contorta</i>		15 feet	125
Evergreen huckleberry	<i>Vaccinium ovatum</i>		7 feet	550
Kinnikinnick	<i>Arctostaphylos uva-ursi</i>		7 feet	550
Oceanspray	<i>Holodiscus discolor</i>		7 feet	550
Snowberry	<i>Symphoricarpos albus</i>		7 feet	500
Tall Oregon grape	<i>Mahonia aquifolium</i>		7 feet	550
Total				

¹ Includes approximate 10% increase to account for potential Year 1 mortalities. Plants needed at the above spacing for a 4.25-acre area total 2,083 and 3,075 are proposed.



PLANTING DIAGRAM
1" = 15'

NOTE: Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible.

- NOTE(S):**
1. Site plan by Gibbs & Olson (7/1/2022).
 2. Temporary buffer impacts to be replanted after grading.

Figure 6
PLANTING PLAN

Mid I-5 Industrial Park HMP and Buffer Enhancement Plan
Trammell Crow Portland Development, Inc.
City of Kelso, Cowlitz County, WA
Section 12 & 13, Township 7N, Range 2W, W.M.

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APPENDIX A

Federal and state management recommendations for species and habitats at the site include the following:

Fish

Federal

The Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan (LCFRB 2010) is being used as a recovery plan for salmon and steelhead by the National Marine Fisheries Service. This plan gives the following key recovery priorities in the lower Cowlitz subbasin to attain recovery of listed salmon and steelhead:

- Manage regulated stream flows through the hydropower system.
- Restore floodplain function, riparian function, and stream habitat diversity.
- Protect intact forest in headwater basins.
- Manage growth and development to protect watershed processes and habitat conditions.
- Address immediate risks with short-term habitat fixes.
- Manage forest lands to protect and restore watershed processes.
- Restore passage at culverts and other artificial barriers.
- Align hatchery priorities consistent with conservation objectives.
- Manage fishery impacts so they do not impede progress toward recovery.
- Reduce out-of-subbasin impacts so that the benefits of in-basin actions can be realized.

State

WDFW does not have specific documents that have a short list of management recommendations for salmon; however, they do provide them for rainbow trout/steelhead (Rodrick and Milner 1991). Steelhead and salmon have similar life histories and habitat needs, so they are expected to be similar, if not identical. The following are management recommendations for steelhead:

- Buffer zones of at least the width of the height of the tallest tree should be maintained along stream banks, which provide rainbow trout and steelhead habitat, and any other stream which directly or indirectly influences rainbow trout and steelhead habitat.
- Road construction and maintenance activities should be avoided adjacent to streams which provide rainbow trout and steelhead habitat.
- Instream structures, such as bridges, piers, boat ramps, or culverts must not impede the natural movements of rainbow trout and steelhead.
- Waters inhabited by steelhead parr should not be treated with metal-based herbicides during the period March 1 through June 15.

Riparian

WDFW's guidance Management Recommendations for Washington's Priority Habitats: Riparian (Guidance; Knutson and Naef 1997) provides recommendations for habitat improvement and that will have a beneficial effect to species that utilize riparian areas. The goal of the Guidance is to "Maintain or enhance the structural and functional integrity of riparian habitat and associated aquatic systems needed to perpetually support fish and wildlife populations on both site and landscape levels. Additionally, the document states that "site specific activities should strive to retain or restore fully functioning riparian habitat and habitat characteristics that are required by fish and wildlife."

Management recommendations at the watershed level and for urban areas appropriate to the project scale as listed in the Guidance include:

- Reduce urban sprawl
- Protect riparian habitat
- Compensate for lost habitat
- Restore degraded habitat
- Limit impervious surfaces
- Control and treat stormwater runoff
- Control pets