



LEVEL I HABITAT ASSESSMENT

April 5, 2022



**Guild Road Permitting
Cowlitz County**
Woodland, Washington

Prepared for
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SIGNATURE

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 Critical Areas Report and Mitigation Plan on behalf of the applicant, Part IV Properties, for proposed light industrial development on Cowlitz County Parcel 508350100 in Woodland, Washington. An ELS biologist conducted a site visit on December 21, 2021 to inventory site conditions and delineate the ordinary high water mark (OHWM) of Goerig Slough onsite. This report documents ELS' findings and associated research, which has been prepared in accordance with the City of Woodland Municipal Code (WMC) *Chapter 15.08 Critical Areas Regulation*, and *Chapter 15.08.180 Mitigation Requirements* (WMC 2021).

The proposed development will impact 0.019 acres (834 sq. ft.) of the Goerig Slough channel from installation of a new crossing, 0.065 acres (2,835 sq. ft.) of riparian buffer from new impervious surfaces due to construction of a stormwater pond retaining wall and an access road, 0.004 acres (198 sq. ft.) of Oregon white oak critical root zone from required road frontage improvements, and 11 non-native trees will be removed. Mitigation will occur onsite and will include restoring 0.841 acres (36,632 sq. ft.) of the Goerig Slough channel by removing two existing crossings, planting 9 oaks and 22 trees in the riparian buffer to compensate for oak root-zone impacts and tree removal, and enhancing the remaining riparian buffer with native trees, shrubs, and habitat features. The project is anticipated to begin in summer 2022.

PROJECT DESCRIPTION AND HISTORY

PROJECT LOCATION

The approximately 4.31-acre property is located immediately west of 1607 Guild Road in Woodland, Washington, Cowlitz County Parcel No. 508350100, within Section 14, Township 5 North, and Range 1 West of the Willamette Meridian (Figure 1).

PROJECT HISTORY

On January 15, 2022, ELS met onsite with George Fornes with the Washington Department of Fish and Wildlife (WDFW) to discuss fish presence in the Goerig Slough, potential impacts to riparian habitat and oak trees, and reducing the stream buffer. During the meeting, ELS learned that representatives from WDFW, the Department of Ecology (Ecology), and local tribes evaluated the slough both up and downstream of the project site and determined that it is fish habitat due to historical fish presence, even though it is highly unlikely fish are currently present. Reduction of the riparian buffer due to site specific habitat conditions was also discussed during the site visit. Mr. Fornes was supportive of reducing the 200-foot riparian habitat buffer to a 50-foot buffer with enhancement of the remaining buffer (Fornes 2022).

CONSTRUCTION ACTIVITIES

The applicant is proposing a light-industrial development consisting of two 12,500 square foot buildings, employee and semi-truck parking, semi-truck loading/off-loading areas, and interior access (Figure 3). This will require clearing, grading, removing 11 non-native redwood (*Sequoia sempervirens*) trees, creating a new access, removing the existing slough crossings and restoring the stream channel, installing utilities, constructing a stormwater facility, and improving the road frontage. Additionally, there will be paving of parking and interior access ways. Approximately 1.97 acres of new impervious surfaces will be added, and total site disturbance is approximately

3.65 acres. To minimize impacts, construction best management practices (BMPs) will be utilized including vividly demarcating clearing limits, installing silt fencing along the edge of disturbance adjacent to the riparian habitat under the supervision of a biologist, applying native grass seed to temporarily disturbed areas, stabilizing existing entrances via installation gravel as needed or installing a standard construction entrance, and making a water truck available to prevent wind erosion and dust blowing during construction. Additional BMPs are discussed in the Avoidance and Minimization Section later in this report. Construction is anticipated to start upon receipt of permits in summer 2022. The applicant proposes to enhance approximately 0.841 acres (36,632 sq. ft.) of the remaining riparian habitat buffer and remove two existing slough crossings to fully compensate for buffer reduction and project impacts (Figure 3).

Goerig Slough Crossings

A sight distance of 350 feet is required in both directions on Guild Road. This is currently not met at either access due to existing Oregon white oaks growing in the right-of-way and a road curve offsite to the west. The Consolidated Diking Improvement District 2 (CDID 2) is also requiring the 12-inch diameter culverts in the existing crossings to be upsized; therefore, one new centrally located access drive is being proposed that will provide adequate sight distance, preserve existing oak trees, and will result in less instream infrastructure than upsizing the two existing crossings.

The proposed access will cross Goerig Slough in the central portion of the site (Figure 3). This location was determined by sight distance requirements and the location and sizing of the proposed stormwater facility. Two 36-inch diameter culverts will be installed in the new crossing. Due to low flow velocity, the culverts will not be considered a fish barrier even if they do not meet standard fish passage criteria (Fornes 2022). As part of mitigation, the two existing accesses will be removed, and the slough will be restored in those locations.

The crossing installation and crossing removal will be done in later summer when the slough is most likely dry. If water is present in the slough, flow will likely be stagnant. Even though the slough is considered fish bearing, fish will not be present as they are only historically present in Goerig Slough (Fornes 2022). Temporary sandbag dams will be placed up and down stream of the work area and a pump will be used for dewatering, if needed. A temporary bypass will be installed if water is flowing. Following dewatering (or if the channel is dry), the two 36-inch diameter culverts will be installed. Once the culverts are in place, hay bales will be placed in the channel to demarcate the edge of the fill slopes and prevent material from extending beyond the fill footprint. Approximately 230 cubic yards of fill material will then be placed to create the 27-foot by 33-foot crossing. Side slopes of the fill will be seeded with a native seed mix. Hay bales will be removed following seeding.

Once the new crossing is installed, the old crossings will be removed using an excavator. Removed material will be reused for site grading or will be hauled offsite to an approved location. The restored channel areas will have the same side slope grade and bottom elevation as the undisturbed slough channel, with a slight bottom slope allowing water to continue flowing westward. A native seed mix appropriate to water regime will be applied to the bare channel bottom and side slopes. Once grass begins to establish, the temporary dams and stream bypass (if installed) will be removed. Willow stakes will be installed on side slopes and along the slope base to facilitate vegetation establishment and prevent erosion.

Stormwater Treatment

Stormwater will be directed to a stormwater pond located within the outer portion of the reduced riparian buffer where it will be detained and treated. Treated water will be released to Goerig Slough through a pipe that discharges just above the OHWM of the slough. Final stormwater design is still being determined.

SITE CONDITIONS

The subject property lies west of 1607 Guild Road in Woodland, Washington and is accessed by existing gravel driveways in the northeastern and northwestern portions of the parcel. The property is bordered on the west and south by single-family homes, on the east by boat and RV storage, and on the north by Guild Road. Guild-Klady Centennial Park and vacant prepared for single-family homes are located north of Guild Road. The western property boundary is also the Woodland City limits. Topography is generally level except for the Goerig Slough channel along the northern property boundary. The property is currently vacant and consists of annually mowed grasses with a row of non-native redwood trees near the central portion of the property that are approximately 80 to 100 feet tall. Approximately 30-year-old Douglas-fir (*Pseudotsuga menziesii*) and other coniferous trees line the south, east, and west property boundaries, and a short row of lilac shrubs is present near the southeast corner of the property. Historically the property was in agricultural use, with the southern portion in hay or other crop production and the northern portion mostly forested, north of the redwood trees. The northern portion was logged (except for the redwoods) between 2005 and 2006 based on Google Earth imagery.

Goerig Slough, a Type F (fish bearing) water, flows westerly along the northern property boundary within a well-defined channel that is approximately 5 feet deep and between 50 and 80 feet wide from top of bank to top of bank. The OHWM of the slough is between 25 and 50 feet wide with a seasonal water depth of approximately 2 to 3 feet. Water in the slough dries up completely during the summer, and the channel is vegetated during the dry season. There are two approximate 40-foot-wide stream crossings at the northeastern and northwestern extents of the property. Each crossing contains one 12-inch-diameter culvert.

The slough appears to originate approximately 2,500 feet southeast of the property and flows southwesterly approximately 2.3 miles through the CDID ditch system to a pumpstation where it's pumped to the Columbia River. CDID 2 regularly maintains the slough immediately west and downstream of the property as part of their ditching system. Upstream on property located at 1441 Guild Road, the slough has been incorporated into a stormwater detention facility.

The slough bottom is primarily vegetated with reed canarygrass (*Phalaris arundinacea*) when it is not flooded and contains scattered shrubs. The southern banks are densely vegetated with shrubs and scattered deciduous trees with dense blackberry thickets (*Rubus sp.*) along the top of the bank. The northern banks are less densely vegetated and are dominated by grasses with scattered trees and shrubs. Functional riparian vegetation is limited to the slough banks with non-native blackberries intermixed with Nootka rose (*Rosa nutkana*) and snowberry (*Symphoricarpos albus*) fringing the top of the southern slough bank. The redwoods also provide riparian function but are separated from the slough by approximately 50 to 100 feet of mowed grasses. The northern banks generally abut Guild Road (Photoplate 1).

METHODS

ELS conducted site visits on December 21, 2021 and January 15, 2022 to observe site conditions, determine the OHWM of Goerig Slough onsite, collect data, and meet with agency personnel. The OHWM was determined using standard methodology as described in the Washington State Department of Ecology (Ecology) manual: *Determining the Ordinary High Water Mark on Streams in Washington State* (Olson and Stockdale 2010). The main indicators used to determine the OHWM were water marks on existing vegetation, a change from hydrophytic vegetation to upland or less water tolerant species, and topography as the side slopes of the slough were steep and tall. One test plot was taken in the lowest topographical area near the slough to determine if the area met wetland criteria. Photo documentation was used to show upland conditions and vegetation on the remaining property. Additionally, online environmental databases and current and historic aerial photos were also reviewed.

VEGETATION

Douglas-fir (FACU) and other coniferous trees line the south, east, and west property boundaries. Additionally, a row of historically planted redwood trees (FACU) that are approximately 100 feet tall extend east-west in the central portion of the site. The remaining vegetation is dominated by regularly mowed pasture grasses, likely *Festuca* species (assumed FAC).

Undisturbed riparian vegetation is limited to the slough banks with non-native blackberries (*Rubus armeniacus*, FAC and *R. laciniatus*, FACU) intermixed with Nootka rose (FAC) and snowberry (FACU) fringing the top of the southern slough banks. The top of the northern stream bank narrowly abuts the shoulder of Guild Road and contains various grasses, weedy species, and scattered trees, including mature Oregon white oak (FACU). Dominant tree species within the limited riparian habitat area (RHA) include, Oregon ash (*Fraxinus latifolia*), and black cottonwood (*Populus balsamifera*). Pacific willow (*Salix lasiandra*, OBL) and red alder (*Alnus rubra*, FAC) were present as both trees and saplings in the shrub layer. Other dominant shrub species included, red osier dogwood (*Cornus sericea*) along the lower slough banks and within the slough, and red elderberry (*Sambucus racemosa*, FACU) along the upper slough banks. Reed canarygrass (*Phalaris arundinacea*) dominated the herbaceous layer within the RHA.

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 Natural Resources Conservation Service (NRCS) designates soils onsite as (32) Clato silt loam, 0 to 3 percent slopes and (141) Newberg fine sandy loam, 0 to 3 percent slopes (Figure 4). Clato silt loam is characterized as a well-drained soil derived from alluvium and formed in flood plains. A typical profile of Clato silt loam consists of fine sandy loam from 0 to 10 inches, very fine sandy loam from 10 to 28 inches, and fine sandy loam from 28 to 60 inches below ground surface (BGS). A typical depth to water table for Clato silt loam is generally more than 80 inches BGS. Newberg fine sandy loam is characterized as well-drained soil derived from alluvium formed in flood plains. A typical profile of Newberg fine sandy loam consists of fine sandy loam from 0 to 10 inches, very fine sandy loam from 10 to 28 inches, fine sandy loam from 28 to 60 inches BGS. According to NRCS Web Soil Survey Mapping Tool, neither Clato silt loam 0 to 3 percent slopes or Newberg fine sandy loam 0 to 3 percent slopes are considered hydric soils (NRCS 2021).

Test Plot 1 was taken in the lowest topographical area adjacent to the stream bank, within the mapped Clato silt loam unit. Soils within the test pit were clay loam in texture, not matching either soil type listed by the NRCS soil map. Evaluated test pit soils did not meet hydric soil indicators as the chroma above the depleted layer was too high.

HYDROLOGY

Goerig Slough appears to originate offsite approximately 2,500 feet to the southeast of the property. The slough enters the property in the northeastern corner through a culvert crossing under the eastern parcel access and flows southwesterly for approximately 2.3 miles through the CDID ditch system to a pump station where it is pumped to the Columbia River. Approximately 2 feet of slow-flowing water was observed within the slough during the site visits. The slough is known to go dry during the summer. On upstream property located at 1441 Guild Road, the slough has been incorporated into a stormwater detention facility. Goerig Slough is historically known to be used by fish and they have the potential to use this habitat, therefore is considered a Type F stream. Test Plot 1 was taken in the lowest topographical area adjacent to the stream bank. Groundwater was encountered at 17 inches below ground surface and soils were saturated at 15 inches after leaving the test hole open for approximately 20 minutes. Although groundwater was present, it was not shallow enough to meet wetland criteria.

NATIONAL WETLANDS INVENTORY

The National Wetlands Inventory (NWI) maps a palustrine scrub-shrub seasonally flooded wetland (PSSC) in the approximate location where ELS identified a Type F stream (USFWS 2022b)(Figure 5). The findings of the ELS study were mostly consistent with the NWI map in respect to location; however, the wetland is Goerig Slough. 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, PRIORITY HABITATS AND PRIORITY SPECIES

GOERIG SLOUGH

Goerig Slough, a Type F (fish-bearing) water, flows westerly across the northern portion of the site and is considered fish-bearing due to historical fish presence and habitat that could potentially be used during part of the year, although there are currently no fish in the slough (Fornes 2022). The DNR stream-type map (Figure 6) shows that the slough originates approximately 2,500 feet southeast of the property and flows southwesterly from the site approximately 2.3 miles through the CDID ditch system to a pump station where it's pumped to the Columbia River. CDID 2 regularly maintains the slough immediately west and downstream of the property. The overall slough channel ranges between approximately 50 and 80 feet wide (top of bank to top of bank) and is approximately 5 feet deep. Water depth ranges up to 3 feet deep and the channel dries out in the dry season. Channel substrate consists of mud or becomes completely vegetated when it dries out. Willows, red-osier dogwood, and reed canarygrass are present within the channel bottom. According to WMC Table 15.08.730-1 *Riparian Habitat Areas (RHA)*, the RHA for a Type F water with a channel width of 5 to 20 feet is 200 feet from the OHWM.

RIPARIAN HABITAT BUFFER REDUCTION

According to *WMC 15.08.730(D)(6) Reduction of Habitat Buffer Widths*, the standard habitat buffer width can be reduced in a case-by-case basis when it is determined that a smaller area is adequate to protect the habitat functions and values based on site-specific characteristics and when all the criteria listed *WMC 15.08.730(D)(6)(a through e)* are met. These criteria are listed below in italics followed by a response of how each criterion is met in regular font.

- a. *The critical area report provides a sound rationale for a reduced buffer based on the best available science;*

The existing buffer conditions are described in more detail above. The slough banks are nearly vertical, dropping down approximately 5 feet to the OHWM. Undisturbed riparian vegetation is limited to the slough banks and channel bottom with a very narrow fringe of native and non-native shrubs along the top of the southern slough bank. The north slough bank abuts Guild Road. Beyond the scrub-shrub fringe on the south bank is regularly mowed pasture grasses that afford little to no riparian function. The existing redwoods provide riparian function but are separated from the slough by approximately 50 to 100 feet of mowed grasses (Photoplate 2). Reducing the buffer to approximately 50 feet and enhancing it with native trees, shrubs, herbaceous species, and habitat features, and removing invasive blackberries will provide a greater riparian function for wildlife over what currently exists. The plantings will create an approximate 50-foot-wide corridor on both sides of the slough, although it will be broken by the new access road. The proposed plantings will provide shade, cover, refuge, and forage opportunities for birds and small mammals and will also provide leaf litter, as well as large and small woody material to the slough system. Additionally, WDFW was supportive of a reduced buffer with enhancement plantings during the site visit.

- b. *The existing buffer area is well-vegetated or will be significantly enhanced with native species and has less than a ten percent slope;*

The remaining buffer has less than a ten percent slope and is dominated by regularly mowed pasture grasses with patches of non-native blackberries. A buffer enhancement

plan that will significantly improve buffer functions has been incorporated into the *Mitigation Plan* section below.

- c. *No direct or indirect, short-term or long-term, adverse impacts to habitats will result from the proposed activity;*

The remaining approximate 50-foot buffer will be enhanced with native trees, shrubs, herbaceous species, and habitat features resulting in no net loss of ecological function of riparian habitat. A mitigation plan has been prepared rectifying project impacts.

- d. *As required by the director, a five-year monitoring program of the buffer and habitat shall be included. Subsequent corrective actions may be required if adverse impacts to the habitats are discovered during the monitoring period;*

A five-year monitoring and maintenance plan is detailed below.

- e. *In no case shall the standard buffer width be reduced by more than fifty percent using this provision.*

The proposed reduction from 200 feet to 50 feet is more than a 50 percent reduction. A variance is being requested from the City because this criterion cannot be met.

An ELS biologist met onsite with George Fornes with WDFW, who, along with the Travis Goddard with the City of Woodland, is supportive of a reduced 50-foot buffer with enhancement due to site-specific circumstances as described above (Fornes 2022 and Goddard 2022). Table 1 below summarizes onsite critical area details.

Table 1. Summary of Critical Areas.

Critical Area	Water Type¹	Required Buffer Width	Proposed Enhanced Buffer Width
Goerig Slough	Type F (fish-bearing, seasonal)	200 feet ¹	26 to 50 feet

¹WMC 15.08.730-1

PRIORITY HABITATS AND SPECIES

Riparian and Instream Habitat

Goerig Slough and its associated buffer are considered priority habitats and are described above.

Oregon White Oak

Oak woodlands and individual oak trees are not specifically designated under the fish and wildlife habitat conservation areas listed under 15.08.700(A)(3), but the code does state that habitats and species of local importance shall include Washington Department of Fish and Wildlife priority habitats and species, candidate species, and any species identified by the City of Woodland or Clark or Cowlitz County.

In urban or urbanizing areas west of the Cascades, WDFW defines priority oak habitat as single oaks, or stands of pure oak, or oak/conifer associations, 1 acre or greater in size. WDFW may also consider individual Oregon white oak trees a priority habitat when found to be particularly valuable to wildlife (i.e., contains many cavities, has a large Diameter at Breast Height (DBH), is

used by priority species, or has a large canopy) (Larsen and Morgan 1998). The project site is within an urban growth boundary. WDFW recommendation is that in urban and urbanizing areas, single trees should be maintained if they are deemed important to species highly associated with Oregon white oak. Oaks and their associated floras comprise distinct woodland ecosystems with various plant communities providing valuable habitat that contributes to wildlife diversity; Oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Larsen and Morgan 1998).

ELS biologists identified four oaks 38 inches DBH or larger onsite during the site visit (Figure 2). Their canopies total approximately 0.164 acres (7,124 sq. ft.) (Figure 2). Table 2 below summarizes the oaks onsite.

Table 2. Summary of Oregon White Oak Canopy Cover Onsite.

Oak Identifier	Diameter at Breast Height	Oak Canopy (acres)
1	38	0.08
2	42	
3	43	0.05
4	39	0.04
Total		0.17

LISTED SPECIES AND HABITATS IN THE PROJECT VICINITY

The potential presence of listed species that have a primary association with the habitat on or adjacent to (within 200 feet) the project area (as shown in Table 3) was evaluated by a site visit, aerial photographs, the WDFW Priority Habitats and Species (PHS) website (WDFW 2022a), SalmonScape Mapping Tool (WDFW 2022b), Washington Department of Natural Resources (WDNR), Washington Natural Heritage Program website (WDNR 2022b), Forest Practices Application Mapping Tool (WDNR 2022a), and the U.S. Fish and Wildlife Service (USFWS), IPaC website (USFWS 2022). ELS fieldwork did not occur during an official botanical survey window for listed plant species.

Table 3. Species of Local Importance, Priority Species and Endangered, Threatened, Candidate, and Sensitive species that have the Primary Association Habitat within 200 feet of Proposed Project Area.

Species	State Status ¹	Federal Status ¹	Suitable Habitat ² in Project Vicinity
<i>Mammals</i>			
Big Brown Bat (<i>Eptesicus fuscus</i>)	PHS Listed	Not Listed	Yes
<i>Birds</i>			
Sandhill Crane (<i>Grus canadensis</i>)	Endangered	Not Listed	Yes
<i>Plants</i>			
Nelson’s Checker-mallow (<i>Sidalcea nelsoniana</i>)	Endangered	Threatened	Yes

Species	State Status ¹	Federal Status ¹	Suitable Habitat ² in Project Vicinity
Soft-leaved willow (<i>Salix sessilifolia</i>)	Sensitive	Not Listed	Yes

1) Endangered - In danger of becoming extinct or extirpated; Threatened - Likely to become endangered within the foreseeable future throughout all or a significant portion of its range and that has been formally listed as such in the State and Federal Register under the Federal Endangered Species Act; Sensitive - Vulnerable or declining and could become endangered or threatened in the state;

2) WDFW 2022

Sandhill Crane

Sandhill cranes were heard and observed flying overhead during both site visits. Sandhill cranes prefer habitats with visibility in all directions, emergent wetland vegetation, and limited amounts of disturbance to feed and nest successfully. During migration they live in more open grassland and river valleys, and often feed in agricultural fields (WDFW 2022c). The field area onsite is too small and views are blocked by the surrounding trees, so it is not likely that sandhill cranes use the property for feeding, nesting, or resting.

Big Brown Bat

Big brown bats are a PHS listed species. According to the Bat Conservation International (BCI) website, big brown bats are found in nearly every habitat ranging from meadows to lowland deserts but are most abundant in deciduous forests as well in suburban areas. Roosting and hibernating habitat includes tree cavities, caves, and all variety of buildings and other man-made structures. The BCI website also states that they are generalists in their foraging behavior, frequenting neighborhoods, clearings, and forests and will feed over water or land showing little preference. Bats may be present onsite roosting in trees or foraging for insects. Removal of the redwood trees may eliminate roosting habitat; however, the remaining trees around the perimeter provide roosting habitat. The proposed building may also provide roosting habitat following construction. Removal of the redwoods and construction of the future building are not likely to affect foraging activities.

Soft-leaved willow

Soft-leaved willow is found in a variety of lowland habitats including riparian forest and on dredge spoils (WDNR, 2022c). Habitat may be present along the slough banks; however, there are no documented occurrences of this species in southern Cowlitz County (WDNR 2022b).

Nelson's Checker-mallow

Nelson's checker-mallow is found in meadow, prairie or grassland habitat, along fencerows, streams, roadsides, drainage swales, and edges of plowed fields adjacent to wooded areas. Standing water is present at some sites (WDNR, 2022b). Nelson's checker-mallow could be present onsite along the slough banks; however, there are no documented occurrences of this species in southern Cowlitz County.

Oregon White Oak

Four Oregon white oaks were mapped onsite along the northern parcel boundary (Figure 2) and are discussed above in the *Critical Areas and Priority Species* section.

Fish

Goerig Slough is considered a fish-bearing stream based on historical fish presence. Fish are no longer present onsite as the slough is only connected to the Columbia River via a pumpstation that does not allow fish access. The section of slough onsite also completely dries up onsite during the summer months. There is the potential for warmwater fish to be present in the permanently flooded portion of the slough farther downstream.

AVOIDANCE AND MINIMIZATION

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the project design process. A 200-foot RHA is proposed for reduction as detailed in the *Critical Areas and Priority Species* section above. Buffer reduction is based on site-specific characteristics as functional riparian vegetation is limited to the slough banks and channel bottom with the remaining vegetation consisting of regularly mowed pasture grasses that afford little riparian function. The reduced enhanced buffer will vary in width between 26 and 50 feet with the average width being approximately 35 feet. Enhancement of the remaining buffer will include planting native trees, shrubs, and habitat features resulting in no net loss of ecological function. The development footprint must accommodate large turning radii and maneuvering of semi-trucks for loading and offloading. A new crossing is needed due to poor sight distance from oaks growing in the right-of-way and a road curve offsite to the west. Additionally, CDID is requiring the existing culverts to be upsized or a new crossing can be built with larger culverts. One new centrally located access driveway will provide adequate sight distance and will result in less infrastructure than upsizing the two existing crossings.

The project will be constructed in phases with the stormwater facility sized to treat and detain stormwater from full build-out of the site. Two potential future warehouse buildings with associated parking may be added east of the currently proposed buildings. This future development will avoid any critical areas impacts.

Project Avoidance measures include the following:

- Locating the proposed slough crossing to comply with sight distance requirements and avoid Oregon white oak removal.
- Avoiding removal of the existing coniferous trees around the perimeter.
- Reducing the 200-foot riparian buffer based on site-specific characteristics and the remaining buffer avoiding impacts.
- Locating the future parking area along the east side of the development to avoid the 50-foot riparian buffer.
- Avoiding the vast majority of existing undisturbed riparian vegetation (native trees and shrubs) during construction activities. Limiting disturbance areas to the project footprint during construction.
- Constructing a retaining wall around a portion of the stormwater facility to allow for a smaller grading footprint.
- Locating the stormwater facility in the outer riparian buffer to the greatest extent possible.
- Minimizing road frontage improvement widths within the dripline of the oak trees to the greatest extent allowed per code.

- Installing signage around the remaining buffer to minimize intrusion from people and pets onsite or from the sidewalk along Guild Road.

Construction avoidance and minimization measures include the following:

- Implementing best management practices (BMPs) during construction including:
 - Marking clearing limits prior to construction.
 - Installing a standard construction entrance as needed.
 - Designating staging areas outside of buffers.
 - Installing silt fencing at the edge of grading/disturbance.
 - Working in the dry season for construction and removal of the slough crossings. If that is not possible, temporary sandbag dams will be installed and the work areas dewatered. A stream temporary bypass will be installed if there is enough flow in the slough.
 - Installing temporary hay bale dams at the edge of fill in the slough on either side of the new crossing to prevent fill material from migrating outside of the crossing footprint.
 - Seeding disturbed areas with a native seed mix appropriate to water regime following construction.
 - Making a water truck available to prevent wind erosion and dust blowing during construction.

UNAVOIDABLE IMPACTS

Unavoidable impacts to the slough and riparian habitat from the project are summarized in Table 4 and include work below the OHWM for installing the new crossing on Goerig Slough, new impervious surfaces beneath the dripline of Oregon white oak trees, new impervious surface within the reduced buffer from the access drive, and retaining wall along the stormwater facility, and removal of 11 mature redwood trees. Constructing the stormwater facility in the riparian areas is not considered a permanent riparian buffer impact. Additionally, excavation beneath the dripline of the oaks to remove the existing slough crossing for restoration purposes will not be counted as an impact unless it is determined by an arborist to impact the tree. Temporary buffer impacts will occur from grading and invasive species removal. These areas will be seeded and/or planted once grading is complete, and BMPs will be in place to prevent sediment-laden water from reaching the slough.

Removal of the redwood trees is necessary as they will become a significant hazard to site development and future workers. Several tree-sized branches and one treetop blew off between the December 2021 and January 2022 site visits. Removing some of the trees, particularly ones at either end of the row, will likely leave the others more susceptible to windthrow; therefore, it is necessary to remove all the redwoods for safety reasons.

Table 4. Impact Summary.

Identifier	Impact	Amount
Goerig Slough	New crossing	0.019 acres
Riparian Buffer	New impervious surface	0.065 acres
Oaks 1-4	New impervious surface within critical root zone	Total: 0.013 acres
Redwood Trees	Removal	11 trees

¹Chapter 15.08.100 (B)(12)(d)

POTENTIAL EFFECTS OF THE PROJECT ON LISTED SPECIES AND HABITAT

DIRECT EFFECTS

Direct effects to species listed in Table 4 above include habitat loss for brown bats due to the redwood tree removal. Sandhill cranes are not likely to utilize the site because it is too small and surrounded by a row of trees limiting sight distance. It is highly unlikely that Nelson's checker mallow or soft leaved willow are present onsite as there are no documented occurrences of either species in southern Cowlitz County. Road frontage improvements will occur within the dripline of Oregon white oaks. An arborist report will be prepared to determine if this activity will affect the oaks.

Flow connectivity within the slough will be improved with removal of the existing crossings, each containing 12-inch diameter culverts, and installation of a single crossing containing two 36-inch diameter culverts. There will be a net gain of instream habitat due to removal and restoration of the crossings, and enhancing the remaining riparian buffer as describe in the *Mitigation Plan* section below and will result in a net gain of riparian habitat functionality. No turbidity increases are expected as removal and installation of the crossings will likely be done when the slough has dried. Hydrology will slowly return to the slough after vegetation has established, and flow velocity is very low therefore turbidity from a first flush event is not anticipated. If water is present in the slough during construction, temporary sandbag dams will be constructed up and down stream of the work area and a pump will be used for dewatering. A temporary bypass will be installed if water is flowing. Minimal turbidity increases are expected from using a bypass system.

INDIRECT EFFECTS

Potential indirect effects include increased stormwater runoff and increased noise and visual disturbances. Potential indirect effects from the increase in runoff due to new impervious surface is not likely to cause erosion or water quality issues in the slough because runoff will be directed to an onsite stormwater facility for treatment and detention. There are no listed fish species in the slough that may be impacted by stormwater runoff. Final stormwater design is still being determined. Increased noise and activity is not likely to occur when bats are foraging in the evening or early morning hours.

MITIGATION PLAN

To fully compensate for project impacts including new impervious surface within the reduced buffer, installing a new crossing on Goerig Slough, critical root zone impacts to Oregon white oak, and removal of 11 redwood trees as described above in the *Unavoidable Impacts* section including

a variety of mitigation and restoration measures will be implemented. Mitigation and restoration measures are summarized in Table 5 below and will provide an ecological lift of critical area functions than currently exists onsite, resulting in no net loss of riparian habitat or stream functions.

Table 5. Summary of Proposed Mitigation.

Identifier	Impact Type and Amount	Proposed Mitigation Activities
Goerig Slough	New stream crossing 0.019 acres Stormwater discharge? Outfall structure?	<ul style="list-style-type: none"> ▪ Restore 0.019 acres of Goerig Slough by removing the two existing crossings. ▪ Improve flow connectivity by installing two 36-inch culverts in the new crossing. ▪ Seed restored slough bottom and slide slopes with a native emergent seed mix. ▪ Install willow plantings on restored slough banks.
Riparian Buffer	Reduced Buffer (not quantified)	<ul style="list-style-type: none"> ▪ Remove invasive species, namely blackberries within reduced buffer. ▪ Enhance 0.365-acres of reduced buffer (landward from top of bank) by installing dense tree and shrub plantings. ▪ Enhance 0.475-acres of slough banks (waterward from top of bank) by installing willow cuttings on bank slopes. ▪ Install habitat features including 2 large woody material piles, 2 downed logs, 2 bird nest boxes, and 2 bat houses within the enhancement area. ▪ Seed bare/disturbed areas, including stormwater facility with native seed mix. ▪ Install signage around final riparian buffer.
Oaks 1-4	Critical root zone impacts 0.013 acres	<ul style="list-style-type: none"> ▪ Install 15, 5-gallon Oregon white oaks within enhancement area. The equivalent amount to plant a 3,400-sq. ft. area at 15' spacing, which is a 6:1 ratio for impacts.
Redwood Trees	Tree removal 11 trees ¹	<ul style="list-style-type: none"> ▪ Install 22 Douglas-fir trees throughout enhancement area, a 2:1 ratio for removed trees.

¹Chapter 15.08.100 (B)(12)(d)

MITIGATION STRATEGY

Approximately 0.019 acres (834 sq. ft.) of Goerig Slough will be impacted by the new crossing and approximately 0.092 acres (4,000 sq. ft.) will be restored by removing the existing crossings. The restored areas will have the same side slopes and substrate gradient as the adjacent slough segments. Side slopes will be seeded with a native seed mixed detailed below and planted with native willow species. The existing crossings each had a 12-inch diameter culvert restricting flows. The new crossing will have two 36-inch diameter culverts providing better flow connectivity. Overall, there will be less fill area in the slough post-construction, allowing more contiguous stream habitat, as there will be one less crossing.

The reduced buffer will provide greater overall function than currently exists following enhancement measures. Undisturbed riparian habitat is mainly limited to the slough banks, as the remaining habitat within the buffer (aside from the redwoods) consists of regularly mowed grass.

Invasive species, namely blackberries, will be removed from the enhancement area either by pulling them out by the roots during grading, spraying, or a combination of both. A spray appropriate for use near streams will be used. Other invasive species including, but not limited to, teasel (*Dipsacus fullonum*) and reed canarygrass will be similarly removed from the enhancement area landward of the top of the slough bank. A native seed mix will be applied to all disturbed areas following grading and invasive species removal. A variety of trees and shrubs will be planted throughout the buffer to develop into a forested corridor along the south side of the slough providing cover, forage, and other habitat opportunities than currently exist onsite.

The northern side of the slough will also be enhanced; however, enhancement plantings are limited to the bank slopes as the road nearly abuts the top of the bank. Two large woody material (LWM) piles will be placed at the east and west ends of the enhancement area, and two downed logs will be placed in the remaining enhancement area, one on either side of the crossing. Material for the LWM - and downed logs will be salvaged from the removed redwoods. Additionally, two post-mounted bat houses will be installed near the perimeters of the enhancement area, and two bird nest boxes will be installed on existing trees or on posts within the enhancement area to provide habitat for birds and bats that may have used the redwood trees for nesting or roosting. Signage stating, "Critical Area and Buffer – Please Retain in a Natural State", or similar wording, will be posted every 100 feet along final riparian buffer on both sides of the Goerig Slough to deter intrusion from people and pets onsite or utilizing the sidewalk.

PLANTING PLAN

Invasive species will be controlled within the enhancement area landward of the top of bank of Goerig Slough followed by seeding with a native seed mix. A native seed mix appropriate to water regime will be applied within the slough bottom and on the slough banks following removal of the two crossings. 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. Mitigation plantings will be installed with tree protection tubes and will be surrounded by mulch to discourage herbivory and increase the survivability. Woody species proposed for installation are either growing onsite or are common in the local area. Willow cuttings will be installed on the slough banks, as the banks are steep and some areas contain rip-rap.

The buffer enhancement area waterward of the top of bank of Goerig Slough totals approximately 0.475 acres and will be planted with willows on 5-foot centers where the slough crossings were removed, and willows will be planted amongst existing vegetation along the remaining slough banks. The buffer enhancement area landward of the top of bank of Goerig Slough totals approximately 0.365 acres. A total of 15 oak trees will be planted at 15-foot spacing to compensate for 0.13 acres of oak critical root zone impact, which equates to 6:1 planting ratio. Additionally, 22 Douglas-firs will be planted on 10-foot centers to compensate for removal of 11 redwoods. The remaining buffer enhancement area will be planted with a variety of trees and shrubs on 5-foot centers, with that number increased by 20 percent to further increase planting density and allow for up to 10 percent mortality in the first year.

Table 6 below summarizes the plant species, spacing, and quantities for the enhancement areas. Tables 7 and 8 detail seed mixes. Figure 10 details the enhancement area and planting plan.

Table 6. Plant Specifications.

Common Name	Scientific Name	Stock	Spacing (on-center)	Quantity
<i>Buffer enhancement area waterward of the top of bank of Goerig Slough</i>				
Scouler willow	<i>Salix scouleriana</i>	Cutting	5 feet	100
<i>Buffer enhancement area landward of the top of bank of Goerig Slough</i>				
Oregon white oak	<i>Quercus garryana</i>	5 gallon	15 feet	15 ¹
Beaked hazelnut	<i>Corylus cornuta</i>	Bare-root	5 feet	70
Bigleaf maple	<i>Acer macrophyllum</i>			30
Douglas-fir	<i>Pseudotsuga menziesii</i>			50 ²
Nootka rose	<i>Rosa nutkana</i>			100
Red elderberry	<i>Sambucus racemosa</i>			70
Snowberry	<i>Symphoricarpos albus</i>			100
Tall Oregon Grape	<i>Mahonia aquifolium</i>			100
¹ Compensation for critical root zone impacts. ² 22 Douglas firs are being planted to compensate for redwood tree removal				

Table 7. Slough Bottom Seed Mix.

Slough Bottom – River Refuge Native Wetland Basic Mix			
Species	Composition	Rate	Quantity
American slough grass (<i>Beckmannia syzigachne</i>)	60%	8-15 lbs/acre	4/lb
Western mannagrass (<i>Glyceria occidentalis</i>)	30%		
Shortawn foxtail (<i>Alopecurus aequalis</i>)	10%		
Total	100%		

Table 8. Upland Area Seed Mix.

Riparian Buffer and Slough Banks – River Refuge Seed Native Upland Grass Mix			
Species	Composition	Rate	Quantity
Blue wild rye (<i>Elymus glaucus</i>)	30%	15-25 lbs/acre	15/lb
California brome (<i>Bromus carinatus</i>)	25%		
Meadow barely (<i>Hordeum brachyantherum</i>)	10%		
Roemer’s fescue (<i>Festuca roemeri</i>)	10%		
Slender hairgrass (<i>Deschampsia elongata</i>)	10%		
Spike bentgrass (<i>Agrostis exarata</i>)	5%		
Tufted hairgrass (<i>Deschampsia cespitosa</i>)	5%		
Red fescue (<i>Festuca rubra rubra</i>)	5%		
Total	100%		

PLANTING, PLANT MATERIAL, AND HABITAT FEATURE SPECIFICATIONS

Planting Implementation

- Plant the specified trees and shrubs in late fall to early spring (October-March) in accordance with specifications listed in Table 6. 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.
- 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.

Gallon Stock

- Gallon potted species will be purchased from a native plant nursery.
- Gallon potted plants will be a minimum size of 18- to 36-inches tall.
- Gallon potted stock will be kept cool and moist prior to being planted.
- Gallon potted stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- Unplanted potted stock will be properly stored at the end of each day.
- The environmental consultant will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

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.

Cutting Stock

- Cuttings will be collected onsite, where possible. Any remaining cuttings will be salvaged from local offsite sources or purchased from a native plant nursery.
- Cuttings will be a minimum of 3 feet long and between ¼ to ½ inches in diameter.
- Cuttings will be protected until installation by being refrigerated, covered in damp burlap, placed in moist sand or peat, or other method of keeping cool and moist.
- Cuttings will be installed within 1 to 2 days of harvesting.
- Unused cuttings must be properly stored at the end of each planting day to prevent drying out.

- The environmental consultant will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

Habitat Feature Specifications

Material for LWM and downed logs will be salvaged from the removed redwood trees during construction. At least 10 branches 5 inches or greater in diameter for at least 6 feet in length will be used to create each LWM pile (at least 20 branches total). Branches will be piled in a loose crisscross pattern. LMW will be located at the eastern and western edges of the enhancement area. Each downed log will be at least 12 inches DBH for at least 20 feet in length with lateral branches retained to the extent feasible. One downed log will be placed on each side of the new crossing.

Two standard pole-mounted bat houses and two standard bird nest boxes will be placed in the enchantment area. Pole-mounted bat houses will be installed at the eastern and western edges of the enhancement area and will be at least 12 feet off the ground. Bird next boxes will be placed on existing trees or on poles within the enhancement areas and will be at least 6 feet off the ground. Table 9 details habitat features to be placed in the enhancement area.

Table 9. Habitat Feature Specifications.

Type	Amount
Large Woody Material Pile	2
Downed Log	2
Bat House	2
Bird Nest Box	2

GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

Goal. Compensate for project impacts providing no net loss of ecological function of riparian and instream habitat onsite.

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

Objective 1. Restore 0.019 acres of Goerig Slough by removing two stream crossings

Performance Standard 1a: Remove material from both stream crossings restoring approximately 0.09 acres of habitat within Goerig Slough. Slough bank slopes and bottom elevation within the restoration areas will be similar in grade to the existing adjacent slopes and bottom elevation. Provide an as-built of the restored crossings including topography and photographs.

Objective 2. Create an 0.841-acre diverse forested and scrub-shrub community within the reduced riparian buffer.

Performance Standard 2a: Install native trees and shrubs as specified in Table 7 of the mitigation plan, overplanting by approximately 20 percent to allow for 10 percent mortality in the first year and planting at denser spacing to compensate for buffer reduction. Document installed species amounts and planting locations in the as-built report.

Performance Standard 2b: Installed 5-gallon Oregon white oaks will achieve 100 percent survival after 1 year and 90 percent survival after 5 years. Document oak survival in annual monitoring reports.

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

Performance Standard 2d: In Year 2, planted woody species density will average 5-foot spacing as measured in monitoring plots. Document in annual monitoring report.

Performance Standard 2e: In Year 3, woody species will achieve at least 15 percent cover within the enhancement area landward of the top of bank of Goerig Slough and on restored bank side slopes. Document in annual monitoring report.

Performance Standard 2f: In Year 3, at least 4 native woody species will achieve a minimum of 3 percent cover for each species within the enhancement area landward of the top of bank of Goerig Slough.

Performance Standard 2g: In Year 5, planted species will achieve at least 25 percent cover within the enhancement area landward of the top of bank of Goerig Slough and on restored bank side slopes. If dead plants are replaced, this performance standard will be met. Document in annual monitoring report.

Performance Standard 2h: In Year 5, at least 4 native woody species will achieve a minimum of 5 percent cover for each species within the enhancement area landward of the top of bank of Goerig Slough.

Performance Standard 2i: In all years, invasive plant species will not exceed 10 percent aerial cover within enhancement area landward of the top of bank of Goerig Slough and on restored bank side slopes. Percent cover of invasive species will be documented in annual monitoring reports.

Performance Standard 2j: In all years, county and state-listed noxious weed cover will not exceed 10 percent cover within enhancement area. Percent cover of county and state-listed noxious weed invasive species will be documented in annual monitoring reports.

Objective 3. Provide habitat features for wildlife within the reduced riparian buffer.

Performance Standard 3a: Install two LWM within enhancement area landward of the top of bank of Goerig Slough. This performance standard will be considered met when the LWM pile locations are documented in the as-built report.

Performance Standard 3b: Install two downed logs within enhancement area landward of the top of bank of Goerig Slough. This performance standard will be considered met when the downed log locations are documented in the as-built report.

Performance Standard 3c: Install two bat houses within enhancement area. This performance standard will be considered met when the bat houses are documented in the final monitoring report.

Performance Standard 3d: Install two bird nest boxes within enhancement area. This performance standard will be considered met when the bird nest boxes are documented in the final monitoring report.

Objective 4. Provide long-term protection for the reduced buffer.

Performance Standard 4a: Signage reading, “Riparian Area and Buffer – Please Retain in a Natural State”, or similar wording, will be posted every 100 feet along the final riparian 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.

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. Individual Oregon white oaks will be counted and assessed for health during each monitoring visit. Five monitoring plots will be established following plant installation, one at each removed crossing, and three additional plots landward of the top of the bank of Goerig Slough. Monitoring plots will be approximately 700 square feet and will be shaped to fit the monitored area. Monitoring plot locations will be shown on the as-built report. Additionally, at least eight photo stations will be established, one at each monitoring plot and at least three overall stations, to photo-document vegetation establishment. 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 oaks in all years.
- Percent survival of other woody species in Year 1.
- Woody species density in Year 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. Taper watering in Years 2 and 3.
- Remove competing herbaceous species as needed within a 3-foot radius of planted trees and shrubs and re-apply mulch as needed.
- Weed-eat, spray, or mow 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 criteria are being not 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.
- Designate staging areas, install silt fencing, and install a standard construction entrance, if needed.
- Remove invasive species landward of the top of bank of Goerig Slough.
- Remove redwood trees and stockpile material needed for LWM and downed logs
- Complete interior site grading.
- Install temporary haybale dams at edge of fill footprint on new crossing in Goerig Slough.
- Construct new crossing and remove existing crossings on Goerig Slough in accordance with permit conditions when the slough is dry. Install temporary sandbag dams and bypass, if needed.

- Seed disturbed areas in restored slough sections.
- Complete grading as-built report addressing removed/constructed crossings and submit to permitting agencies.
- Install habitat features following invasive species control and/or grading.
- Seed other disturbed areas within the enhancement area.
- Install enhancement plantings the following late October through March following seeding.
- Complete vegetation installation as-built report and submit to permitting agencies.
- 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.

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- Fornes, George. Habitat Biologist for the Washington Department of Fish and Wildlife. Verbal communication on January 15, 2022.

FIGURES AND PHOTOPLATES

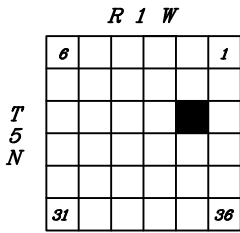
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WASHINGTON

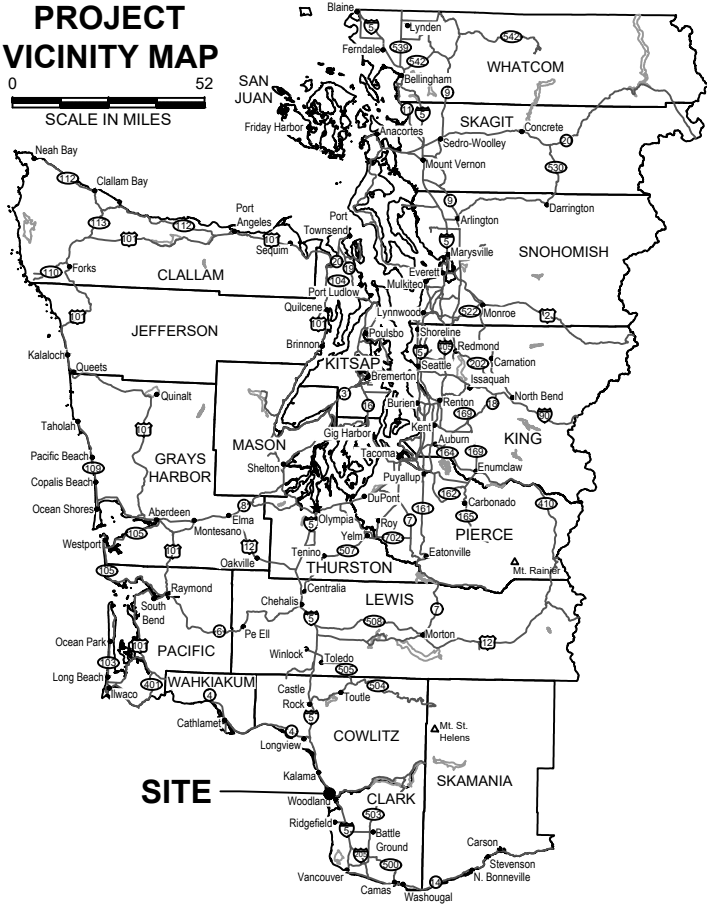


Latitude: 45.9153°
Longitude: -122.7680°

LOCATION MAP



PROJECT VICINITY MAP



NOTE:

Quadrangle topographic map from USGS.

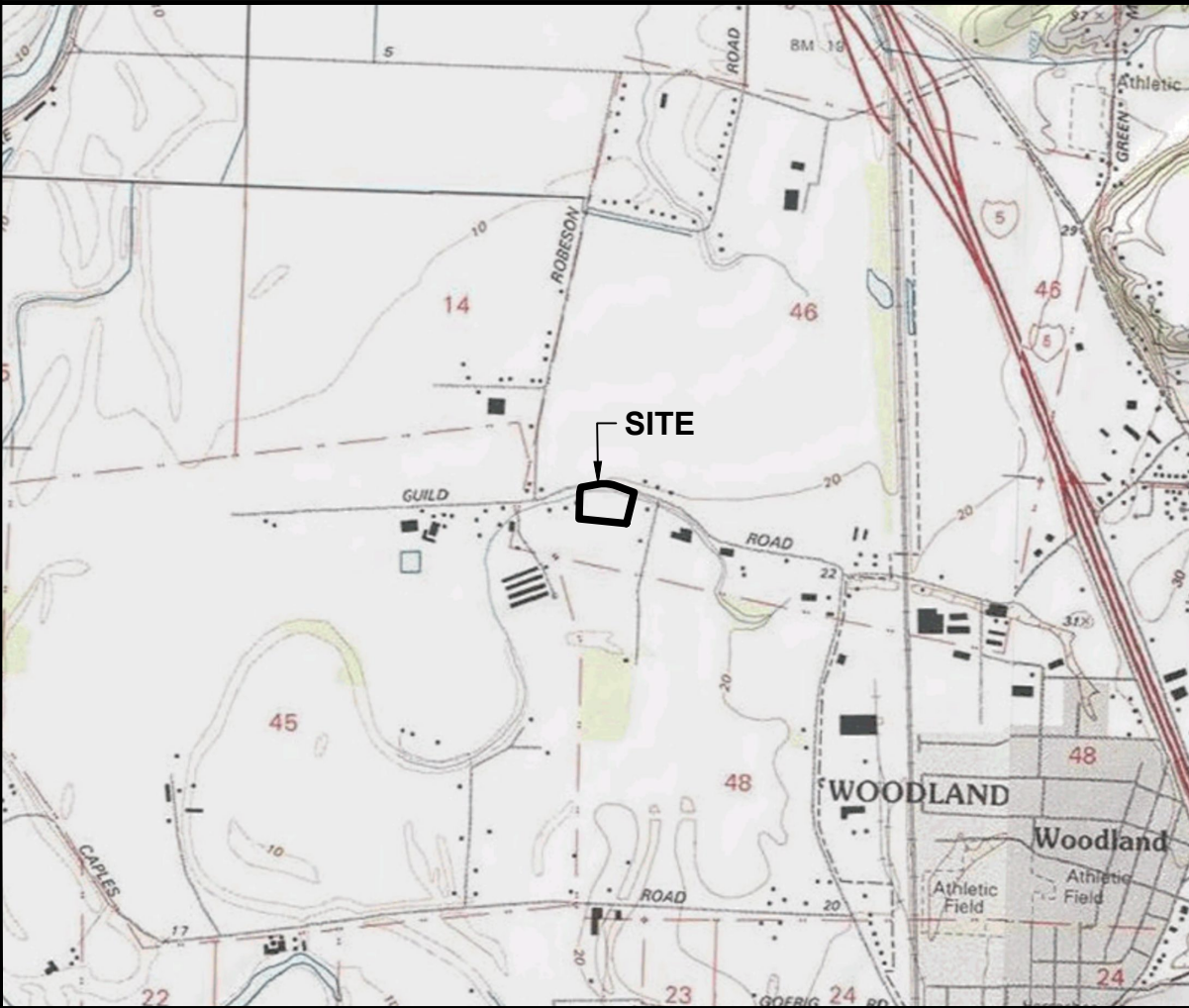
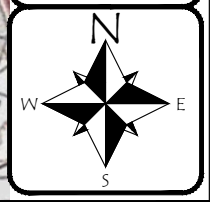
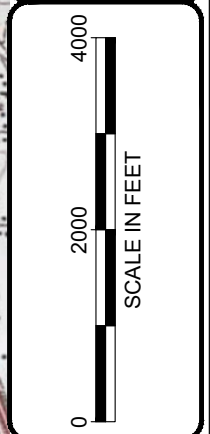


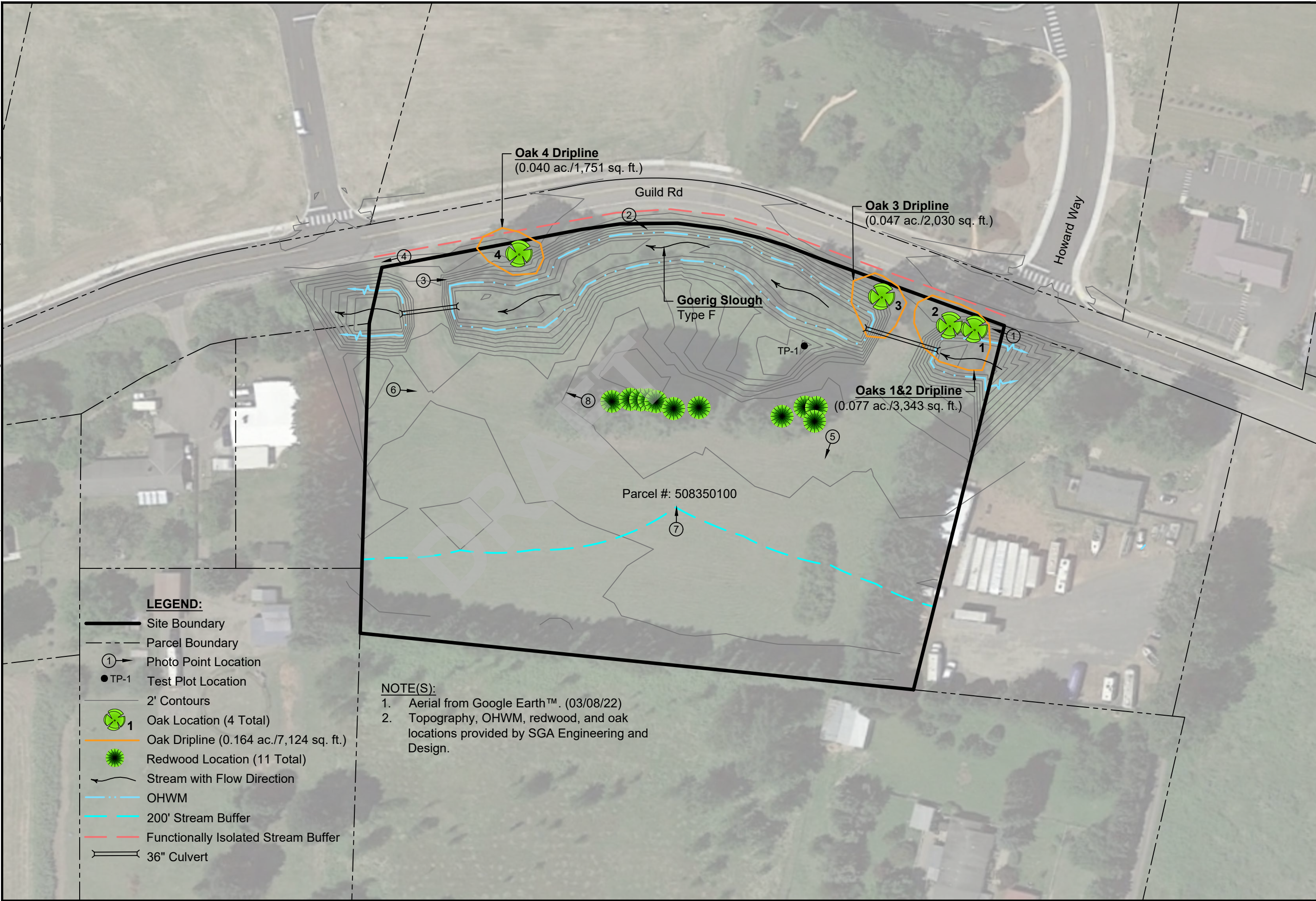
Figure 1
VICINITY MAP
Guild Road Permitting
Part IV Properties, LLC
Woodland, Cowlitz County, WA
Section 14, Township 5N, Range 1W, W.M.

DATE: 4/5/22
DWN: EF
REQ. BY: ST
PRJ. MGR: ST
CHK: JKJ
PROJECT NO:
1353.02

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services





LEGEND:

- Site Boundary
- Parcel Boundary
- Photo Point Location
- TP-1 Test Plot Location
- 2' Contours
- Oak Location (4 Total)
- Oak Dripline (0.164 ac./7,124 sq. ft.)
- Redwood Location (11 Total)
- Stream with Flow Direction
- OHWM
- 200' Stream Buffer
- Functionally Isolated Stream Buffer
- 36" Culvert

NOTE(S):

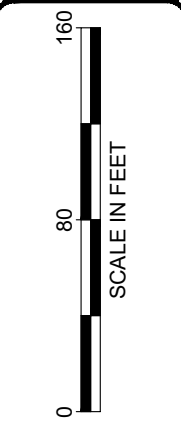
1. Aerial from Google Earth™. (03/08/22)
2. Topography, OHWM, redwood, and oak locations provided by SGA Engineering and Design.

Figure 2

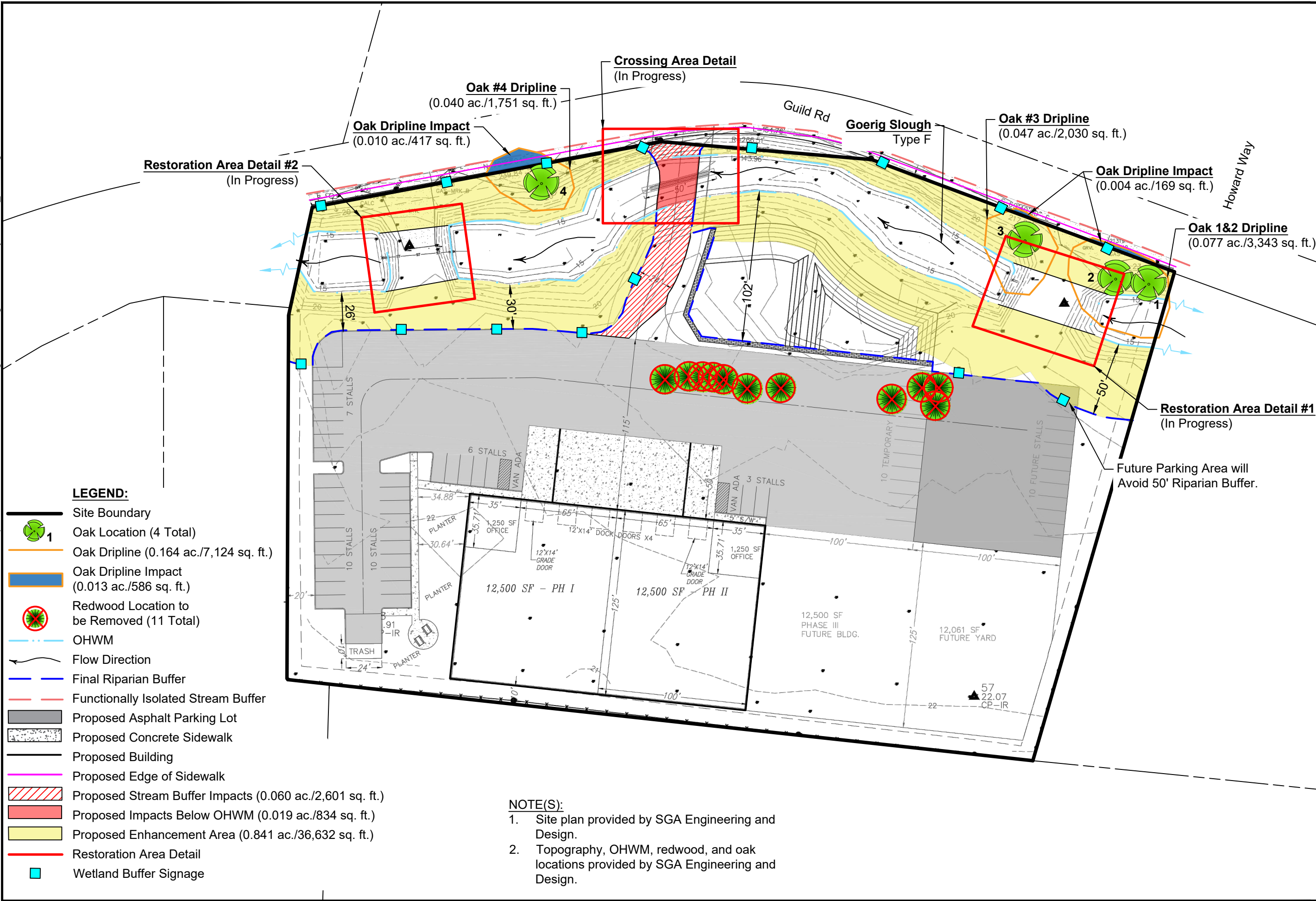
EXISTING CONDITIONS
 Guild Road Permitting
 Part IV Properties, LLC
 Woodland, Cowlitz County, WA
 Section 14, Township 5N, Range 1W, W.M.

DATE: 4/5/22
 DWN: EF
 REQ. BY: ST
 PRJ. MGR: ST
 CHK: JKJ
 PROJECT NO:
 1353.02



















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LEGEND:

-  Site Boundary
-  Oak Location (4 Total)
-  Oak Dripline (0.164 ac./7,124 sq. ft.)
-  Oak Dripline Impact (0.013 ac./586 sq. ft.)
-  Redwood Location to be Removed (11 Total)
-  OHWM
-  Flow Direction
-  Final Riparian Buffer
-  Functionally Isolated Stream Buffer
-  Proposed Asphalt Parking Lot
-  Proposed Concrete Sidewalk
-  Proposed Building
-  Proposed Edge of Sidewalk
-  Proposed Stream Buffer Impacts (0.060 ac./2,601 sq. ft.)
-  Proposed Impacts Below OHWM (0.019 ac./834 sq. ft.)
-  Proposed Enhancement Area (0.841 ac./36,632 sq. ft.)
-  Restoration Area Detail
-  Wetland Buffer Signage

NOTE(S):

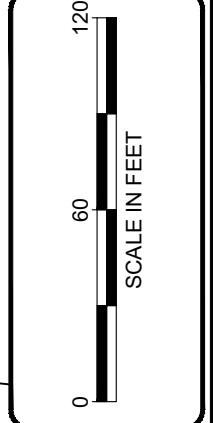
1. Site plan provided by SGA Engineering and Design.
2. Topography, OHWM, redwood, and oak locations provided by SGA Engineering and Design.

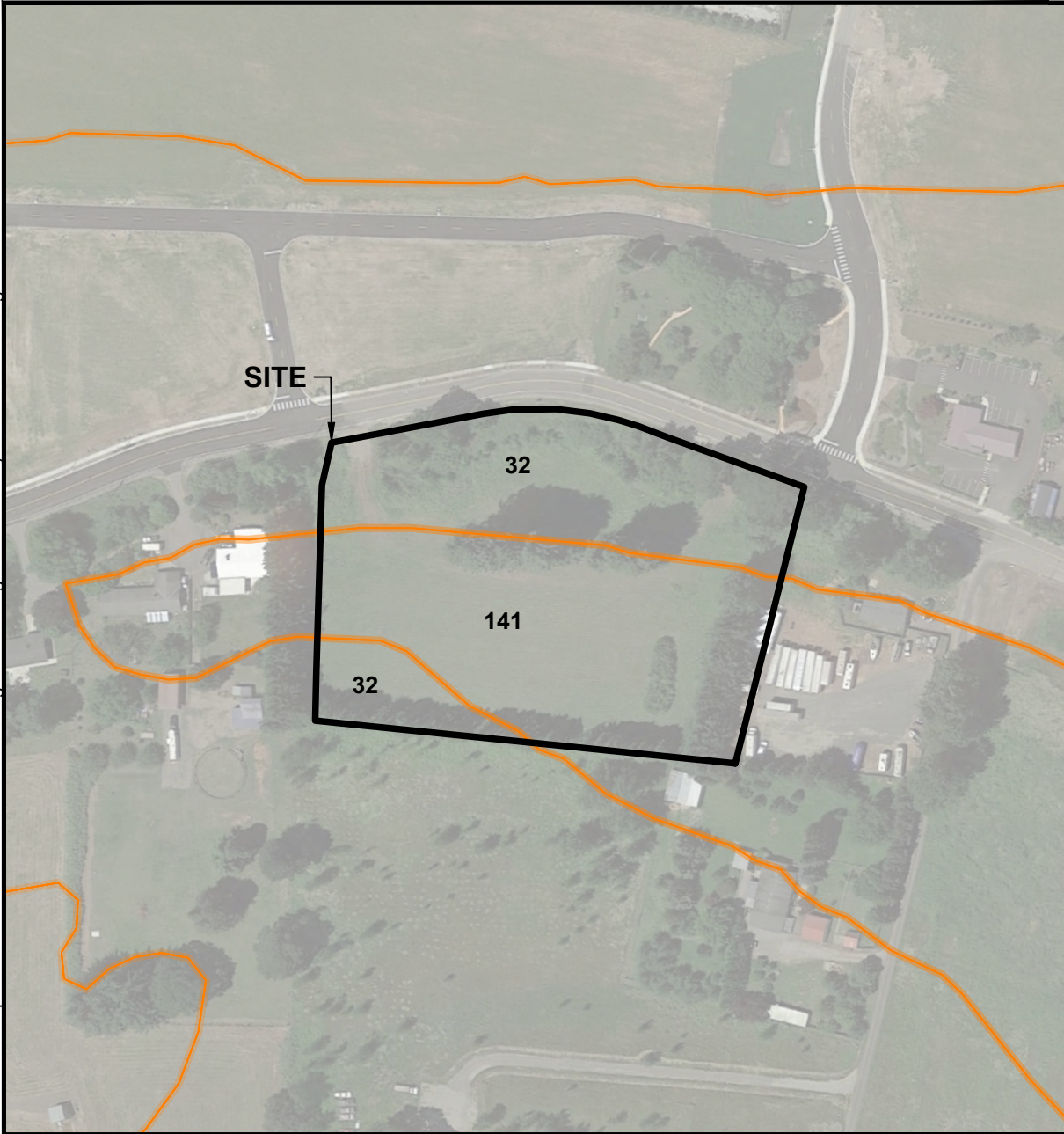
Future Parking Area will Avoid 50' Riparian Buffer.

Figure 3
PROPOSED CONDITIONS
 Guild Road Permitting
 Part IV Properties, LLC
 Woodland, Cowitz County, WA
 Section 14, Township 5N, Range 1W, W.M.

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SITE

32

141

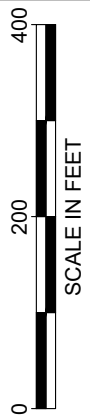
32

LEGEND:

-  Site Boundary
-  NRCS Soil Boundary
- 32** Clato silt loam, 0 to 3 percent slopes. Not hydric.
- 141** Newberg fine sandy loam, 0 to 3 percent slopes. Not hydric.

NOTE(S):

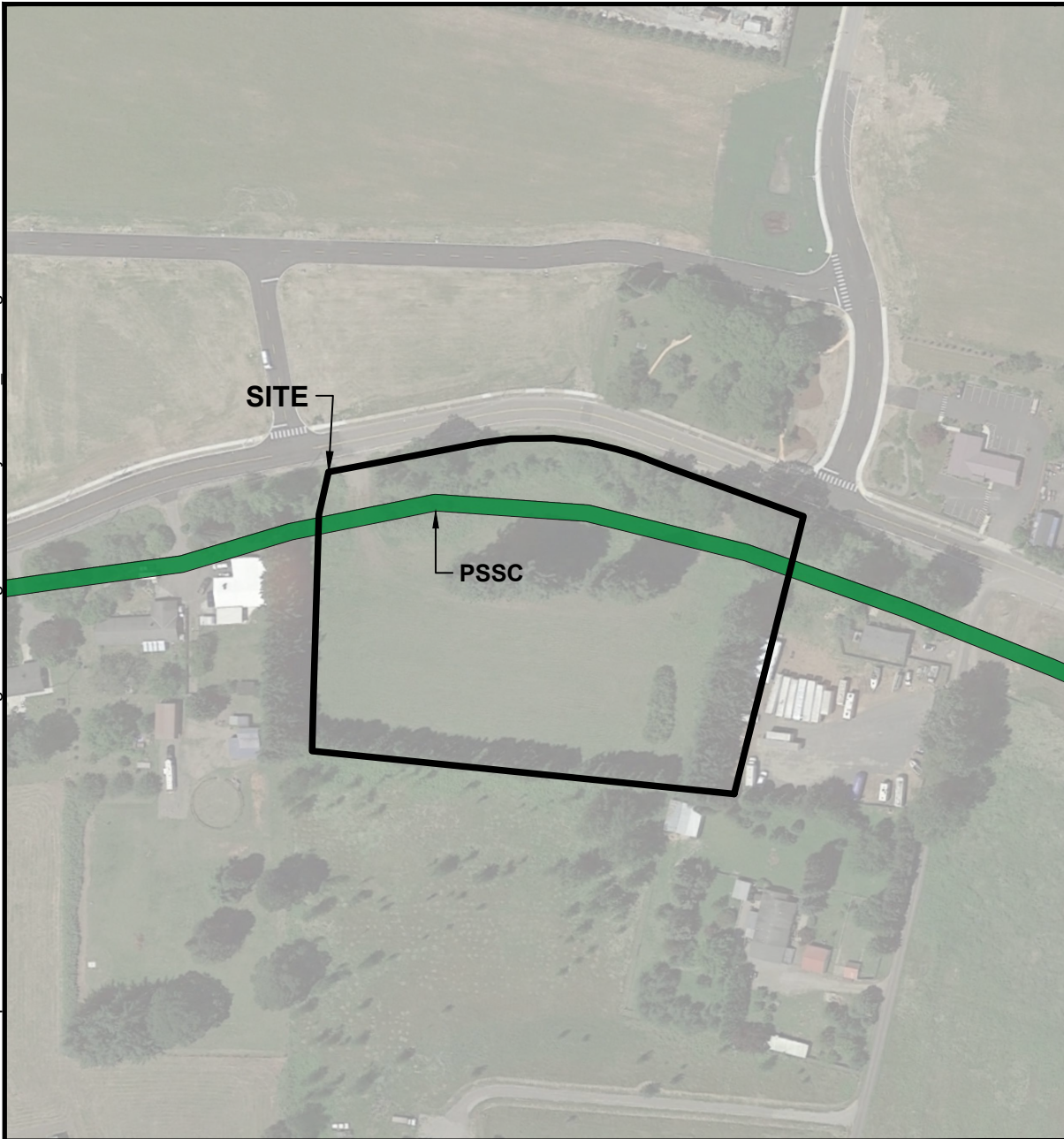
1. Map provided on-line by NRCS at web address:
<http://websoilsurvey.nrcs.usda.gov/app/>




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Figure 4
NRCS SOIL SURVEY
Guild Road Permitting
Part IV Properties, LLC
Woodland, Cowlitz County, WA
Section 14, Township 5N, Range 1W, W.M.



Mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

— Site Boundary

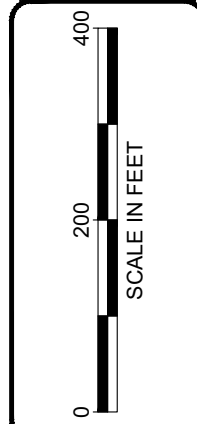
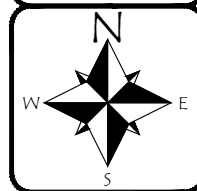
Wetlands

■ Freshwater Forested/Shrub Wetland

PSSC Paulstrine, scrub-shrub, seasonally flooded.

NOTE(S):

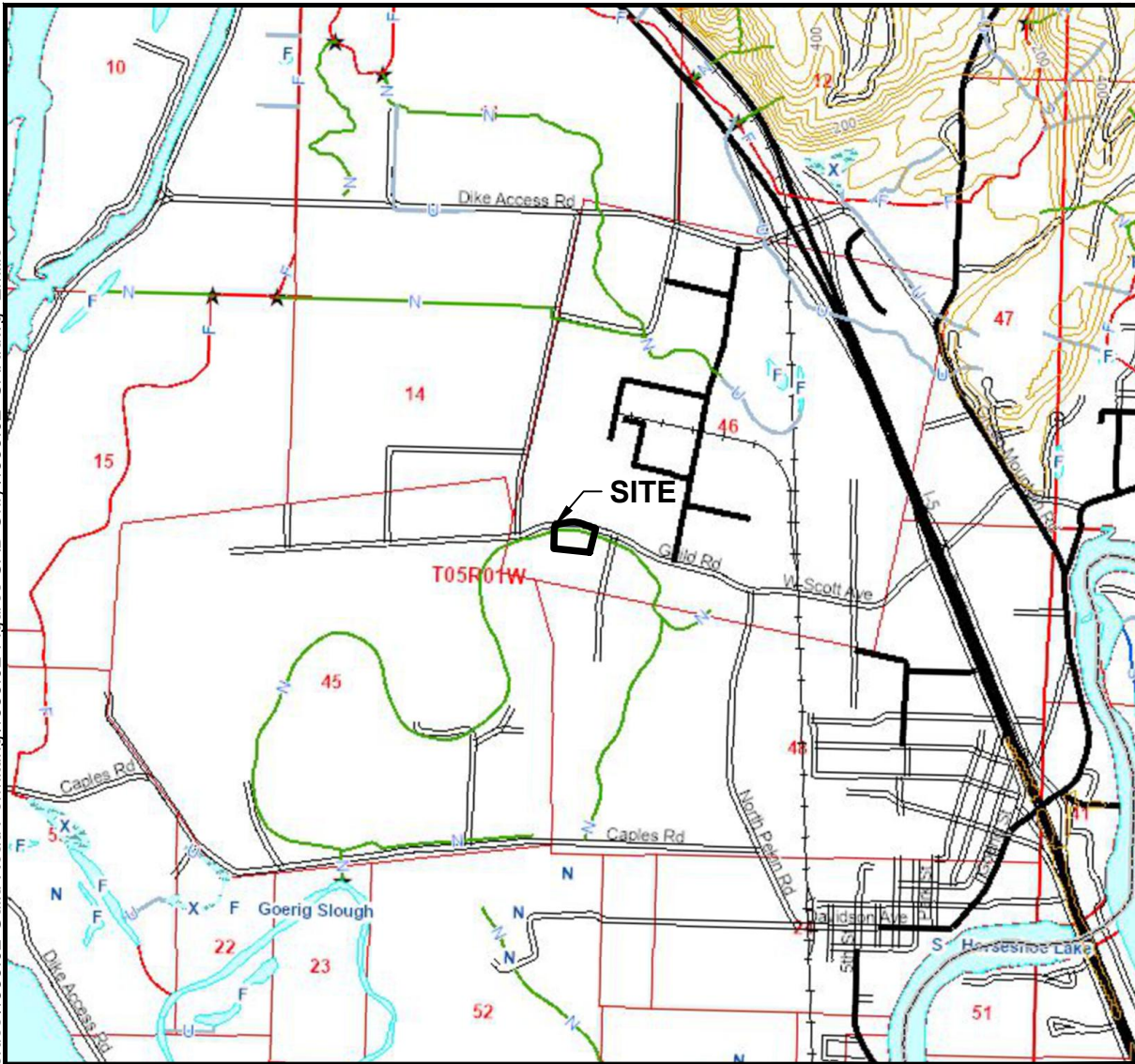
1. Map provided on-line by US Fish & Wildlife Service at web address: <http://www.fws.gov/wetlands/data/index.html>



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Figure 5
USFWS NATIONAL WETLANDS INVENTORY
 Guild Road Permitting
 Part IV Properties, LLC
 Woodland, Cowlitz County, WA
 Section 14, Township 5N, Range 1W, W.M.



Mapped streams indicated onsite by the Washington State Department of Natural Resources (WDNR).

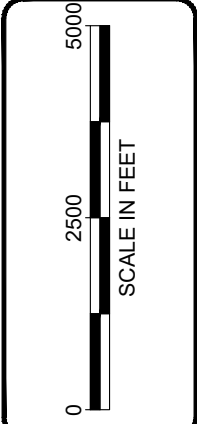
LEGEND:

- Site Boundary
- Water Courses (FP)
 - Type S
 - Type F
 - Type N, Np, Ns
 - U, unknown
 - X, non-typed per WAC 222-16
- 40-foot Contours
 - 40 ft. Contours
- DNR Roads
 - Paved Road
 - Unpaved Road/Surface Unknown
- Unpaved Road/Surface Unknown
 - Water Type Breaks (FP)
- Public Land Survey Sections
 - Public Land Survey Sections
- Public Land Survey Townships
 - Public Land Survey Townships

Figure 6
 WDNR FPAMT
 Guild Road Permitting
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 Section 14, Township 5N, Range 1W, W.M.

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NOTE: Map provided on-line by Washington State Department of Natural Resources at web address: <http://fortress.wa.gov/dnr/app1/Fpars/viewer.htm>





- LEGEND:**
-  Freshwater Forested/Shrub Wetland
 -  Big Brown Bat Waterfowl Concentrations

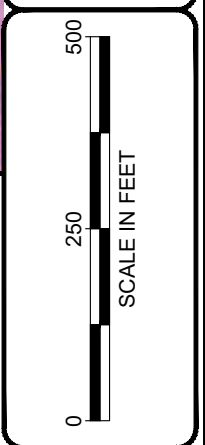
Figure 7
WDFW PRIORITY HABITAT AND SPECIES
 Guild Road Permitting
 Part IV Properties, LLC
 Woodland, Cowlitz County, WA
 Section 14, Township 5N, Range 1W, W.M.

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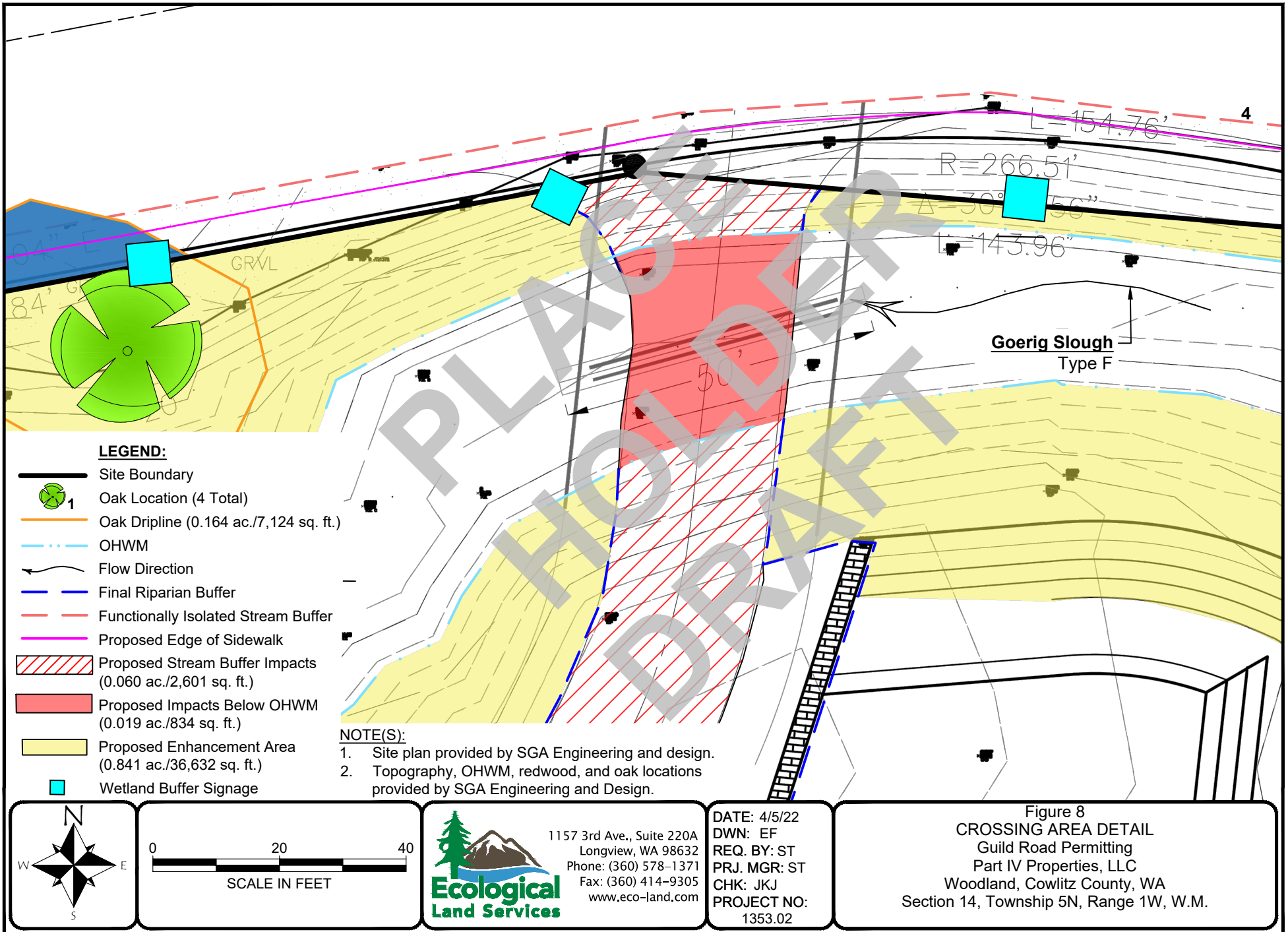
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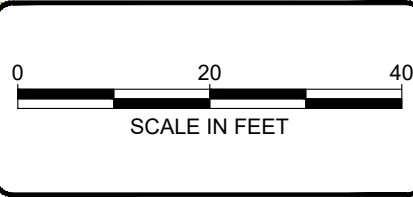
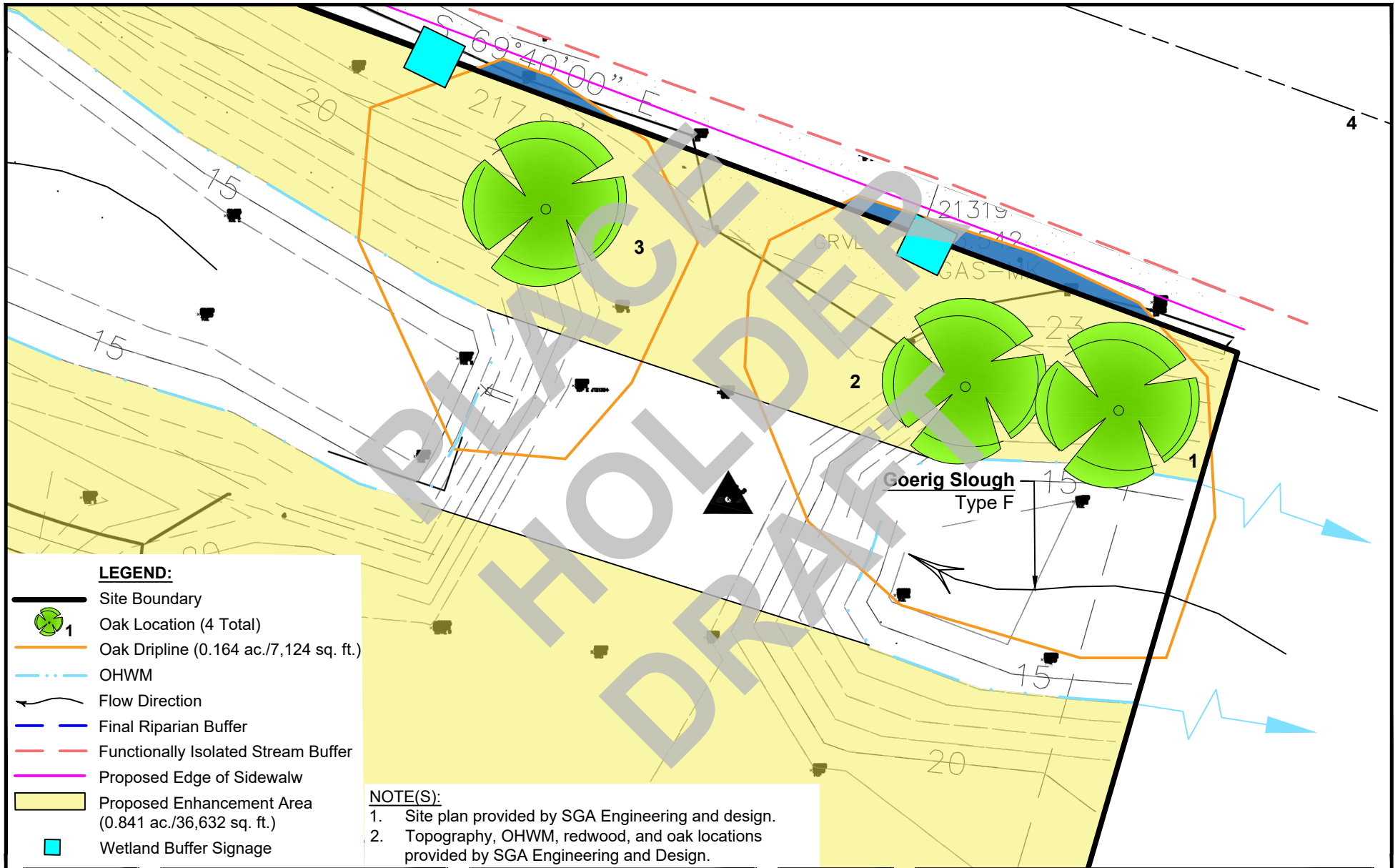


Ecological Land Services



NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address:
<http://apps.wdfw.wa.gov/phsontheweb/>

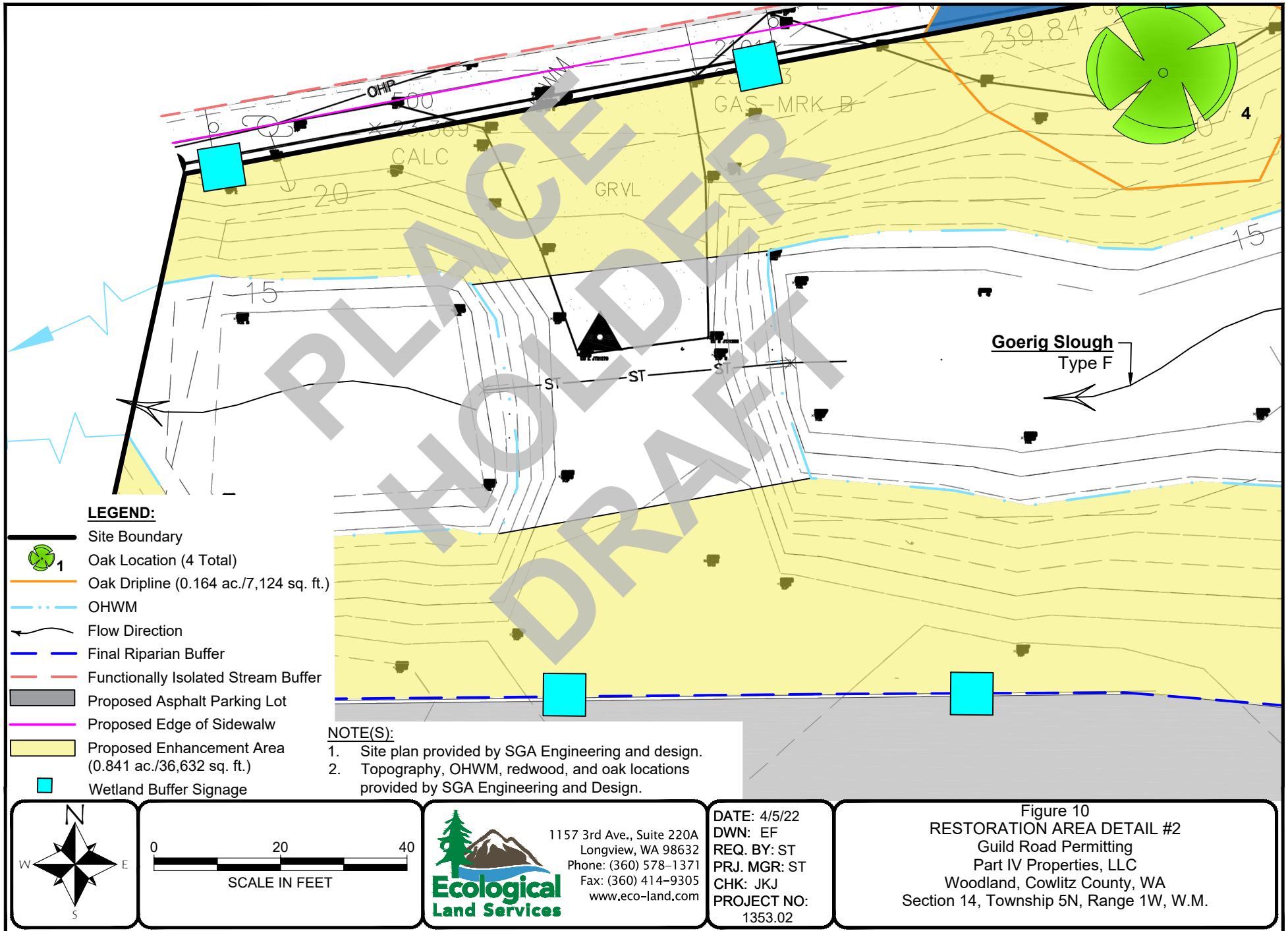




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Figure 9
 RESTORATION AREA DETAIL #1
 Guild Road Permitting
 Part IV Properties, LLC
 Woodland, Cowlitz County, WA
 Section 14, Township 5N, Range 1W, W.M.

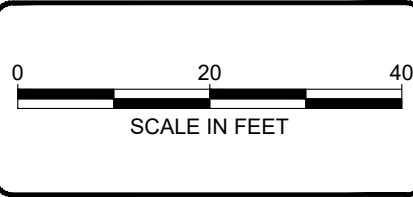


LEGEND:

- Site Boundary
- 1 Oak Location (4 Total)
- Oak Dripline (0.164 ac./7,124 sq. ft.)
- OHWM
- Flow Direction
- Final Riparian Buffer
- Functionally Isolated Stream Buffer
- Proposed Asphalt Parking Lot
- Proposed Edge of Sidewalk
- Proposed Enhancement Area (0.841 ac./36,632 sq. ft.)
- Wetland Buffer Signage

NOTE(S):

1. Site plan provided by SGA Engineering and design.
2. Topography, OHWM, redwood, and oak locations provided by SGA Engineering and Design.



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Figure 10
 RESTORATION AREA DETAIL #2
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 Section 14, Township 5N, Range 1W, W.M.

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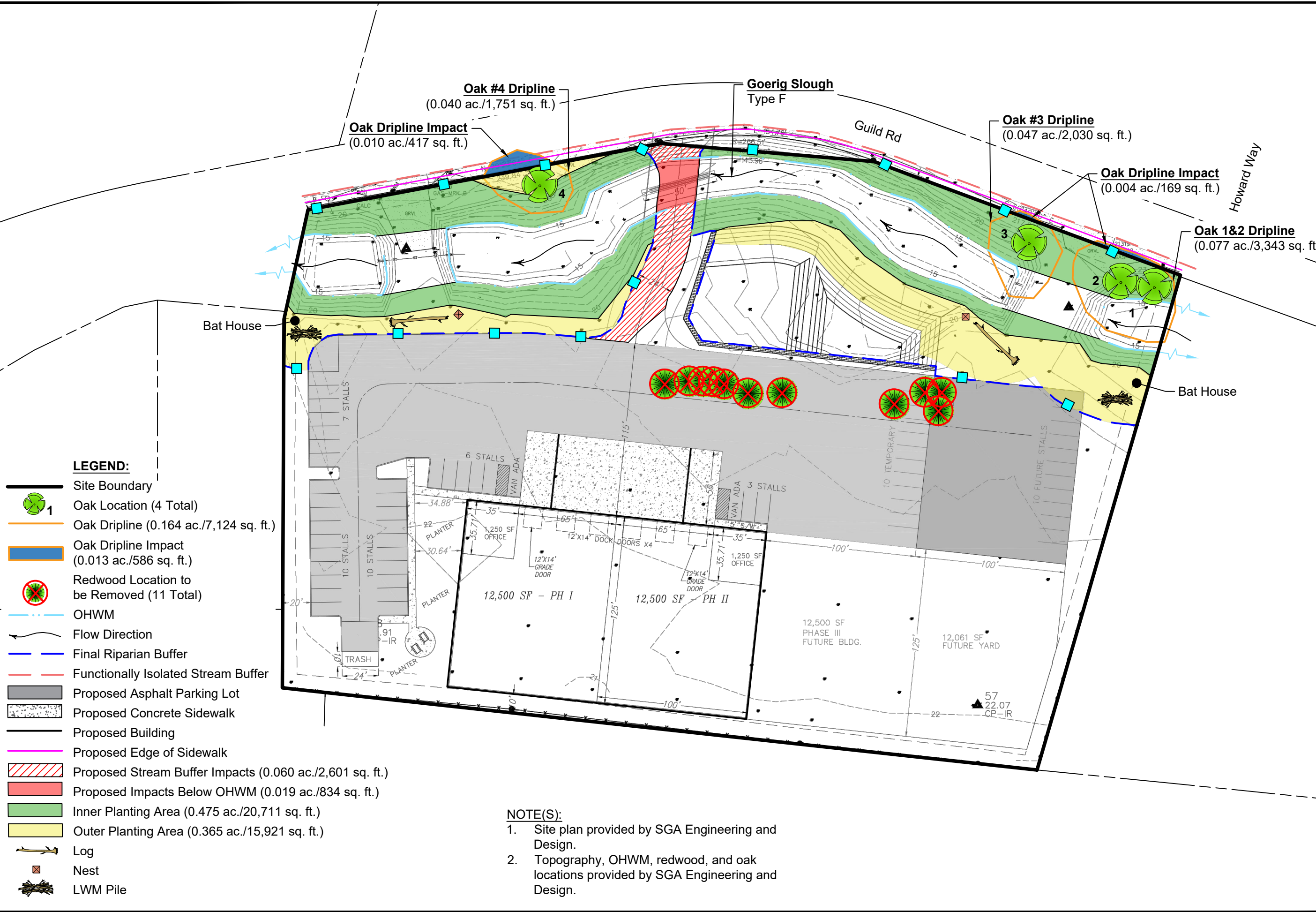


Figure 11
 PLANTING PLAN
 Guild Road Permitting
 Part IV Properties, LLC
 Woodland, Cowlitz County, WA
 Section 14, Township 5N, Range 1W, W.M.

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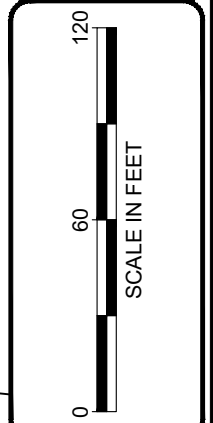




Photo 1. Eastern end of property, looking west.



Photo 2. Midway along central slough segment, looking southeast.



Photo 3. Central slough segment from western end, looking east.



Photo 4. West end of property, looking west.



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Photoplate 1
Site Photos
Guild Road Permitting
City of Woodland, WA
Section 14, Township 5N, Range 1W, W.M.



Photo 5. Looking south from eastern access.



Photo 6. Looking east at redwoods from western end of site.



Photo 7. Gap between redwoods, looking north.



Photo 8. Looking northwest at blackberry area located in southwest portion of central segment.



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Photoplate 2
Site Photos
Guild Road Permitting
City of Woodland, WA
Section 14, Township 5N, Range 1W, W.M.

APPENDIX A: WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Guild Road Permitting City/County: Woodland / Cowlitz Sampling Date: 12/21/21
 Applicant/Owner: Part IV Properties State: WA Sampling Point: TP-1
 Investigator(s): Taylor, S. Section, Township, Range: S14, T5N, R1W
 Landform (hillslope, terrace, etc.): Flood plains Local relief: (concave, convex, none): Convex Slope (%): 0-3%
 Subregion (LRR): LRR A Lat: 45.915278 Long: -122.767778 Datum: 83
 Soil Map Unit Name: Clato silt loam NWI classification: PSSC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soils Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: This test plot was located in the northeastern portion of parcel 508350100, within the lowest topographical area adjacent to the stream bank. This test plot met one wetland indicator with 100% hydrophytic vegetation; therefore, it does not meet the criteria of being a wetland.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u> ft radius)				
1. _____	%			Dominance Test Worksheet Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	%			
3. _____	%			
4. _____	%			
50% = _____ 20% = _____	%	=Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u> ft. radius)				
1. <u>Rosa nutkana</u>	25%	yes	FAC	Prevalence Index worksheet Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1= _____ FACW species _____ x 2= _____ FAC species _____ x 3= _____ FACU species _____ x 4= _____ UPL species _____ x 5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Cornus sericea</u>	15%	yes	FACW	
3. <u>Symphoricarpos albus</u>	5%	no	FACU	
4. _____	%			
5. _____	%			
50% = <u>23</u> 20% = <u>9</u>	45%	=Total Cover		
Herb Stratum (Plot size: <u>5</u> ft radius)				
1. <u>Phalaris arundinacea</u>	60%	yes	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 – Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Urtica dioica</u>	20%	yes	FAC	
3. <u>Galium aparine</u>	5%	no	FACU	
4. _____	%			
5. _____	%			
6. _____	%			
7. _____	%			
8. _____	%			
9. _____	%			
10. _____	%			
11. _____	%			
50% = <u>43</u> 20% = <u>17</u>	85%	=Total Cover		
Woody Vine Stratum (Plot size: <u>15</u> ft radius)				
1. <u>Rubus armeniacus</u>	20%	yes	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	%			
50% = <u>10</u> 20% = <u>4</u>	20%	=Total Cover		
% Bare Ground in Herb Stratum <u>15%</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:				

