

Critical Areas Report and Restoration Plan

Song Restoration Project
Redmond (Unincorporated King
County), Washington

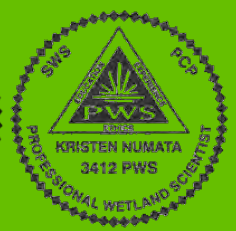
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PREPARED FOR:
Haiju Song

PREPARED BY:
Wet.land, LLC
206-309-8100
Wet.land



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Appendix B: King County Critical Areas Designation CADS20-0125, issued 15 June 2021

Appendix C: Jennifer Marriott, PWS – Resume

 Kristen Numata, PWS - Resume

Appendix D: Photodocument

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W1.0 Existing Conditions & Impacts Overview Plan

W1.1 Historical Aerial Overview

W1.2 Mitigation Plan

W1.3 In-Water Work Isolation Plan & Details

W2.0 Planting Specifications & Details

W3.0 Performance Monitoring & Bond Quantity Worksheet

DISCLAIMER

This report has been prepared by Wet.land, LLC based on our best professional judgment, and is intended for the use outlined in Section 1.3 below. Use of this report or its appendices outside of its intended purpose is a breach of the contract under which this document was prepared.

Any delineations, wetland ratings, stream typings, or general characterizations were completed in accordance with the applicable regulations at the time field work was completed. Where information was provided by Others and not collected directly by Wet.land, LLC, such is stated within the report.

Conclusions presented within this report are based on the information available at the time of report preparation, and are accurate and true to the best of our knowledge. The opinions and conclusions contained within this report are a reflection of our interpretation of applicable regulations and are not final until concurrence is provided by the appropriate agencies.

1. Report Purpose

1.1 Project Name and Purpose

The Song Restoration Project proposes to restore an area of wetland, stream, and buffer that was impacted by a previous landowner and subject to a violation notice issued by King County. The violation included removing vegetation from within a wetland and buffer and adding rocks to the stream shoreline without a permit. The restoration will remove the rocks and replant vegetation within the impacted areas.

1.2 Applicant

The Applicant for Project is Haiju Song:

Email: songhaiju@gmail.com

1.3 Report Purpose

This report has been prepared with the intent of using one set of reports for all local, State, and Federal agencies through which permits are required.

Permitting Agencies:

- US Army Corps of Engineers (USACE);
- Washington State Department of Ecology (ECY) (through the USACE permitting process);
- Washington Department of Fish and Wildlife (WDFW); and
- King County (County).

This report has been prepared in accordance with the requirements of the King County Code (KCC) Chapter 21A.24 *Critical Areas*. This report has also been prepared in light of applicable State and Federal regulations.

1.4 Previously Prepared Documents

A Critical Areas Report (CAR) was previously prepared by Talasaea Consultants (26 May 2020) that outlines the existing conditions on the property (Talasaea 2020, **Appendix A**). This CAR is the document on which the Critical Area Determination (CAD) issued by King County was based (CADS20-0124 and CADS20-0125, **Appendix B**). The final existing conditions map attached to the King County CAD differs from the existing conditions map of the Talasaea 2020 report at a single location where an existing man-made pond was excluded from the wetland limits in 2020, but included in the wetland limits in the final 2021 determination. The final approved delineations from the 2021 CAD are used moving forward with the restoration plan.

No field delineations were completed by Wet.land, LLC staff. The existing conditions and critical areas present within the Site were visually assessed in the field for general consistency by Wet.land, LLC, but no flags remained in the field so a full verification was not completed. It was assumed the final delineations approved by King County through the 2021 CAD reflect the accurate critical area limits.

1.5 Preparer Qualifications

Field investigations were previously completed by other consultants, and the results of their work are presented within this and other referenced reports. This report was prepared by Jennifer Marriott, PWS and Kristen Numata, PWS (**Appendix C**).

Jennifer Marriott has a Bachelor's Degree and a Master's Degree in Biology from University of Central Florida, and a second Master's Degree in Soil and Environmental Science from the University of Florida. She has over 20 years of experience in wetland delineations and environmental permitting.

Kristen Numata has two Bachelor's Degrees in Biology and Environmental Science from Santa Clara University, and she has over eight years of experience in environmental consulting.

2. Project Site

2.1 Project Location

The Project Site is a combination of two (2) parcels located in unincorporated King County, Washington (**Figure 1**). The primary residence address is 7702 196th Avenue NE. The latitude/longitude coordinate for the center of the property is 47.6728, -122.0753. The Public Land Survey System location is the northwest quarter of Section 8, Township 25 North, Range 6 East, Willamette Meridian (W.M.).

Table 1. Summary of Tax Parcels within Project Site.

Tax Parcels	Address	Acreage	Parcel Owner	Proposed Project Element
082506-9026	7702 196 th Avenue NE, Redmond, WA 98053	5.23	SONG HAIJU+HAN JING	Wetland & Buffer Restoration
082506-9032	7550 196 th Avenue NE, Redmond, WA 98053	2.88	SONG HAIJU+HAN JING	Wetland, Stream & Buffer Restoration
Total		8.11		

2.2 Project Site History

The main house on Parcel 082506-9026 was built in 2005 with the house on Parcel 082506-9032 built in 1947. The property has generally been maintained at least partially as pasture since then except for a forested corridor around Martin Creek. A Farm Management Plan was recorded with the King County Conservation District in 2006 (**Appendix A, Talasaea CAR**) that identified a stream, wetland and buffers onsite and targeted areas outside of the stream and wetlands as pasture.

The Project Site was previously owned by James L. and Deanna L. Scott of John L. Scott Real Estate, and purchased by the Songs in July 2021. The violation action occurred in prior to the Song's purchase of the property. The King County CAD references an enforcement case that started in 2019.

The extent of the violation action is unknown as the canopy in the area of disturbance was and remains a dense forest of deciduous trees that prohibits a thorough evaluation of the violation action via aerial imagery. According to the Talasaea 2020 CAR, the only action taken was the removal of vegetation from under the canopy of the trees, mostly Himalayan blackberry (*Rubus armeniacus*), without a permit. In addition to vegetation removal, the lower half of Martin Creek was lined with rock to prevent flooding of the primary residence without a permit, according to the Talasaea 2020 CAR.

The Songs are now moving the project forward to address the outstanding violation actions that will require work in wetlands and a stream.

2.3 Project Site Description

The properties contain two (2) single-family homes, one per parcel with associated infrastructure. The western home also has a barn and paddocks for horses while the eastern home has a large, landscaped area around the house. The driveway crosses over a bridge for Martin Creek to reach the eastern home. The riparian corridor is forested while the remainder of the properties are maintained as house, lawn or pasture. The forested riparian corridor is dominated by deciduous trees with few conifers located onsite. The understory was previously disturbed and is part of the violation action to be addressed.

Since the unpermitted land clearing was completed, the entire area was seeded with a grass blend. The area is dominated by orchard grass and fescue grasses in its current condition. The grasses in the seeded areas are very dense. Other species present include a variety of invasive species discussed in more detail below.

More detail on the existing conditions of these parcels is provided in the 2020 report prepared by Talasaea.

3. Existing Site Conditions

While existing conditions regarding the presence of wetlands, streams and their buffers are addressed in the 2020 Talasaea CAR, wildlife and habitat was not. Therefore, below is a brief discussion of critical areas and a more substantial discussion on listed species potentially using the Site and any protected habitat.

3.1 Wetlands & Streams

Portions of a riparian wetland complex occurs around Martin Creek that meanders across the center of the property (**Appendix E**). Martin Creek flows from the northeast to southwest and enters Evans Creek approximately 700 west of the Site.

Wetlands onsite were dominated by emergent species such as yellow iris (*Iris pseudoacoris*), jewelweed (*Impatiens capensis*), reed canarygrass (*Phalaris arundinacea*), watercress (*Nasturtium officinale*), smartweeds (*Polygonum* spp.), and small-fruited bulrush (*Scirpus microcarpus*), among others. Orchard grass (*Dactylis glomerata*) is quite prevalent as well along with a blend of fescues and rye. The canopy is mostly red alder (*Alnus rubra*).

3.2 Wildlife & Listed Species

General observations on expected and observed wildlife usage is below.

Table 2. Summary of Listed Species and Potential for Occurrence

Common Name	Scientific Name	Federally Listed	State Listed	Priority Habitat or Species	Potential Occurrence/ Use of Site ¹
BIRDS					
Marbled Murrelet	<i>Barchyramphus marmoratus</i>	X	X		None
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	X	X		None
Snowy Plover	<i>Charadrius nivosus</i>	X	X		None
Streaked Horned Lark	<i>Eremophila alpestris strigata</i>	X	X		None
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	X	X		None
MAMMALS					
Gray wolf	<i>Canis lupis</i>	X	X	X	Very Low

Common Name	Scientific Name	Federally Listed	State Listed	Priority Habitat or Species	Potential Occurrence/ Use of Site ¹
Fisher	<i>Pekania pennant</i>		X		None
Lynx	<i>Lynx canadensis</i>	X	X		None
Whales ¹	¹	X	X		None
Wolverine	<i>Gulo gulo luscus</i>	Proposed			None
FISH					
Bull Trout	<i>Salvelinus confluentus</i>	X			Potentially Occurring
Dolly Varden	<i>Salvelinus malma</i>	X			Potentially Occurring
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	X			Not mapped in Martin Creek; Are mapped in Evans Creek downstream
Steelhead Trout	<i>Oncorhynchus mykiss</i>				Not mapped in Martin Creek; Are mapped in Evans Creek downstream
AMPHIBIANS					
Oregon Spotted Frog	<i>Rana pretiosa</i>	X	X		None
INVERTEBRATES					
Taylor's Checkerspot	<i>Euphydryas Editha taylori</i>	X			None

¹All whales lumped together to reflect their occurrence downstream, but none are occurring on or near the Site.

3.2.1 Federally Listed Species – NMFS

Salmonids, including Chinook salmon and steelhead trout, are expected to occur or have the potential to occur within Martin Creek. Several species are known to use Evans Creek immediately downstream and have the potential to move upstream.

3.2.2 Federally Listed Species - USFWS

No suitable habitat occurs onsite for any land-based listed species. The Site is surrounded by single-family large lot properties, though several large swaths of undeveloped public lands do occur within a mile of the Site that could allow for mammal movement. It is very unlikely that any listed mammal or bird would use the Site due to the lack of mature forested habitat and adjacent uses of large lawns and pastures.

3.2.3 State Listed Species

State priority habitats on the Site include wetlands, instream and riparian habitat. It is expected that wildlife and state listed species that typically use these habitats have the very low potential to use the Site, however, on and offsite conditions are degraded. No state listed species are known or were observed using the Site.

3.2.4 Local Species

Common urban wildlife are expected to use the Site, though King County does not have its own list of local species of importance.

4. Regulatory Review

The Site falls under the jurisdiction of the King County, State of Washington, and the US Army Corps of Engineers. A summary of the relevant regulations follows.

4.1 Federal Regulations

Waters of the US, including the wetlands and watercourses, occur on or adjacent to the Site and may be subject to applicable Federal regulations. Wetland and stream (watercourse) impacts are regulated at the Federal level by Sections 404 and 401 of the Clean Water Act. The US Army Corps of Engineers (USACE) is responsible for administering compliance with Section 404 via the issuance of Nationwide or Individual Permits for any fill or dredging activities within wetlands under Corps jurisdiction. If no actions are proposed that would directly impact a wetland or stream, then no coordination with the USACE is necessary for Section 404 compliance.

This restoration project will require removal of rock from the stream bank of Martin Creek which requires coordination with the USACE. The remainder of the restoration plan involved planting trees and shrubs and removing invasive species, which are not actions that require coordination with the USACE.

4.2 State Regulations

Wetlands on the Site are subject to applicable State regulations. However, County regulations retaining to wetlands and streams are based on state guidelines and will dictate critical areas protections.

4.2.1 Washington State Department of Ecology (ECY)

Any project that is subject to Section 404 permitting is also required to comply with Section 401 Water Quality Certification, which is administered by the Washington State Department of Ecology (DOE). If no actions are proposed that would directly impact a wetland or stream, then no coordination with the USACE is necessary for Section 404 compliance, which would also include Section 401 compliance.

This Project requires coordination with the USACE, which will also require coordination with ECY as part of the water quality component of Section 404 permitting.

4.2.2 Washington State Department of Fish & Wildlife (WDFW)

The Project will apply for a Hydraulic Project Application (HPA) permit through the Washington Department of Fish and Wildlife once the State Environmental Policy Act (SEPA) decision has been issued to address the removal of rocks from the stream bank.

4.3 Local Regulations

The Site falls within King County limits and is subject to the regulations of KCC Chapter 21A.24 – Critical Areas.

4.3.1 Shoreline Jurisdiction

The Site does not occur within Shoreline jurisdiction. Shoreline jurisdiction stops at Evans Creek downstream.

4.3.2 Non-Shoreline Jurisdiction

Critical areas on the Site are subject to the regulations of King County Code (KCC) Chapter 21A.24 – *Critical Areas*. A summary of the onsite features is provided in **Table 3** below, as approved by King County.

***Table 3.** Summary of Critical Areas on the Project Site.*

Critical Area ID	Wetland Category (Habitat Score)/ Stream Typing	Standard Buffer (feet) (KCC 21A.24) (Moderate Land Use)
Wetland A	III (6)	110
Wetland B	III (6)	110
Wetland C	II (7)	110
Martin Creek	Type F	165

Building Setback

The wetland and stream buffers require a 15-foot building setback line to prevent encroachment into the critical areas following construction (KCC 21A.24.200). Certain activities are allowed within this building setback, including but not limited to, landscaping, uncovered decks, building overhangs, and impervious surfaces such as driveways.

4.3.3 Flood Hazard Area

No 100-year floodplains are mapped on or adjacent to the Site.

5. Proposed Project

5.1 Proposed Project

The Project is only mitigation to address unpermitted impacts to critical areas completed by a previous landowner. The noted violation was for the removal of the entire understory within the riparian corridor around Martin Creek, including within wetlands and buffers. While the vegetation was reported to be mostly Himalayan blackberry, the size of the cleared area and lack of documentation appears to have caused concerns. In addition to the cleared understory, rocks were added to the banks of Martin Creek without a permit as well.

Since the clearing was completed, the entire area was seeded with a grass blend. The area is dominated by orchard grass, fescue, and thistle in its current condition.

5.2 Stormwater Management

There is no stormwater management component associated with this Project as the focus of this Project is the restoration of the completed critical area impacts.

5.3 Site Development Alternatives

No alternatives exist. The impacts have been completed, and the restoration effort will target those impacted areas to recreate the native vegetation that was removed without permits.

6. Critical Areas Impacts

6.1 Assessment of Development Impacts

There is no development associated with this application. The project is only to address unpermitted impacts to critical areas.

6.2 Wetland Impacts

Work within wetlands will be required as part of the restoration to remove invasive species and plant a dense understory of native trees and shrubs. The canopy within the wetland remains undisturbed. It is unclear what the understory was prior to the clearing activities, but the restoration will target dense plantings of native trees and shrubs to supplement the existing canopy.

Temporary impacts to the wetland may result where access to Martin Creek is required for rock removal. Where temporary access to the stream is required, timber mats or equivalent will be used to protect the wetland soils. Any temporary disturbances to the wetland will be restored consistent with the remainder of the restoration plan.

6.3 Stream Impacts

Small boulders roughly 12" across were placed 1-2 high along the stream banks without a permit. Rocks were only placed along the banks of the lower half of the stream within the smaller parcel. The stream was not modified in any other fashion except for the addition of the rocks and bank vegetation modification.

Stream restoration only addresses removing the unpermitted rock placed along the lower half of the stream channel (only placed on Parcel 082506-9032), stabilizing the low banks after rock removal, and replanting the edges of the stream as part of the wetland and buffer restoration actions. No other actions within the stream channel are proposed nor required. Implementation of these restoration measures will ensure the stream condition post-mitigation is better than the pre-mitigation condition through the addition of native species.

6.4 Buffer Impacts

A review of aerial imagery comparing structures and canopy was completed and is provided as **Sheet W1.1 (Appendix E)**. This aerial review supports that some areas of buffer between the existing canopy and the eastern house were dominated by Himalayan blackberry that was since removed. A large portion of the onsite buffers for the wetlands and stream was already maintained as lawn or pasture or contain portions of the primary residences on the properties prior to the violation action.

The canopy appears to have not changed since before the violation action in the summer to fall of 2019 to present. Therefore, buffer restoration actions focus on adding a densely planted, native understory dominated by woody shrubs where the native canopy remains. Areas that were clearly not forested prior to the violation action will remain in their current condition of native grasses.

6.5 Listed Species Impacts

The project will have no long-term impact on state and federally listed species that have the potential to occur on the Site. Short-term impacts will result from the temporary dewatering necessary to isolate the work area, remove the rocks, and stabilize the shoreline. So while short-term impacts may result from the mitigation actions, ultimately, the net result will be improved stream habitat along this reach of Martin Creek. Therefore, this Project may affect, but is not likely to adversely affect listed species.

7. Proposed Mitigation Plan

7.1 Agency Policies and Guidance

The proposed mitigation plan was designed in accordance with the policies and guidance provided in the following documents:

- King County Code, Chapter 21A.24 -- Critical Areas;
- The Washington State Department of Ecology (ECY) Publication #06-06-011a, Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance, and Part 2: Developing Mitigation Plans (Version 1), dated March 2006 (Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10 2006a, 2006b); and
- The Federal Compensatory Mitigation for Losses of Aquatic Resources Final Rule (33 CFR Parts 325 and 332, April 10, 2008), effective June 9, 2008 (U.S. Army Corps of Engineers Seattle District and U.S. Environmental Protection Agency Region 10 2008).

All proposed mitigation shall be based on best available science and shall demonstrate no net loss of critical area functions and values.

7.2 Mitigation Sequencing

No mitigation sequencing discussion is provided. The intent of this project is to restore previously disturbed critical areas for actions completed without the required permits and approvals. Those areas of native vegetation that were disturbed will be restored to the pre-impact condition.

7.3 Proposed Mitigation Components

The mitigation plan includes the following elements:

- Stream Channel Restoration 323 linear feet
- Wetland Restoration 20,507 square feet (0.47-acre)
- Buffer Restoration - Planting 7,619 square feet (0.17-acre)
- Buffer Restoration – Hydroseed 10,099 square feet (0.23-acre)

7.3.1 Stream Channel Restoration

Stream restoration only addresses removing the unpermitted rock places along the bank along the lower half of the stream (only placed on Parcel 082506-9032), stabilizing the banks after rock removal, and replanting the edges of the stream as part of the wetland and buffer restoration actions. Once the rock is removed, the banks will be stabilized through the installation of coir matting over the bank and adjacent area landward of the stream. The streambed substrate will not be modified as part of this process.

7.3.2 Wetland Restoration

Wetland restoration actions include removal of invasive species and plantings of dense, native trees and shrubs to replace the understory cleared without a permit. No modifications to the wetlands are proposed beyond the addition of native plants.

Temporary access across the wetlands may be necessary to reach the stream for rock removal. If that becomes the case, timber mats or equivalent will be used to prevent disturbing wetland soils during the rock removal effort. This would be done before any vegetation restoration occurs within the wetlands.

7.3.3 Buffer Restoration

Targeted portions of the buffers where understory clearing occurred will be restored through the removal of invasive species and addition of densely planted native shrubs. Some trees will be added as well, though the area contains a fully mature deciduous canopy that was not disturbed as part of the violation actions.

Portions of the buffer that were maintained as pasture prior to the violation action will remain as pasture with no supplemental plantings proposed. These areas of clearing will be restored with a native upland grass mix.

7.4 Mitigation Design Elements

7.4.1 Irrigation

An irrigation system will be provided for the proposed mitigation areas, though it is yet undetermined whether this will be a temporary or permanent system.

7.4.2 Plantings

All plantings will only be native species typical for the region that have been site located based on that species' tolerances for light, water, and soil type. A variety of tree and shrub species will be chosen with the intent to provide structural and species diversity within the mitigation areas. It is expected that natural recruitment of species occurring in the area will also occur and contribute to the species diversity and cover in the mitigation area.

7.5 Mitigation Goals, Objectives, and Performance Standards

The primary goal of the mitigation is to compensate for impacts to buffers and restore the temporarily impacted buffers. To accomplish these goals, the proposed project will:

- Stream Channel Restoration 323 linear feet
- Wetland Restoration 20,507 square feet (0.47-acre)
- Buffer Restoration - Planting 7,619 square feet (0.17-acre)
- Buffer Restoration – Hydroseed 10,099 square feet (0.23-acre)

Mitigation actions will be evaluated through the following objectives and performance standards. See **Chapter 9** for a full description of the monitoring methods that will be used to evaluate the approved performance standards. Mitigation monitoring will be performed by a qualified biologist.

Objective A: Restore the understory in the designated wetlands and buffers.

Performance Standard A1: Percent survival of all installed species must be at least 90% at the end of Year 1, and at least 80% at the end of Years 2 and 3.

Performance Standard A2: A total of at least 5 species of desirable native plant species will be present in the wetland and buffer restoration areas. Species may be comprised of both planted and naturally colonized vegetation.

Performance Standard A3: In hydroseeded buffer areas, coverage will be at least 75% throughout the performance monitoring period.

Objective B: Restore 323 linear feet of stream banks.

Performance Standard B1: Stream banks will be monitored annually for bank stability to ensure no major erosion events have occurred beyond what would be considered normal for a stream of this size.

Objective C: Remove and control invasive plants to less than 10% cover in mitigation areas.

Performance Standard C1: After construction and throughout the s monitoring period, aerial coverage by non-native invasive plant species shall be maintained at 10% or less throughout the mitigation site. These standards apply to ditch, riparian, and upland buffer areas combined. These species include, but are not limited to: Scot's broom, Himalayan and evergreen blackberry, purple loosestrife, hedge bindweed, and bittersweet nightshade.

Performance Standard C2: Per Corps requirements, after construction and throughout the monitoring period, non-native invasive knotweed species (such as *Polygonum cuspidatum*, *P. polystachyum*, *P. sachalinense*, and *P. bohemicum*) will be eradicated throughout the mitigation areas (including buffer areas) for a total cover of 0%.

8. Construction Sequencing

8.1 Mitigation Construction Sequencing

The following provides the general sequence of activities anticipated to construct this mitigation project. Some of these activities may be conducted concurrently as the project progresses.

1. Conduct a site meeting between the Contractor, project Biologist or Ecologist, and the Owner's Representative to review the project plans, staging/stockpile areas, and material disposal areas.
2. A pre-construction meeting with County staff will be required in advance of beginning any construction activities.
3. Two to three weeks prior to the installation of BMP's for clearing, grading, or restoration a wildlife survey will be conducted to establish pre-clearing existing conditions and presence/absence of protected species. Any wildlife discovered that is Local, State, or Federally protected or protected under KCC 21A.24.382 B through J and K will need to be protected during construction. This condition would apply during the nesting/breeding season of protected species (March – July).
4. Survey work limits.
5. Install silt fence and any other erosion and sedimentation control BMPs necessary for work in the project areas.
6. Mow entire understory within work limits to cut down grasses to the greatest extent practicable to prepare area for restoration activities.
7. **Martin Creek:**
 - a. Install in-water work isolation plan.
 - b. Remove rocks from stream banks.
 - c. Stabilize stream banks:
 - i. If exposed bank is more than 12" height of soil, lay back soil to prevent erosion.
 - ii. If exposed bank is less than 12" height of soil, no bank modification is necessary.
 - iii. Stabilize bare dirt banks with coir matting. Stake coir mats at edge of streambed substrate, over exposed banks. Any extra coir matting should be on landward side of stream bank.
 - d. Plant per the planting typical/plans.
8. **Wetland and Buffers:**
 - a. Remove non-native, invasive species from designated areas.
 - b. Plant areas per the planting typical/plans.
 - c. Hydroseed buffer areas per mitigation plan.
 - d. Mulch all buffer areas and provide a three-inch-deep mulch ring around all container-planted material outside of OHWM and wetlands.
9. Install irrigation system. Ensure that the system is capable of head-to-head coverage.
10. Complete site cleanup.

8.2 Post-Construction Approval

Once construction is approved, a qualified wetland ecologist shall conduct a post-construction assessment. The purpose of this assessment will be to establish baseline conditions at Year 0 of the required monitoring period. A Baseline Assessment report including “as-built” drawings will be submitted to all of the required agencies. The as-built plan set will identify and describe any changes in grading, planting, or other constructed features in relation to the original approved plan.

8.3 Post-Construction Assessment

The Permittee or representative shall notify the permitting agencies (County, USACE, WDFW) when the mitigation plan has been fully installed and is ready for a final site inspection and subsequent final approval. Once final approval is obtained in writing, and “as-built” plans are approved, the monitoring period will begin.

9. Monitoring Plan

Performance monitoring of the mitigation areas will be conducted according to all applicable code/regulatory requirements and permit conditions. Monitoring will be conducted for a minimum of three years for the County. Monitoring will be conducted according to the schedule presented in **Table 4** below, and will be performed by a qualified biologist or ecologist. The performance monitoring period will be complete when the mitigation site meets all performance standards, at which point one can conclude that the goals and objectives for the mitigation site have been met.

Table 4. Projected Schedule for Performance Monitoring & Maintenance Events

Year	Date	Maintenance Review	Performance Monitoring	Report Due to Agencies
Year 0 As-built and Baseline Assessment	Fall	X	X	X
1	Spring	X	X	
	Fall	X	X	X
2	Spring	X	X	
	Fall	X	X	X
3	Spring	X		
	Fall	X	X	X*

① *Final approvals from the County may be requested to facilitate release of any financial guarantees assuming performance criteria are met.

9.1 Monitoring Reports

Each monitoring report will adhere to the requirements of KCC 21A.24. The reports will include: 1) Project Overview, 2) Requirements, 3) Summary Data, 4) Maps and Plans, and 5) Conclusions. Monitoring reports will be submitted by the end of October to both King County and the USACE during the years in which monitoring is conducted.

9.2 Monitoring Methods

The following monitoring methods will be used to evaluate the mitigation site for compliance with the approved performance standards.

9.2.1 Vegetation Monitoring

Vegetation monitoring methods may include counts; photo-points; random sampling; sampling plots, quadrats, or transects; stem density; visual inspection; and/or other methods deemed appropriate by the permitting agencies. Vegetation monitoring components shall include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weed cover.

Permanent vegetation sampling plots, quadrats, and/or transects will be established at selected locations to adequately sample and represent all of the plant communities within the mitigation project areas. The number, exact size, and location of transects, sampling plots, and quadrats will be determined at the time of the baseline assessment and shown on a map for use in the baseline assessment report, as well as future annual monitoring reports.

Percent aerial cover of woody vegetation will be evaluated through the use of point-intercept sampling methodology. Using this methodology, a tape will be extended between two permanent markers at each end of an established transect. Trees and shrubs intercepted by the tape will be identified, and the intercept distance recorded. Percent cover by species will then be calculated by adding the intercept distances and expressing them as a total proportion of the tape length.

The established vegetation sampling locations will be monitored and compared to the baseline data during each performance monitoring event to aid in determining the success of plant establishment. Percent survival of shrubs and trees will be evaluated in a 10-foot-wide strip along each established transect. The species and location of all shrubs and trees within this area will be recorded at the time of the baseline assessment and will be evaluated during each monitoring event to determine percent survival.

9.2.2 Photo Documentation

Permanent photo stations will be established at a minimum of three (3) locations within the mitigation site from which panoramic photographs will be taken throughout the monitoring period. Photo-point locations will be shown on a map and submitted with the baseline assessment report and yearly performance monitoring reports. These photographs will document general appearance and relative changes within the plant community. Review of the photos over time will provide a semi-quantitative representation of success of the planting plan.

9.2.3 Wildlife

Direct and indirect observations of wildlife usage will be recorded during scheduled monitoring events. Direct observations entail actual sightings of the animal, while indirect observations include noticing tracks, scat, nests, or other indications of a species using the area.

9.2.4 Water Quality

Water quality will be visually observed during scheduled monitoring events for a qualitative assessment that is only intended to notice obvious discrepancies from expected conditions. No water quality sampling is proposed in conjunction with this parameter. Qualitative water quality assessment parameters include oil sheens (or other surface films); abnormal color or odor of water; stressed or dead vegetation or aquatic fauna, if present; or obvious turbidity.

9.2.5 Site Stability

General observations of slope stability in the mitigation site will be made during each scheduled monitoring event. Any observations of unexpected erosion will be recorded and discussed with appropriate Team members or Agency staff to determine any necessary corrective measures.

10. Maintenance Plan and Contingency Measures

Regular maintenance reviews will be performed according to schedule presented in **Table 4** as part of the performance monitoring program to address any conditions that could jeopardize the success of the mitigation project. Required maintenance on the site will be implemented within ten (10) business days of submission of a maintenance memo to the maintenance contractor and permittee.

The established performance standards identified in Section 7.5 (above) will be compared to the yearly monitoring results to evaluate the success of the mitigation. Adjustments to the mitigation will be made as needed based on these regular evaluations to bring the mitigation back on track for success.

The following list includes examples of maintenance (M) actions that may be implemented during the course of the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- Replace all dead woody plant material during Year One (M).
- Remove/control weedy or exotic invasive plants in a manner consistent with current Agency guidelines and recommendations. Use of herbicides or pesticides within the mitigation area would only be implemented if other measures failed or were considered unlikely to be successful and would require prior agency approval. All non-native vegetation must be removed and disposed of off-site (M).
- Weed all trees and shrubs to the dripline and provide 3-inch deep mulch rings 24 inches in diameter for shrubs and 36 inches in diameter for trees (M).
- Remove trash and other debris from the mitigation areas twice a year (M).
- Selectively prune woody plants at the direction of Project Ecologist or Biologist to meet the mitigation plan's goal and objectives (e.g., thinning and removal of dead or diseased portions of trees/shrubs) (M).
- Repair or replace damaged structures including signs, or bat/bird boxes (M).

If, during the course of the monitoring period, there appears to be a significant problem with achieving the performance standards, the permittee shall work with the City and other permitting agencies to develop a Contingency Plan in order to get the project back into compliance with the performance standards. Contingency plans can include, but are not limited to, the following actions: additional plant installation, erosion control, bank stabilization, modifications to hydrology, and plant substitutions of type, size, quantity, and/or location. If required, a Contingency Plan shall be submitted to the City by December 1st of any year when deficiencies are discovered.

The following list includes examples of contingency (C) actions that may be implemented during the course of the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- Replace dead plants with the same species or a substitute that meets mitigation plan goals and objectives, subject to project Biologist/Ecologist and agency approval (C).

- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.) (C).
- After consulting with City staff and other permitting agencies, minor excavations, if deemed to be more beneficial to the existing conditions than currently exists, will be made to correct surface drainage patterns (C).

11. Long-Term and Adaptive Management Plans

Long-term maintenance of the Site will be handled in conjunction with the Site landscape management, as determined appropriate. It is anticipated that minimal hands-on maintenance will be required of these natural areas after the 10-year performance monitoring period. However, the mitigation areas will be evaluated periodically for unnatural or non-native disturbances, including, but not limited to, invasive species and human impacts, such as trash.

The maintenance, contingency action, long term- and adaptive management plans are all intended to be adaptive in nature to respond to the changing conditions of the mitigation site. These elements are intended to be broad in nature and allow a wide variety of action depending on what is best for the mitigation site based on the issues at that time. Any action that requires more than minor modifications to the mitigation site would be discussed with appropriate Agency staff prior to action being taken.

12. Financial Guarantees

Per KCC 21A.24.140, the mitigation plan, separate from other aspects of the project on the Site, shall include financial guarantees, to ensure that the mitigation plan is fully implemented.

The financial guarantee for the County meets the requirements for the USACE consistent with Section 33 CFR 332.3(n).

13. Summary

The Song Restoration Project proposes to restore an area of wetland, stream, and buffer that was impacted by a previous landowner and subject to a violation notice issued by King County. The violation included removing vegetation from within a wetland and buffer and adding rocks to the stream shoreline without a permit. The restoration will remove the rocks and replant vegetation within the impacted areas under an undisturbed, existing canopy.

The mitigation plan includes the following elements:

- Stream Channel Restoration 323 linear feet
- Wetland Restoration 20,507 square feet (0.53-acre)
- Buffer Restoration - Planting 7,619 square feet (0.17-acre)
- Buffer Restoration – Hydroseed 10,099 square feet (0.23-acre)

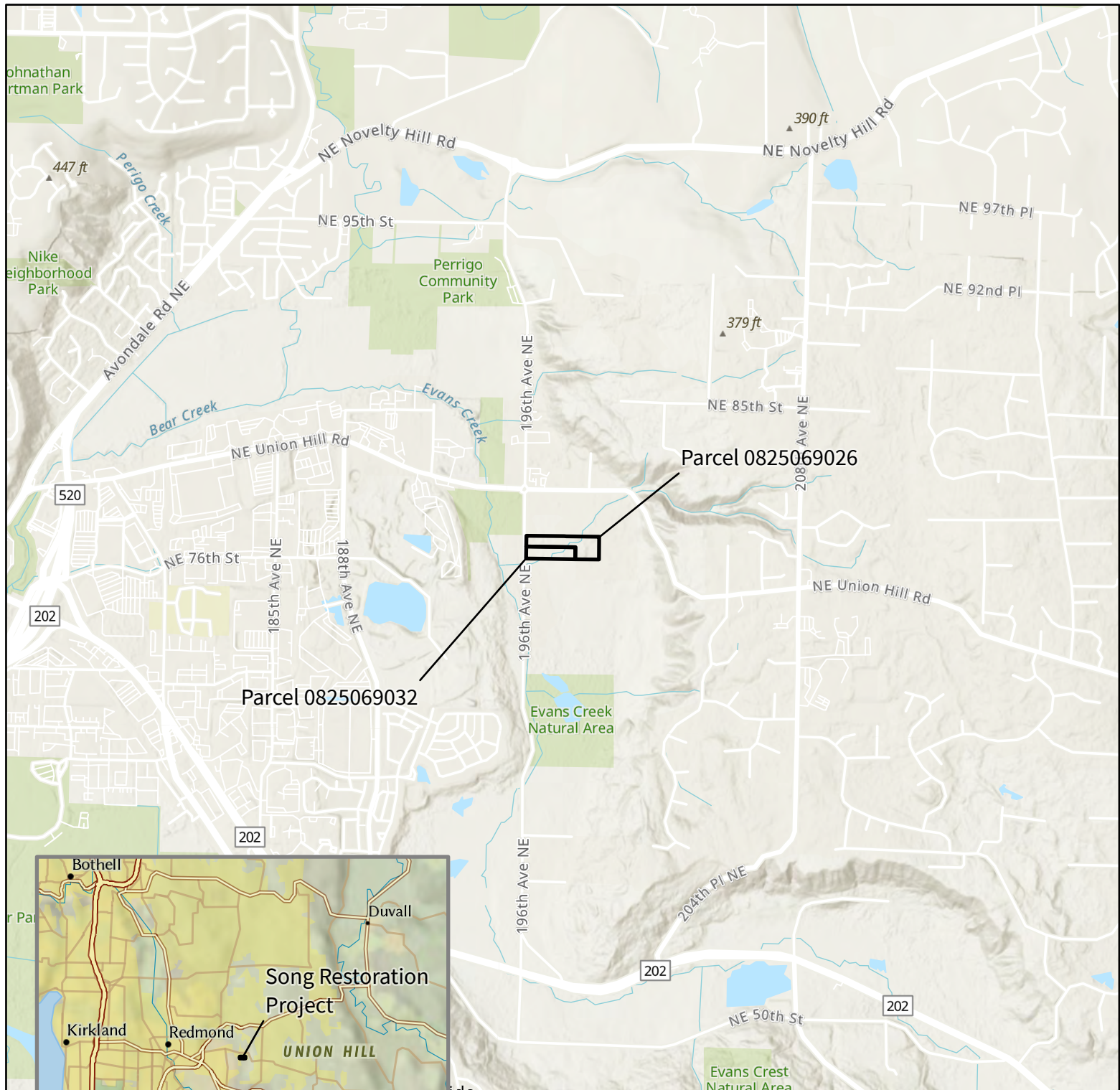
Performance monitoring of all mitigation plan elements will continue for a minimum of 3 years for the County.



14. References

1. Anderson, P. S., Meyer, S., Olsen, P., & Stockdale, E. (2016). *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State*. Lacey, WA: Washington Department of Ecology, Shorelines & Environmental Assistance Program.
2. Cowardin, L. M., Carter, V., Golet, F. C., & LaRoe, E. T. (1979). *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service.
3. Environmental Laboratory. (1987). "*Corps of Engineers Wetlands Delineation Manual*," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
4. Hruby, T. (2014). *Washington State Wetland Rating System for Western Washington: 2014 Update* (Publication #14-06-029). Olympia, WA: Washington Department of Ecology.
5. King County Code (KCC) Chapter 21A.24 Critical Areas (accessed 8 January 2025).
6. Lichvar, R. (2012). The National Wetland Plant List. Hanover, NH: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. Retrieved from [http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=\\$N/1012381](http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=$N/1012381)
7. U.S. Army Corps of Engineers. (2010, May). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0). U. S. Army Corps of Engineers. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

LIST OF FIGURES

Figure 1: Vicinity Map




 N

 0 500 1,000 2,000 Feet
SOURCE: ESRI TOPOGRAPHY AND HILLSHADE



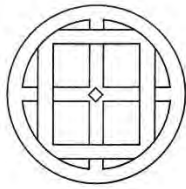
VICINITY MAP
 Song Restoration Project
 7702/7550 196th Ave NE, Redmond
 King County, Washington

#0096
 SEPT 2022
FIGURE 1

APPENDIX A

Critical Areas - Existing Conditions Report, dated 26 May 2020, prepared by Talasaea Consultants

*Due to the size of this document, select appendices have not been included, but are available upon request.



TALASAEA
CONSULTANTS, INC.

26 May 2020

TAL-1855

John Lennox Scott, CEO
John L. Scott Real Estate
7702 196th Avenue Northeast
Redmond, Washington 98053
Via email: lennox@johnlscott.com

REFERENCE: 7550 and 7702 196th Ave NE, King County, Washington
SUBJECT: Critical Areas – Existing Conditions Report

Dear Mr. Scott,

At your request, Talasaea Consultants has completed an evaluation of the subject property ("Site" hereinafter), and adjacent properties, for the presence of critical areas that could potentially impact future use of the Site. The Site and 300 feet surrounding the Site are referred to jointly as the "Study Area".

PROPERTY LOCATION

The Site is comprised of two adjacent parcels totaling approximately 8.11 acres in unincorporated King County (**Figure 1**). "Parcel A" (King County Tax Parcel #082506-9026) is the primary residence located at 7702 196th Ave NE, and "Parcel B" (#082506-9032; a.k.a, the "Wregglesworth Property") is located at 7550 196th Ave NE (**Figure 2**). These parcels are approximately 5.23 acres and 2.88 acres in size, respectively. The Public Land Survey System location of the Site is the Northwest ¼ of Section 8, Township 25 North, Range 6 East, Willamette Meridian.

PROPERTY DESCRIPTION AND LAND USE

The Site is rectangularly shaped and spans approximately 1,057 feet east from 196th Ave NE, and 333 feet north to south. Access to the properties is from 196th Ave NE. Each parcel contains one (1) single-family residence, with the primary residence located on Parcel A. The Site is bordered to the north, east, and south by other single-family residences, and to the west by 196th Ave NE (**Photo 1**). Pasture areas are located throughout the Site, delineated by electric fencing, and have historically been managed through a Farm Management Plan, recorded with King Conservation District in August, 2006 (**Appendix A**).

Resource & Environmental Planning

15020 Bear Creek Road Northeast • Woodinville, Washington 98077 • Bus: (425)861-7550 Fax: (425)861-7549

An updated Farm Management Plan is currently being developed for review and approval by the King Conservation District.

Native vegetation within the Study Area is limited to treed areas surrounding Martin Creek, which includes an assemblage of red alder (*Alnus rubra*), Oregon ash (*Fraxinus latifolia*), paper birch (*Betula papyrifera*), western redcedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), and big-leaf maple (*Acer macrophyllum*). According to the property owner, Understory vegetation, predominantly non-native blackberry (*Rubus armeniacus*), was removed from the areas surrounding Martin Creek in summer/fall of 2019. However, salmonberry (*Rubus spectabilis*) and other native and non-native species are re-emerging in these areas. The areas of the Site outside of the Creek's corridor are vegetated with pasture grass species, including perennial ryegrass (*Lolium perenne*) and tall fescue (*Lolium arundinaceum*). Yellow archangel (*Lamium galeobdolon*), a Class B noxious weed, is abundant along the banks of Martin Creek.

Both Site parcels are zoned RA-5 (Residential) and have complying uses as single-family residences. Topography of the Site generally slopes downward from the northeast to the southwest.

Martin Creek flows in a southwesterly direction through the center of the Site. Three (3) wetlands (Wetlands A, B, and C) are located onsite and are associated with Martin Creek (discussed in the *Critical Areas* section of this report).



Photo 1. Project Site, outlined in red, and surrounding land uses.

BACKGROUND INFORMATION

Background information from the following sources was reviewed prior to field investigations:

- US Fish and Wildlife Service (USFWS) Wetlands Online Mapper (National Wetlands Inventory, NWI) (www.wetlandsfws.er.usgs.gov/wtlnds/launch.html);
- Natural Resources Conservation Service (NRCS), Web Soil Survey (www.websoilsurvey.nrcs.usda.gov/app);
- King County Critical Areas Database (King County IMap, 2020);
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) Database on the Web (wdfw.wa.gov/mapping/phs);
- Washington Department of Natural Resources (DNR) Natural Heritage GIS database, 2020;
- Fish usage data from SalmonScape (<http://apps.wdfw.wa.gov/salmonscape/map.html>), StreamNet (<http://www.streamnet.org/data/interactive-maps-and-gis-data/>) and the Northwest Indian Fisheries Commission (<https://geo.nwifc.org/swifd/>);
- Orthophotography from Earth Explorer (2020), Google Earth (2020); and Historic Aerials (www.historicaerials.com, 2020).

The National Wetland Inventory (NWI) maps two (2) features occurring partially within the 300 foot Study Area (**Figure 3**). The first feature is a Palustrine Emergent, persistent, temporarily flooded wetland system (PEM1A) located approximately 165 feet southwest of the property, west of 196th Ave NE. The second feature mapped is a Riverine, intermittent, streambed class, seasonally flooded system (R4SBC) located along the eastern property boundary of the Site. The Riverine feature is likely an inaccurate representation of Martin Creek because Martin Creek was determined to be located west of the primary residence and no such features were discovered east of the residence.

The Natural Resources Conservation Service (NRCS) maps four (4) soil types as occurring within the Study Area (**Figure 4**). The western area of the Site is primarily composed of Norma Sandy Loam and the northwestern corner of the Site is mapped as Mixed Alluvial Land. The eastern portion of the Site is mapped as Indianola loamy sand, 0 to 5% slopes. The northeastern portion of the Study Area is mapped as containing Everett very gravelly sandy loam, 0 to 8% slopes. The National Technical Committee for Hydric Soils identifies the Norma, Indianola, and Everett soil series as partially hydric, with inclusions that may meet hydric soil criteria. The Norma and Indianola soil series are map units that are frequently ponded for long durations during the growing season.

The *Environmentally Sensitive Area* layer on King County's GIS database maps a Sensitive Area Notice on the Title of Parcel A (**Appendix B**) and the property located south of Parcel B (**Appendix C**), both recorded in 2003. These Sensitive Area Notices (Recording numbers 20030307002177 and 20030924001676) identify one (1) Class 2S Stream (Martin Creek) as

occurring on Parcel A, Parcel B, and the property located south of Parcel B, but did not map any wetlands as occurring on any of these parcels.

The DNR Wetlands of High Conservation Value mapper does not locate any features within the Study Area. However, the WDFW SalmonScape application maps Martin Creek as habitat for documented presence of resident coastal cutthroat trout. Evans Creek is the receiving water of Martin Creek and is also mapped as habitat for documented presence of resident coastal cutthroat trout, along with documented presence of fall-run Chinook salmon, sockeye salmon, and steelhead trout. Evans Creek is also mapped spawning habitat for documented Coho salmon.

FIELD INVESTIGATIONS

We evaluated the Site on several occasions between January and April 2020. Critical areas on the Site were delineated on 20 and 21 April 2020. Offsite areas were evaluated visually from boundaries of the Site and via aerial imagery. The routine approach described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers, 2010) was used as a baseline for evaluating the Site for the presence of wetlands. Wetland Determination Data Sheets were used to document site conditions and identify wetland areas (**Appendix D**). Wetlands were rated using the *Revised Washington State Wetland Rating System* for Western Washington (Hruby 2014) (**Appendix E**), and buffers were assigned according to King County Zoning Code (KCZC) §21A.24.325.B.1.

CRITICAL AREAS

One (1) stream (Martin Creek) and three (3) wetlands (Wetlands A, B, and C) were identified within the Study Area (**Figures 5 and 6**). No other wetlands or streams were identified on or adjacent to the Site that would project buffers onto the Site. The stream feature mapped by NWI, east of the primary residence, does not exist and was likely a misrepresentation of Martin Creek, which is located further west.

A summary of the identified critical areas and their buffers is located in **Table 1**, below, followed by detailed descriptions of each critical area.

Table 1. Critical Area Feature Summary Table.

FEATURE NAME	CATEGORY/TYPE (Habitat Score)	COWARDIN CLASS	STANDARD BUFFER
Martin Creek	Type F	N/A	165 feet
Wetland A	Category III (6)	PFO	110 feet
Wetland B	Category III (6)	PFO	110 feet
Wetland C	Category II (7)	PFO/PEM	110 feet

MARTIN CREEK

Martin Creek is a known salmon-bearing stream (Type F) that flows southwesterly through the central portion of the Site. The drainage basin of Martin Creek, upgradient of the Site, is approximately 365 acres and is developed with low density residential lots. The receiving water of Martin Creek is Evans Creek, which is located roughly a quarter mile west of the Site. Evans Creek is listed as a 303(d) water for bacterial concentrations. The onsite portion of Martin Creek ranges from approximately four (4) feet to 12 feet in width.

In summer/fall of 2019, Martin Creek was lined with rock throughout Parcel B and in the southern portion of Parcel A, in an effort to prevent flooding of the primary residence. The placement of rock along the stream was unpermitted and necessitates this report and ongoing cooperation with applicable agencies. The Creek is mostly devoid of large woody material or other fish habitat features. However, some stream channel braiding at the northern end of Parcel A has created off-channel rearing habitat for salmonid fry, which were observed during the Site visit.

King County Type F streams, including Martin Creek, require a 165-foot standard buffer measured from the Ordinary High Water Mark (OHWM). This buffer extends into the maintained landscaped and pasture areas and includes some of those areas cleared of blackberry (on the report of the property owner) in 2019. A 15-foot building setback is also required, and extends out from the standard buffer.

WETLAND A

Wetland A is an approximately 7,176 square-foot (SF) wetland located along the northern bank of Martin Creek. The wetland is characterized as a Palustrine Forested, persistent, saturated only system through the Cowardin wetland classification system (Cowardin *et al.* 1979). This wetland is associated with Martin Creek and portions of the wetland receive overbank flooding from the Creek with a recurrence interval of two (2) years, which qualify the feature as a Riverine class in the Hydrogeomorphic (HGM) wetland classification system (Brinson 1993).

Vegetation within Wetland A includes red alder, paper birch, Oregon ash, skunk cabbage (*Lysichiton americanus*), perennial ryegrass, tall fescue, yellow archangel, and common horsetail (*Equisetum arvense*). A dense understory of Himalayan blackberry and some native species likely comprised the shrub stratum through most of the wetland area. Some of these areas were formerly used as pasture for many years. Currently, the wetland does not contain a strong shrub stratum after clearing in summer/fall of 2019. However, some salmonberry and red elderberry (*Sambucus racemosa*) are re-emerging. Yellow archangel, present throughout much of Wetland A, is an emergent species listed as a Class B noxious weed by King County.

Soils within Wetland A are generally characterized by having a dark yellowish-brown (10YR 3/2) surface layer (0-6 inches), underlain by a higher value and lower chroma (10YR 4/1) layer with redoximorphic features occurring as concentrations and pore linings. These soil characteristics meet the criteria for Hydric Soil Indicator F3 – *Depleted Matrix*.

Hydrology in Wetland A is primarily supplied by groundwater associated with Martin Creek, which saturates soil within 12 inches of the surface. Martin Creek occasionally provides additional hydrology through overbank flooding during annual flood events.

Wetland A scored 6 points for Water Quality functions, 7 points for Hydrologic Functions, and 6 points for Habitat functions through the Revised Wetland Rating System (Hruby, 2014). The total score of functions is 19, which qualifies Wetland A as a Category III wetland. Category III wetlands with a Habitat Score of 6 require a standard 110-foot buffer measured from the wetland edge. Wetlands also require a 15-foot building setback line (BSBL) measured from the buffer's outer edge.

WETLAND B

Wetland B is a small, approximately 770 SF, Palustrine Forested, persistent, saturated only system (Cowardin *et al.* 1979) located along the northeastern bank of Martin Creek. As with Wetland A, Wetland B receives some overbank flooding from Martin Creek at a two (2) year recurrence interval, which qualifies the feature for the Riverine HGM classification.

Vegetation within Wetland B is comprised of paper birch, perennial ryegrass, and tall fescue. Shrubs, including a dense understory of Himalayan blackberry, were cleared from this area in 2019 and the area was reseeded with pasture grasses (ryegrass and fescue).

Soils within Wetland B are characterized by an approximate 6-inch layer of topsoil (placed after vegetation clearing), underlain by a loamy gley layer (Gley 1 4/10Y) and a depleted (10YR 4/1) sandy loam layer, both with redoximorphic concentrations. These soil characteristics meet the criteria for the *Loamy Gleyed Matrix* and the *Depleted Matrix* hydric soil indicators.

Hydrology in Wetland B is supported by groundwater associated with Martin Creek, with a secondary source from annual overbank flooding events.

Wetland B scored 6 points for each function (Water Quality, Hydrologic, and Habitat) in the Revised Wetland Rating System, for a total score of 18 points, which qualifies Wetland B as a Category III wetland. Wetlands meeting these criteria require a standard 110-foot buffer measured from the wetland boundary and an additional 15-foot BSBL measured from the buffer's outer edge.

WETLAND C

Wetland C is a large, approximately 10,596 SF, wetland located along the southern bank of Martin Creek. The wetland is characterized as a Palustrine Forested and Emergent, saturated only system. Like Wetlands A and B, Wetland C is associated with Martin Creek and portions of the wetland receive overbank flooding from the Creek, which qualifies the feature as a Riverine class in the HGM wetland classification system (Brinson 1993). This wetland does not include the excavated “pond” area to the southeast (discussed below), which was created prior to October 1991 and is managed as a landscape water feature.

Vegetation composition in Wetland C is similar to that within Wetland A. Native and ornamental species have been planted along the streambanks, including western redcedar and ornamental fern and grass species. Some salmonberry is beginning to reemerge after clearing in 2019.

Soils within Wetland C are characterized by a shallow surface layer of topsoil placed in 2019, underlain by a dark yellowish-brown (10YR 3/2) sandy loam with redoximorphic concentrations within the matrix. This layer is underlain by a low-chroma (10YR 4/1) layer with redoximorphic concentrations within the matrix. This low chroma layer is located deeper in the soil strata in the southern portions of the wetland (Sample Plot #7).

Hydrology within Wetland C is sourced primarily from groundwater associated with Martin Creek, which expresses as saturation within 12 inches of the ground surface throughout much of the wetland area. Occasional overland flow of Martin Creek is evident from sediment deposits and staining on trees during high-flow events that occurred this winter.

If the pre-existing man-made pond feature is determined not to be functionally connected to Wetland C, then Wetland C will score 7 points for Water Quality functions, 7 points for Hydrologic functions, and 7 points for Habitat functions. The total score of functions is 21, which qualifies Wetland C as a Category II wetland. Wetlands meeting these criteria require a standard 110-foot buffer measured from the boundary and an additional 15-foot BSBL measured from the buffer’s outer edge.

PRE-EXISTING MAN-MADE POND

At some point prior to October 1991 (first recorded Sensitive Area Notice including a ‘pond’ feature within Parcel B), an area was excavated south of Wetland C for the purpose of creating a maintained landscape water feature. The water feature, labeled as “pond”, was also recorded on a survey associated with a Sensitive Areas Notice from 1999 (**Appendix A**). This water feature measures approximately 80 feet wide by 50 feet long and is approximately 8 feet deep at the deepest point. Some portion of onsite storm water may be conveyed to this feature, as indicated by an occasionally-flowing, approximately 8-inch diameter pipe located at the northeastern corner of the feature. The feature was inundated with approximately 1.5 feet of water at the time of the Site visit, but water marks indicate that

this landscape feature ponds with several feet of water on occasion during wetter parts of the year.

This feature appears to have been excavated from an upland area, since the feature is located approximately 65 feet southwest of a portion of Parcel A that has a recorded Sensitive Area Notice on Title, displaying no wetland areas within the vicinity of the Site. However, it is difficult to say with certainty whether this area met wetland criteria prior to excavation. Currently, this created feature meets all three parameters of wetland criteria (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology), and may be continuous with a narrow portion of Wetland C. However, soils surrounding the pond in some areas appear to have been historically disturbed, perhaps due to the placement of spoils in these areas from the pond excavation, so these areas represent an atypical condition. The property owner reports that Martin Creek connected to the feature during the 2019 flooding event, which was a 25-year storm event. If this flooding connects to the pond area on an occurrence interval of two years or less it would meet the definition of a riverine wetland system. However, due to the constructed nature of this feature, and its ongoing maintenance and recreational use, we propose that the feature should not be regulated as a wetland, but should be maintained as a landscape water feature.

SUMMARY

The Site is comprised of two parcels: Parcel A and Parcel B. Parcel A is the location of the primary residence, while Parcel B is primarily managed as pasture area with an existing residential structure. However, both parcels contain several acres of maintained and managed pasture. Martin Creek flows southwesterly through the center of the Site and three (3) wetlands (Wetlands A, B, and C) are associated with the onsite portions of the Creek. Wetlands A and B are Category III wetlands with standard buffer widths of 110-feet. Wetland C is a Category II wetland and also requires a standard 110-foot buffer. A man-made pond, excavated sometime prior to October 1991, is located along the eastern portion of Wetland C and, due to when it was constructed and its continued use as a landscape feature, should not be regulated as a wetland.

We trust that the information presented here sufficiently describes and documents critical areas on your property, and that this information will be found useful to County staff as they prepare for the up-coming ABC meeting and subsequent CAD by their field biologists.

Should you have questions or wish to discuss any of the information in this report, please contact Bill Shiels or me at (206) 399-0145 or (425) 949-6659, respectively.

Thank you.

Sincerely,

TALASAEA CONSULTANTS, INC.

Kellen Maloney,
Ecologist, WPIT

Appendices:

- A. Farm Management Plan, King Conservation District, 2006.
- B. Recorded Sensitive Area Notice (Parcel A; Notice BOOL1239), King County, 2003.
- C. Recorded Sensitive Area Notice (Offsite Parcel; Notice B03L0825),
King County, 2003.
- D. Wetland Determination Datasheets, Talasaea Consultants, 2020
- E. Wetland Rating Forms and Figures, Talasaea Consultants, 2020

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FIGURES

Figure 1: Vicinity Map & Driving Directions

Figure 2: Parcel Map

Figure 3: National Wetlands Inventory Map

Figure 4: NRCS Soils Map

Figure 5: Existing Conditions Map

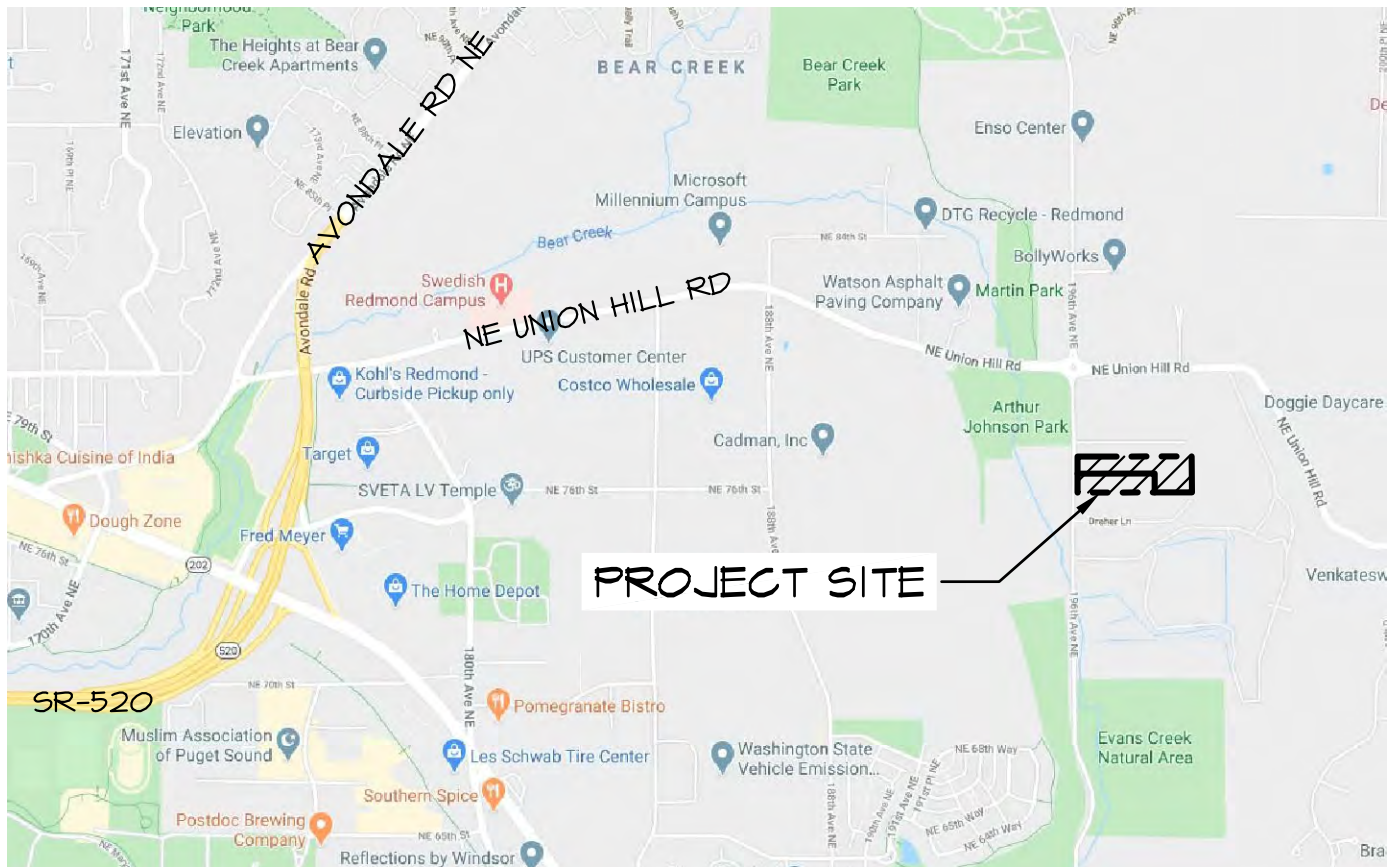


IMAGE SOURCE: GOOGLE MAPS, WWW.MAPS.GOOGLE.COM (ACCESSED 4 MAY 2020)

DRIVING DIRECTIONS FROM REDMOND CITY HALL:

1. HEAD SOUTHEAST TOWARD NE 85TH STREET. CONTINUE FOR 60 FEET.
2. TURN RIGHT TOWARD NE 85TH STREET AND CONTINUE FOR 40 FEET.
3. TAKE A SLIGHT RIGHT TOWARD NE 85TH STREET. CONTINUE FOR 108 FEET.
4. TURN RIGHT ONTO NE 85TH STREET AND CONTINUE FOR 0.2 MILES
5. USE THE LEFT TWO LANES TO TURN LEFT ONTO I54TH AVE NE. CONTINUE FOR 0.6 MILES.
6. CONTINUE STRAIGHT ONTO WEST LAKE SAMMAMISH PARKWAY NORTHEAST. CONTINUE FOR 0.4 MILES.
7. TAKE A SHARP RIGHT ONTO NE 80TH STREET/UNION HILL RD. CONTINUE FOR 1.5 MILES.
8. TURN RIGHT ONTO NE 80TH ST/NE UNION HILL RD. CONTINUED FOR 1.3 MILES.
9. AT THE TRAFFIC CIRCLE, TAKE THE FIRST EXIT ONTO 196TH AVE NE/ RED BRICK ROAD. CONTINUE FOR 0.1 MILES AND THE DESTINATION WILL BE ON THE LEFT.
10. ARRIVE AT DESTINATION:

7702 NE 196TH AVENUE NE,
REDMOND, WA 98053



TALASAEA
CONSULTANTS, INC.

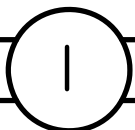
Resource & Environmental Planning

15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #1

VICINITY MAP & DRIVING DIRECTIONS
SCOTT RESIDENCE
KING COUNTY, WASHINGTON

DESIGN	DRAWN	PROJECT
	KM	1855
SCALE		
NTS		
DATE		
12-12-2019		
REVISED		





LEGEND

KEY	PARCEL NUMBER	ADDRESS
PARCEL A	0825069026	7702 196TH AVE NE, REDMOND, WA, 98053
PARCEL B	0825069032	7550 196TH AVE NE, REDMOND, WA, 98053

SOURCE: KING COUNTY IMAP. <<https://gismaps.kingcounty.gov/iMap/>>



TALASAEA
CONSULTANTS, INC.

Resource & Environmental Planning

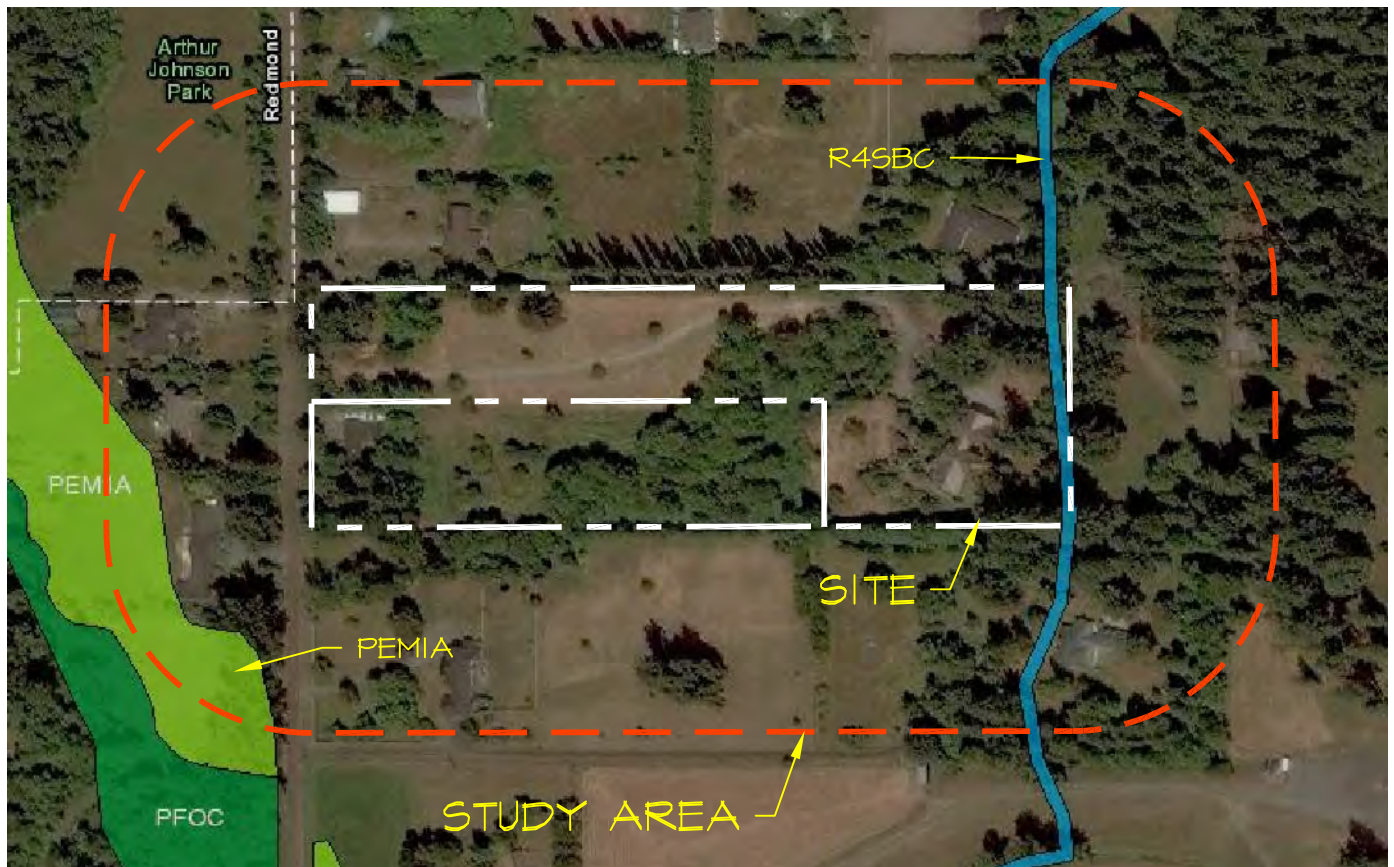
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #2

PARCEL MAP
SCOTT RESIDENCE
KING COUNTY, WASHINGTON

DESIGN	DRAWN	PROJECT
	KM	1855
SCALE		
NTS		
DATE		
12-12-2019		
REVISED		

2



LEGEND

TYPE	DESCRIPTION
PEMIA	PALUSTRINE EMERGENT, PERSISTENT, TEMPORARILY FLOODED.
R4SBC	RIVERINE INTERMITTENT, STREAMBED CLASS, SEASONALLY FLOODED.

SOURCE: U.S. FISH AND WILDLIFE SERVICE, (MAY 2020). NATIONAL WETLANDS INVENTORY WEBSITE, U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, WASHINGTON D.C.
<http://www.fws.gov/wetlands/data/wetland-codes.html>



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 Woodinville, Washington 98077
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FIGURE #3

NATIONAL WETLANDS INVENTORY MAP
 SCOTT RESIDENCE
 KING COUNTY, WASHINGTON

DESIGN	DRAWN	PROJECT
	KM	1855
SCALE		
NTS		
DATE		
5-8-2020		
REVISED		

3



LEGEND

TYPE	DESCRIPTION, SLOPES
No	NORMA SANDY LOAM
Ma	MIXED ALLUVIAL LAND
LnA	INDIANOLA LOAMY SAND, 0-5% SLOPES
EvB	EVERETT VERY GRAVELLY SANDY LOAM, 0-8% SLOPES

SOURCE: SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, WEB SOIL SURVEY. AVAILABLE ONLINE AT <http://websoilsurvey.nrcs.usda.gov/>. ACCESSED (MAY 2020).



TALASAEA
CONSULTANTS, INC.

Resource & Environmental Planning

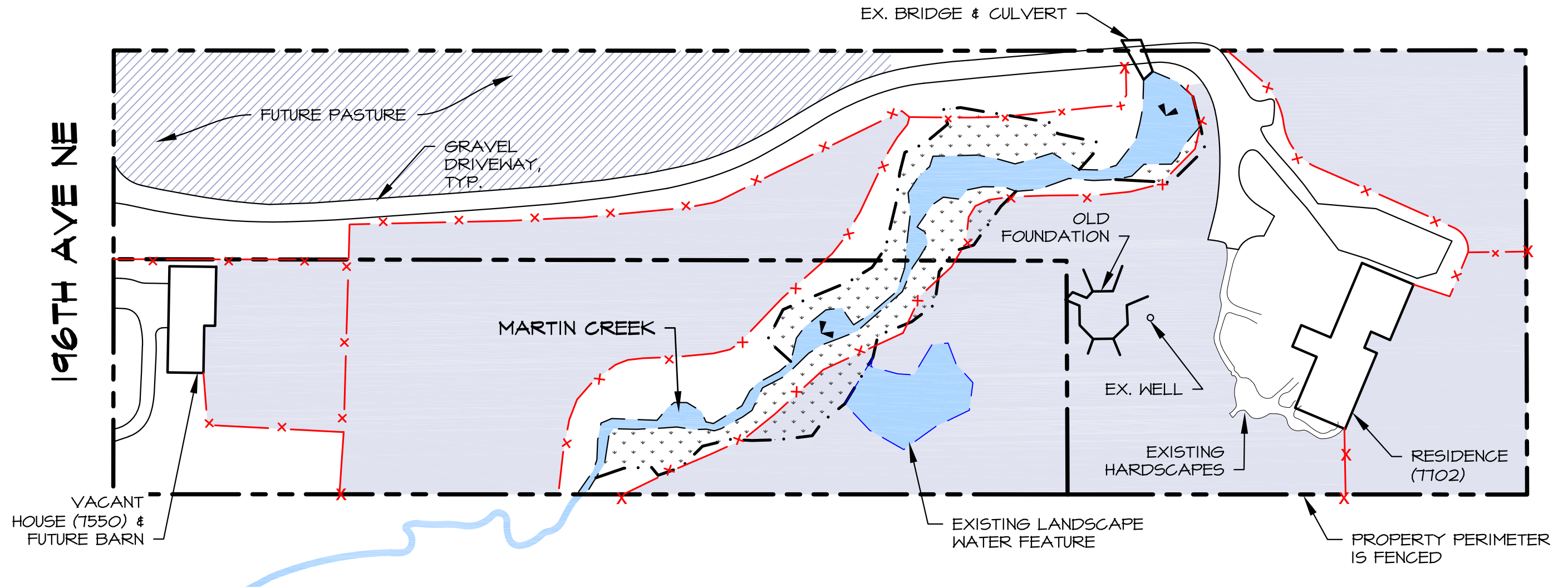
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #4

NRCS SOILS MAP
SCOTT RESIDENCE
KING COUNTY, WASHINGTON

DESIGN	DRAWN	PROJECT
	KM	1855
SCALE		
NTS		
DATE		
5-8-2020		
REVISED		

4

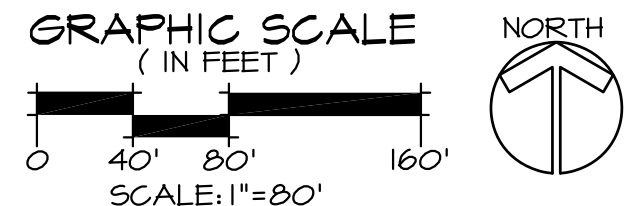


EXISTING CONDITIONS - PASTURE AREAS

PLAN LEGEND

- PROPERTY LINE
- [---] EXISTING WETLAND
- STREAM ORDINARY HIGH-WATER MARK (OHWM)
- x- EXISTING FENCE
- EXISTING PASTURE AREAS (4.08 ACRES)
- /// FUTURE PASTURE AREAS (1.21 ACRES)

NOTE: ALL ONSITE CRITICAL AREA BOUNDARIES WERE LOCATED WITH AN EOS ARROW 100 GNSS RECEIVER. THESE POINTS ARE NOT SURVEYED. OFFSITE BOUNDARIES WERE ESTIMATED.



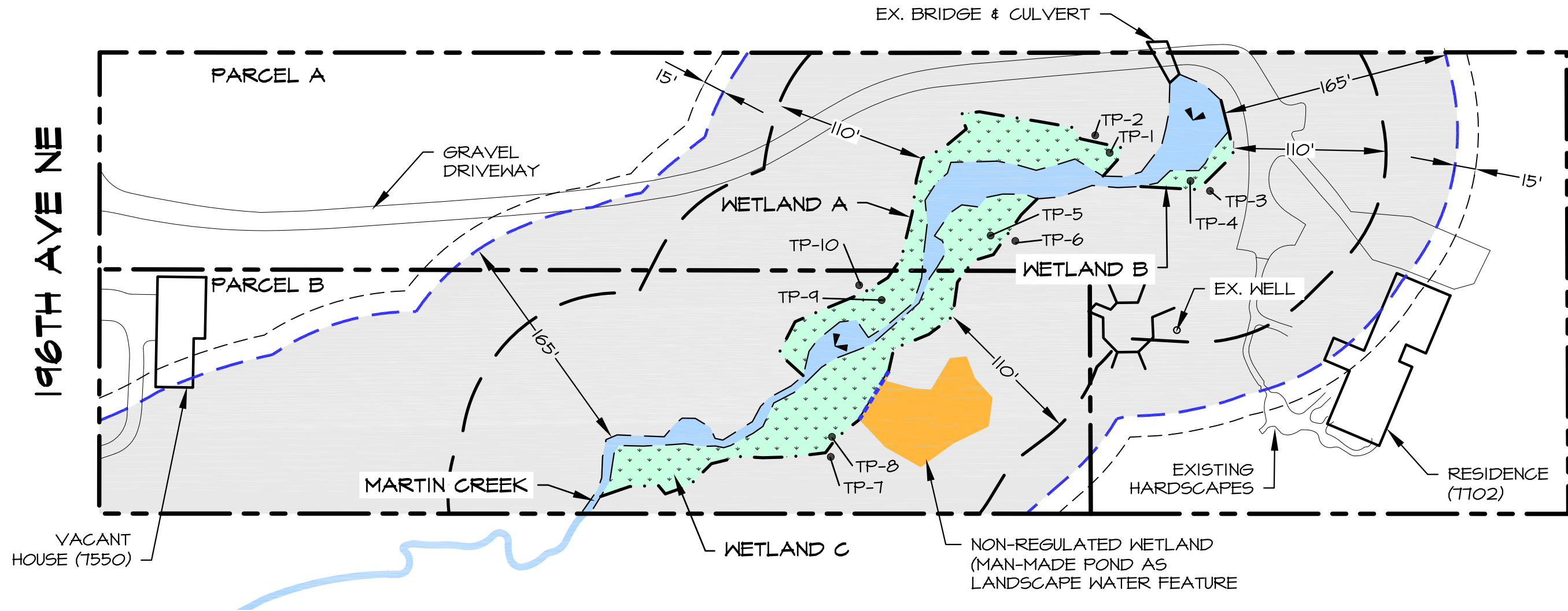
TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #5

EXISTING CONDITIONS - PASTURE AREAS
SCOTT RESIDENCE
KING COUNTY, WASHINGTON

DESIGN	DRAWN	PROJECT
KM	KM	1855
SCALE		
AS SHOWN		
DATE		
5-14-2020		
REVISED		

5



EXISTING CONDITIONS - NATURAL AREAS

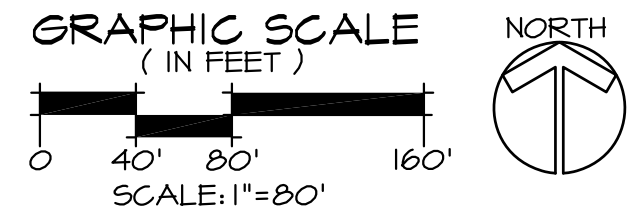
PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND
- WETLAND BUFFER - STANDARD (110-FT)
- TP-# WETLAND TEST PIT LOCATION
- NON-REGULATED WETLAND (MAN-MADE POND AS LANDSCAPE WATER FEATURE)
- STREAM ORDINARY HIGH-WATER MARK (OHWM)
- STREAM BUFFER - STANDARD (165-FT)
- BUILDING SETBACK (15-FT)
- COMBINED BUFFER AREA (5.04 AC)

FEATURE	TYPE / CATEGORY (HABITAT SCORE)	STANDARD BUFFER
MARTIN CREEK	TYPE F (FISH-BEARING)	165 FEET
WETLAND A	CAT. III, HABITAT SCORE: 6	110 FEET
WETLAND B	CAT. III, HABITAT SCORE: 6	110 FEET
WETLAND C	CAT. II, HABITAT SCORE: 7	110 FEET

NOTE: ALL CRITICAL AREAS REQUIRE A 15-FOOT BUILDING SETBACK, MEASURED FROM THE EDGE OF THE STANDARD BUFFER.

NOTE: ALL ONSITE CRITICAL AREA BOUNDARIES WERE LOCATED WITH AN EOS ARROW 100 GNSS RECEIVER. THESE POINTS ARE NOT SURVEYED. OFFSITE BOUNDARIES WERE ESTIMATED.



TALASAEA
CONSULTANTS, INC.

Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #6

EXISTING CONDITIONS - NATURAL AREAS
SCOTT RESIDENCE
KING COUNTY, WASHINGTON

DESIGN KM	DRAWN KM	PROJECT 1855
SCALE AS SHOWN		
DATE 5-14-2020		
REVISED		

6

APPENDIX A
Farm Management Plan,
King Conservation District,
August, 2006

Farm Management Plan



**John Wreggelsworth
7550 NE 196th St.
Redmond, WA 98053
S. 08, T. 25, R. 06, 2.88 acres
Parcel # 082506-9032
Evans Creek Sub-basin
Cedar/ Sammamish/ Lake Washington Watershed**



**King Conservation District
August 2006**

Farm Management Plan



Table of Contents

Section 1 – Farm Description

Section 2 – The Conservation Plan

Section 3 – Fact Sheets

A. Pasture

B. Mud

C. Manure

D. Soils

E. Wildlife

Jay Mirro
425-277-5581 x 121
jay.mirro@kingcd.org

6 in deep
5/8 min
1,000 sq ft
per animal

Section 1

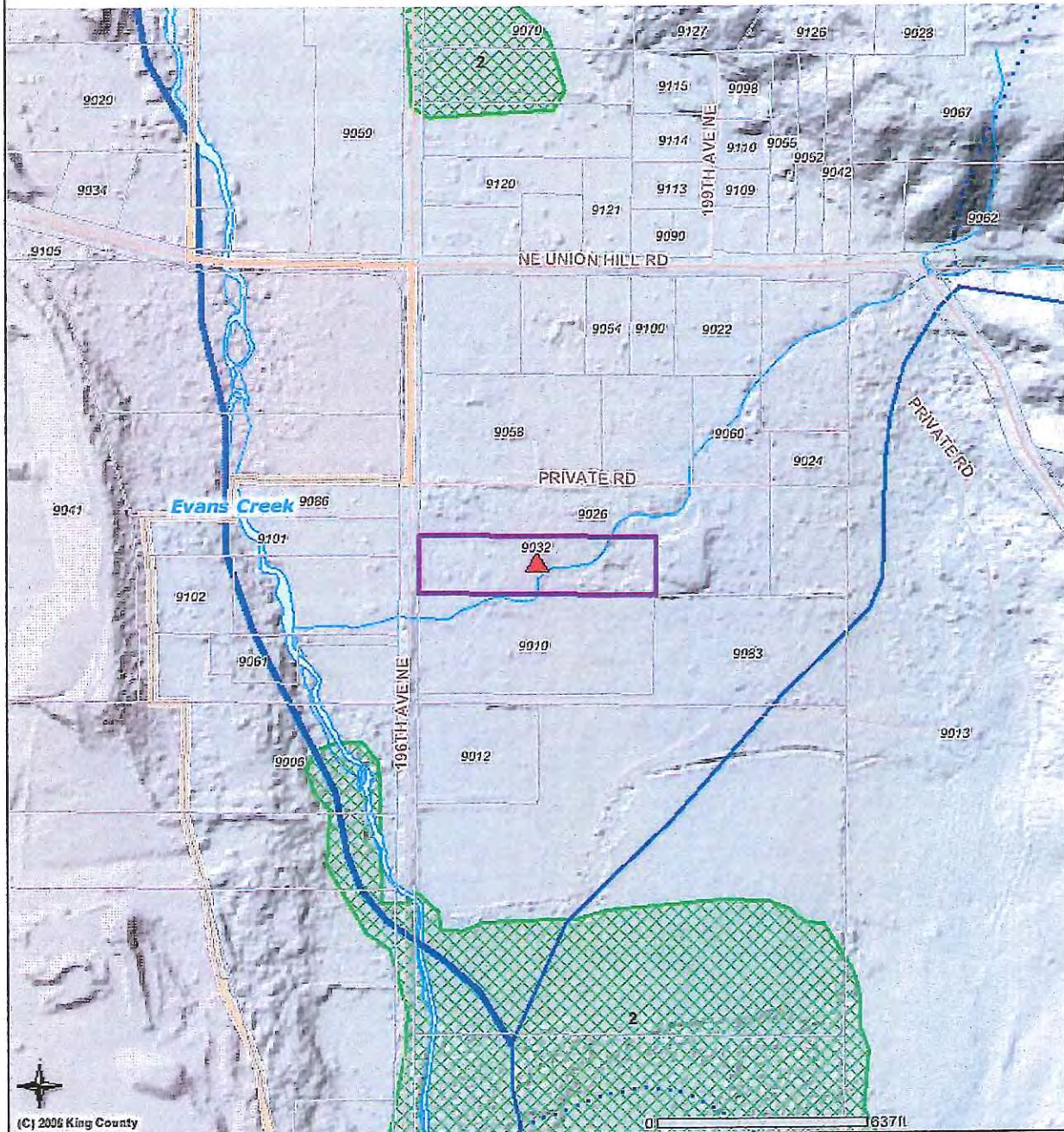
Farm Description



Sensitive Area Map
Wreggelsworth
S 08 T 25N R 06E



King County GIS Center
Redmond, WA
2006



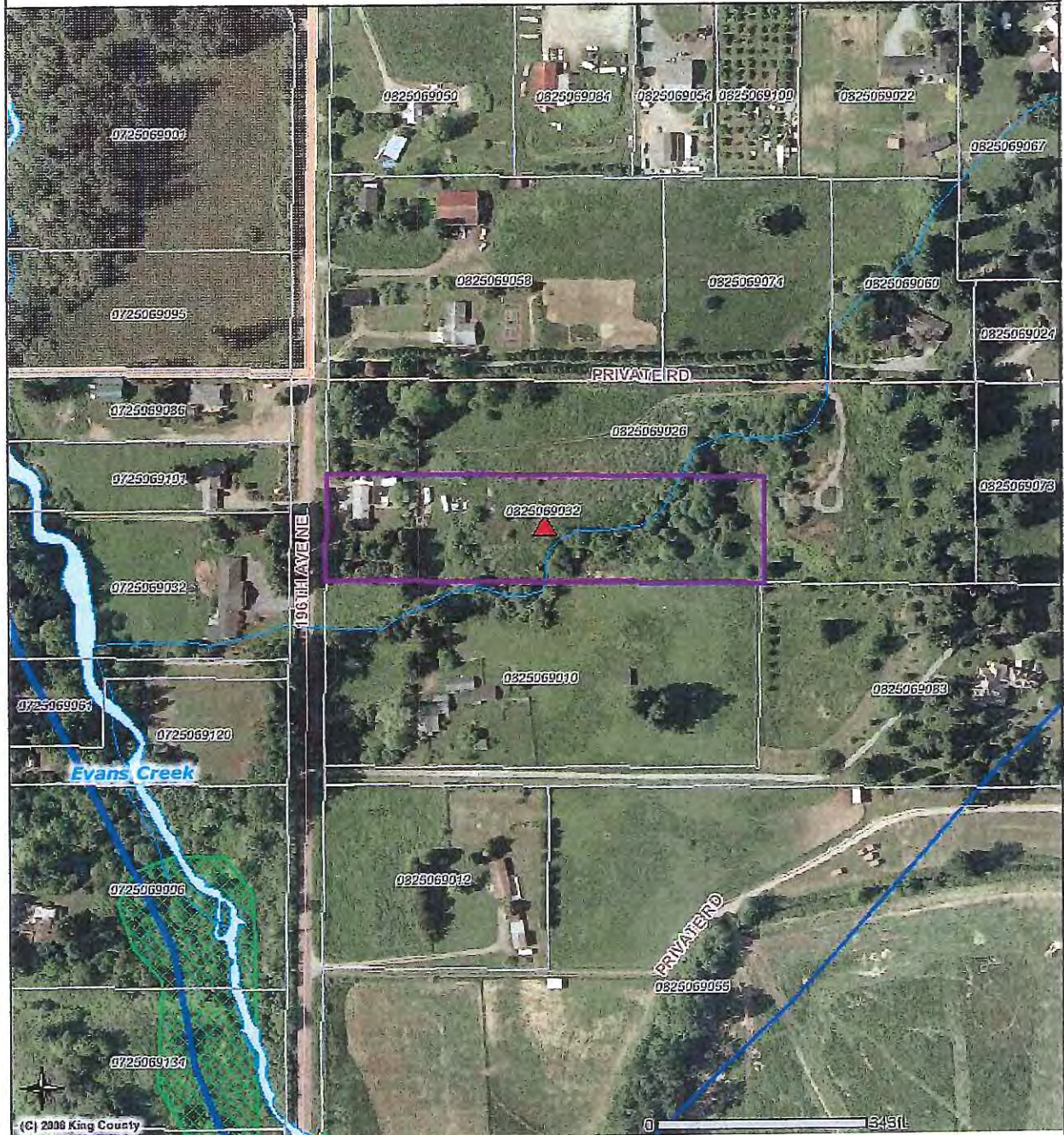
(C) 2006 King County



Aerial Map
Wreggelsworth
S 08, T 25N R 06E



Metro KC IMAP
Redmond, WA
2002



Aerial Map
Wreggelsworth
S 08, T 25N R 06E



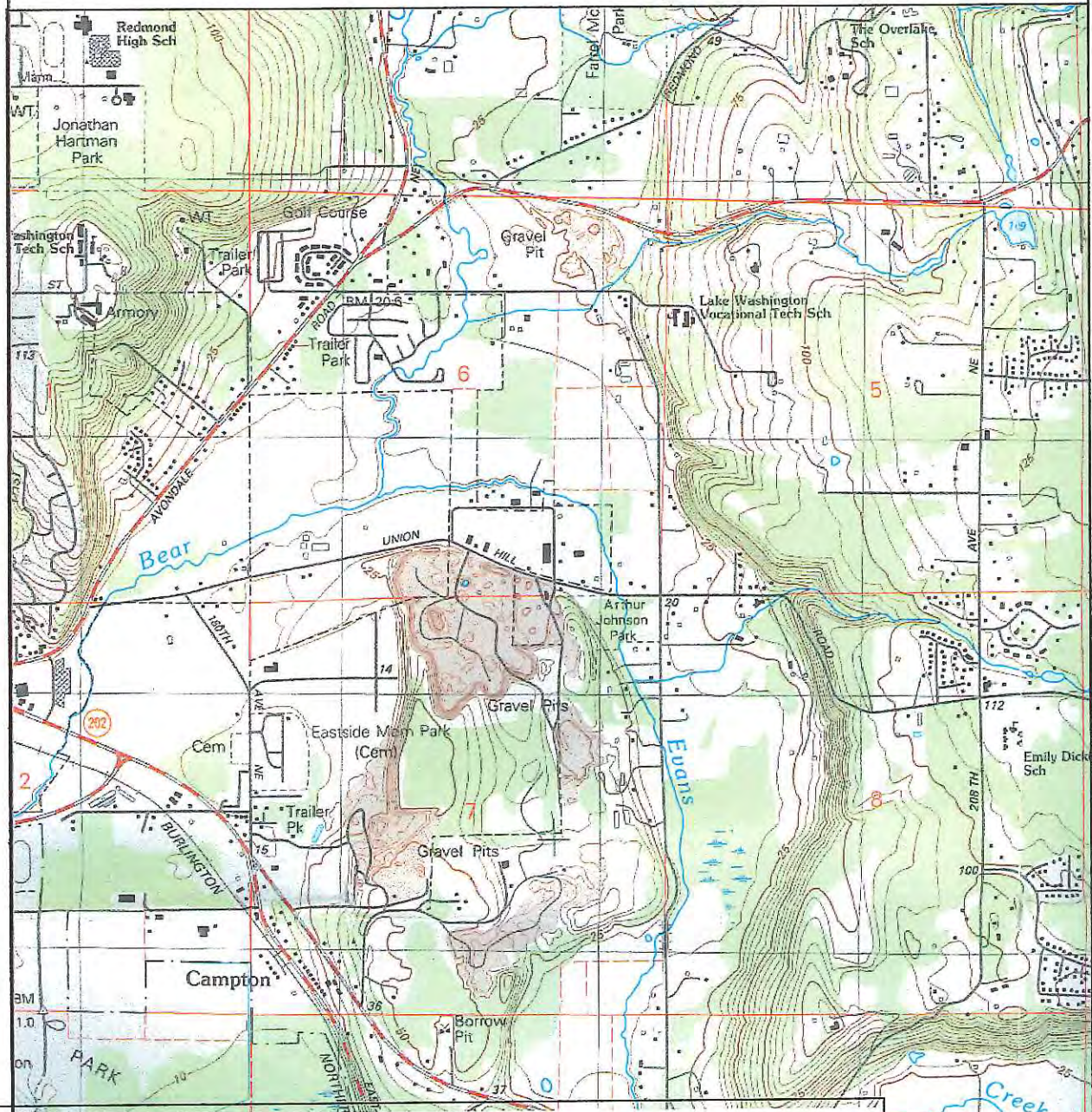
King County GIS Center
Redmond, WA
1998



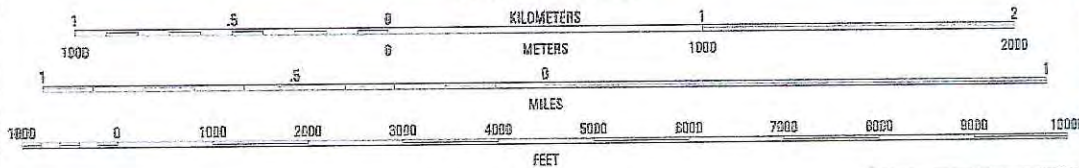
Topographic Map
Wreggelsworth
S 08 T25N R 06E



USGS- Geological Survey
Redmond, WA
1994



SCALE 1:24000



CONTOUR INTERVAL 25 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
BATHYMETRIC CONTOUR INTERVAL 2 METERS
DATUM IS MEAN LOWER LOW WATER
THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE
TO CONVERT FEET TO METERS MULTIPLY BY 3.2808
TO CONVERT METERS TO FEET MULTIPLY BY 0.3048

INTERIOR - GEOLOGICAL SURVEY, RESTON, VIRGINIA - 1995

ROAD CLASSIFICATION

- | | |
|--------------------|--------------------------|
| Primary highway | Light-duty road, hard or |
| hard surface | improved surface |
| Secondary highway | Unimproved road |
| hard surface | |
| Interstate Route | U.S. Route |
| State Route | |

Soils Map
Wreggelsworth
S 08 T 25N R 06E



USDA-NRCS
King County, WA
Sheet no. 13, 1970



Scale 1:24 000



This map is one of a set of 20.

SOIL SERIES DESCRIPTION

Norma sandy loam

Mapping Symbols: No

The Norma series consists of poorly drained soils that formed in alluvium in basins on glaciated uplands and areas along stream bottoms under conifers, hardwoods, grasses, and sedges. It occurs in strips from 25 to 300 feet wide. Slopes are less than 2%. The annual precipitation is 35 to 60 inches. The frost-free season is about 150 to 200 days.

Typical Profile:

Depth from Surface:

0 to 10 Inches: Black sandy loam

10 to 30 Inches: Dark grayish-brown sandy loam

30 to 60 Inches: Dark gray sandy loam

Permeability:

Moderately rapid

Rooting Depth:

60 inches + if drained

Depth to Seasonal High Water Table:

0 to 1 foot

Available Water Holding Capacity:

Moderately high to high

Runoff Potential:

Slow

Erosion and Slippage Hazard:

Slight

Flooding Potential:

Severe in places

Norma Series

Use and Management:

This soil is primarily used for pasture. Forage yields are 2.0 tons/acre/year if undrained and 4.5 tons/acre/year if drained. Drained Norma soils are also used for row crops.

Douglas-fir, Western Hemlock, Western Red Cedar, Red Alder, Willow, and Sitka Spruce are important tree species. This soil has severe limitations for seedling mortality, plant competition, equipment use, and windthrow hazards because of its potential for wetness.

The Norma soil has severe recreational and severe engineering limitations due to its high water table and flooding potential.

SOIL SERIES DESCRIPTION

Indianola loamy fine sand

Mapping Symbols and Slope Classes:

InA: 0 to 4% slopes

InC: 4 to 15% slopes

InD: 15 to 30% slopes

The Indianola series consists of somewhat excessively drained soils that formed under conifers in sandy, recessional, stratified glacial drift. These undulating, rolling and hummocky soils are on terraces at elevations ranging from sea level to 1000 feet. The annual precipitation is 35 to 55 inches. The frost-free season is between 150 and 210 days.

Typical Profile:

Depth from Surface:

0 to 30 Inches: Brown, dark yellowish brown, and light olive brown loamy
fine sand

30 to 60 Inches: Olive sand

Permeability:

Rapid

Rooting Depth:

60 inches+

Depth to Seasonal High Water Table:

No seasonal high water table within a depth of 5 feet

Available Water Holding Capacity:

Moderate

Runoff Potential:

Slow to medium depending upon slope

Erosion and Slippage Hazard:

Slight to severe depending upon slope

Indianola Series

Page 2

Use and Management:

Primary uses of these soils are for timber, and urban development on slopes less than 15% and for timber on the steeper slopes.

Pasture forage yields for the InA and InC are 2.5 tons/acre/year with good management. Forage production may become limited in Summer by the low water holding capacity of the soil.

Douglas-fir, Western Hemlock, Western Red Cedar, and Red Alder are important tree species on all soil slope classes. The InD phase has severe limitations on equipment use for site preparation and timber harvest. Caution should be used to avoid unnecessarily disturbing the vegetation on this phase to avoid problems with erosion, runoff, and slippage.

These soils have moderate to severe limitations on most engineering uses due to their high permeabilities in all slope phases and the steep slope in the InD phase. The InA and InC have no to slight limitations for use as foundations for low buildings. Recreational limitations in the InA and InC are mainly due to the coarseness of their textures while the steepness of the InD also limits its uses.

SOIL SERIES DESCRIPTION

Mixed Alluvial Lands

Mapping Symbol: Ma

This mapping unit consists of a variety of alluvial soils in areas that are too small and too closely associated to map separately at the scale used in the Soil Survey. Slopes are generally 0 to 2%. The hazard of flooding is severe.

Typical Profile:

Variable, ranges from sand and gravelly sand to silty clay loam

Permeability:

Very poor drained to highly permeable

Rooting Depth:

Variable

Depth to Seasonal High Water Table:

Generally at surface

Available Water Holding Capacity:

Highly variable

Runoff Potential:

Slow

Erosion and Slippage Hazard:

Slight

Flooding Potential

Severe

Mixed Alluvial series

Page 2

Use and Management:

Primary uses of these soils are for pasture and timber.

Pasture forage yields are 2.0 tons/acre/year with good management. These soils may be very wet in the Spring, delaying their use.

Douglas-fir, Western Red Cedar, Red Alder, and Bigleaf Maple are important tree species on all soil slope classes. There are moderate limitations on equipment use for site preparation and timber harvest because of their wetness and flooding potential.

This soil has severe limitations on recreational and engineering uses because of its potential for flooding.

60' Wetland
buffer

165' Stream
buffer

Pasture 2
0.52 acres

60' Wetland
buffer

Pasture 1
0.96 acres

165' Stream
buffer

Shed

Concrete

H



0 100
SCALE IN FEET

Legend

- Property Boundary
- X Existing Fence
- /- Planned Fence
- [M] Manure Storage
- C Confinement Area
- B/S Barn/Shed
- G Gate
- ☁ Trees/ wooded

KING CONSERVATION DISTRICT
Conservation Plan Map - Existing
Wreggelsworth Farm

7550 196th Ave NE Redmond, WA 98053

2.88 acres, S 08 T 25 N, R 06 E

CAD FILE NO.

DRAWING NO.
Existing Map

SHEET OF

Date

Designed Mirro

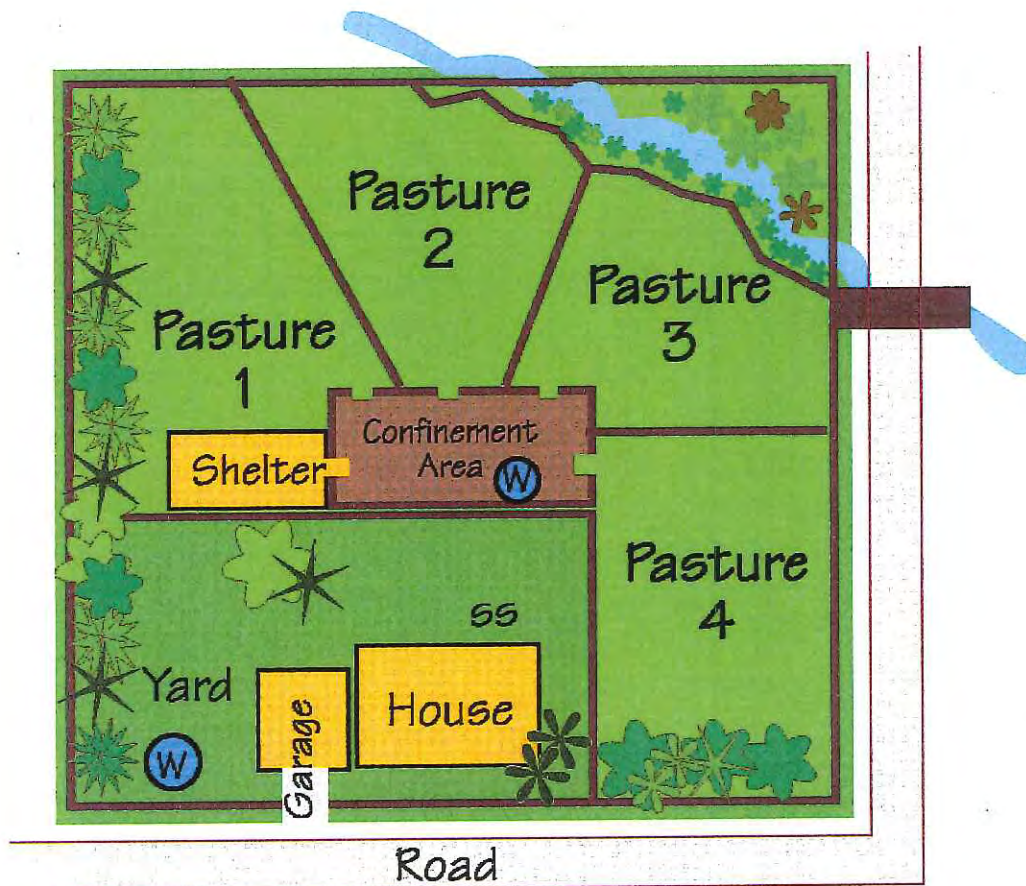
Drawn

Checked

Approved

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

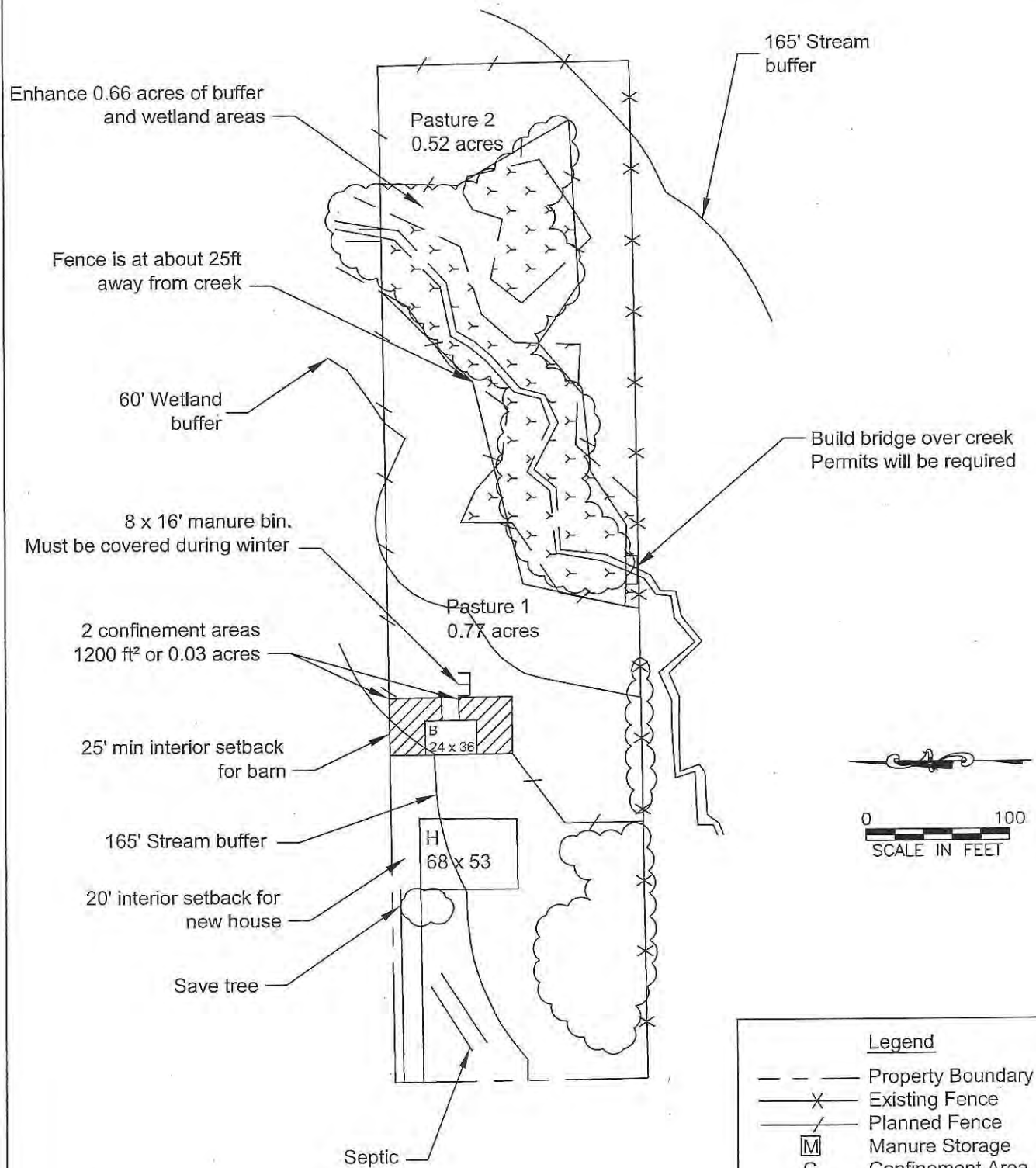
Section 2 Farm Management Plan



Record of Operator Decisions and Progress in Application
USDA-NRCS-CONS-68-REV. 5-96
Proposed Schedule of Activities

Cooperator: Wregglesworth
 Assisted By: Mirro
 Date: 8/1/2006

Field No.	Planned		Applied		Land Use & Treatment	Cost shareable
	Amount	Year	Amount	Mo/Yr		
					MUD MANAGEMENT SYSTEM	
Confinement area	Up to 2400 or 0.06 acres	Aug-07			Heavy Use Area Protection (561): Grade future confinement area so there is a 1 - 2% slope away from barn. Add 6" of 5/8th gravel. Manure will need to be picked out daily.	Y
Perimeter	240 ft	Aug-07			Fencing (382): Install confinement area fencing.	Y
All Pastures	1.29 acres	Nov-07			Use Exclusion (472): Remove livestock from pastures during the rainy months and summer drought to prevent negative impacts; overgrazing and soil compaction.	
Confinement area	1	Oct-07			Roof Runoff Management (558): Direct downspout away from and out of confinement area.	Y
					PASTURE MANAGEMENT SYSTEM	
Pastures	660 ft	Apr-07			Fencing (382): Add perimeter fencing.	Y
Pastures	1.29 acres	May-08			Prescribed Grazing (528A): Graze pasture using a rotational grazing system. Graze pasture to a 3" stubble height and move animals to the next pasture in the rotation. Allow pasture to rest until it has reached 6"-9" before animals are returned, ideally 21 days. Do not graze fall growth below 3" as well. This is critical for lush spring regrowth. If pastures grows higher then 10", mow it to 3".	
Pastures	1.29 acres	May-08			Grazing Land Mechanical Treatment (548): Harrow or drag pasture to fracture compacted soil, increase infiltration, increase plant vigor and increase productivity. This will also break up manure clods and spread them around. Mow pastures to 3" height when animals are pulled off to rest it.	
Creek	20 ft	Aug-08			Animal Trails & Walkways (575): Build bridge over creek. Permit and design will be needed. Contact KCD when ready to start on this.	
Pastures	1.29 acres	Oct-06			Pasture and Hayland Planting (512): Overseed pasture with a Orchardgrass, Ryegrass, Tall Fescue, and White clover. Allow pasture to establish before grazing.	Y
					WASTE MANAGEMENT SYSTEM	
Pastures	1.29 acres	Oct-06			Nutrient Management (590): Begin regular program of soil testing, adding amendments as needed to maintain soil & forage health. Use composted manure to meet all the needs of the pasture. Lime should be added to reduce pH.	
Manure	1	May-07			Waste Management Facility (313): Build compost bins to facilitate the compost process.	Y
Manure	1	May-07			Waste Management System (312): Design a system to compost waste and return it to the pastures as fertilizer. Waste collected should have air and should have a minimum of water to ensure proper composting.	
					WILDLIFE HABITAT	
Farm	2.16 acres	Mar-07			Wildlife Upland Habitat Management (645): Try to encourage and support wildlife by creating and enhancing habitat. Leave areas wild.	Y
Buffer	817 ft	May-07			Fencing (382): Install buffer fencing on stream and wetland.	?
Buffer	0.66 acres	May-07			Tree & Shrub Establishment (612): Plant native trees and shrubs in the buffer area. King County will require an exact square footage to be restored for development.	?



Legend

- Property Boundary
- X- Existing Fence
- /- Planned Fence
- [M] Manure Storage
- C Confinement Area
- B/S Barn/Shed
- G Gate
- Trees/ wooded

KING CONSERVATION DISTRICT
Conservation Plan Map - Planned
Wreggelsworth Farm

7550 196th Ave NE Redmond, WA 98053

2.88 acres, S 08 T 25 N, R 06 E

CAD FILE NO.

DRAWING NO.
Planned Map

SHEET OF

Date

Designed Mirro

Drawn _____

Checked _____

Approved _____

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

USDA NATURAL RESOURCES CONSERVATION SERVICE

8/1/2006

ANIMAL WASTE NUTRIENT BALANCE

File Name: Waste and Forage

FOR: Wreggelsworth

By: Mirro

COUNTY: King

Scenario: 2 Horse

Type of Animal	Waste Production				Animal #s	A.U.	Number of Days in System		Net Nutrients Available					
	N lb/day	P lb/day	K lb/day	Volume cu ft/d					Grazing			Confined		
							Grazing	Confined	N	P	K	N	P	K
Horse	0.28	0.05	0.19	0.8	2	1.00	173	192	50	16	64	40	15	64
			Total ave. AU's:		2			TOTALS:	50	16	64	40	15	64

Nutrient Retention Value (%) (See tables at right)

Type of Loss	Grazing			Confined		
	N	P	K	N	P	K
Storage Loss	100%	100%	100%	80%	85%	95%
Volatilization	75%	100%	100%	80%	100%	100%
Denitrification	85%	100%	100%	85%	100%	100%
Mineralization	81%	93%	98%	68%	90%	93%

Confinement Bedding & Manure Volume

Bedding Material	cu yds/yr
Shavings	9
Manure	11
Total	20
Reduction factor	0.8
Total volume material	16

Crop/ Major Species	Field Inventory		Prod. (T/A)	Annual Nutrients Removed by Crop (#/Ton crop) (see at right)			Soil Mineral (lb/ac)	N Req'd (lb/ac)	Required per Field (lb)		
	Field	Acres		N	P	K			N	P	K
Pasture	1	0.77	4.00	66.0	4.0	34.0	60	204	157	12	105
Pasture	2	0.52	4.00	66.0	4.0	34.0	60	204	106	8	71

Fertilizer Value

		N	P	K
Total Nutrients Required/Yr for Crop Production on:	1.29 acres	263	21	175
Net Nutrients Available/Yr for Crop Production on:	1.29 acres	90	31	129
Total Excess Pounds of Nutrients on:	1.29 acres		10	
Per acre			8	
Additional Pounds of Nutrients Needed on:	1.29 acres	173		47
Per acre		134		36
Net Nutrients Available in Stored Waste, Annually:		40	15	64
Amount of Stored Nutrients/cubic yard available to apply to fields:		2.4		
Net Nutrients Available from Grazing, Annually:		50	16	64
Amount of Nutrients/acre in droppings, Assuming EQUAL Distribution:		39	12	50
Percent of Nutrient Needs Supplied by Animals:		34%	149%	73%

USDA NATURAL RESOURCES CONSERVATION SERVICE

LIVESTOCK FEED & FORAGE BALANCE WORKSHEET

8/1/2006

For: Wreggelsworth

County: King

FORAGE NEEDS

Scenario: 2 Horse

Livestock Type	Animal Unit Factor **	Livestock Numbers and Animal Unit Months (AUMs***) Requirements													Total AUMs Needed/Yr
			OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Horse	1.00	#	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
		AUM's	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
		#													
		AUM's													
		#													
		AUM's													
		#													
		AUM's													
		#													
		AUM's													
Total Livestock No.s/Mo.			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Total AUMs Needed/Mo.			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	

** May be changed to reflect a specific farm.

What is land characteristic?

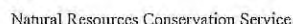
14	MLRA A2-Moderate AWC
	Puget Sound

FORAGE AVAILABILITY

Field Number	Acres	Yield (tons/acre)	Forage Available per Field by Month (pounds)												Total Pounds Produced/Yr
			OCT 6%	NOV 3%	DEC 1%	JAN 1%	FEB 4%	MAR 11%	APR 17%	MAY 22%	JUN 20%	JUL 11%	AUG 1%	SEP 3%	
1	0.77	4.00	0.4	0.2	0.1	0.1	0.3	0.7	1.2	1.5	1.4	0.7	0.1	0.2	6.8
2	0.52	4.00	0.3	0.1	0.0	0.0	0.2	0.5	0.8	1.0	0.9	0.5	0.0	0.1	4.6
Total Acres =			1.29												AUMs/yr
Total AUMs Available per Month			0.7	0.3	0.1	0.1	0.5	1.2	1.9	2.5	2.3	1.2	0.1	0.3	
Feed Balance(AUMs)			-1.32	-1.66	-1.89	-1.89	-1.55	-0.75	-0.07	0.50	0.27	-0.75	-1.89	-1.66	
Total AUMs Air-dry Pasture Needed per Month			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Percentage of feed supplied by pasture/month			34%	17%	6%	6%	23%	62%	96%	125%	114%	62%	6%	17%	
SURPLUS Feed Produced/Mo. (AUMs)										0.50	0.27				
SURPLUS Feed Produced/Mo. (Tons)										0.22	0.12				
ADDITIONAL Pasture Feed Needed/Mo.(AUMs)			1.32	1.7	1.9	1.9	1.5	0.8	0.1			0.8	1.9	1.7	13.4
ADDITIONAL Feed Needed as Hay (Tons)*			0.59	0.75	0.85	0.85	0.70	0.34	0.03			0.34	0.85	0.75	
Total Feed (Tons) Needed for Year as Hay* =															5.7

*** One AUM = Amount of forage necessary to feed one 1000lb animal for one month

* One AUM equals 900 lb of air-dry pasture forage or 660 lb of hay because of less wasted feed with hay



Nutrient Management

Specification 590

5/03

Operator	Wreggelsworth			Date:	8/1/06	Tract(s):	2 Horse
Assisted by	Mirro	Soil Type(s):	Norma				

Purpose(check all that apply)

<input checked="" type="checkbox"/>	Budget and supply nutrients for plant production	<input checked="" type="checkbox"/>	Utilize manure/organic materials as a nutrient source
<input checked="" type="checkbox"/>	Minimize agricultural non-point source pollution (water quality)	<input checked="" type="checkbox"/>	Maintain or improve soil condition

[illegible]

Total Acres:	1.3
--------------	-----

Nutrients available in stored manure (pounds):

N	P	K
40	15	64
2.4		

Total for farm:

Per cubic yd manure:

Total cubic yards/year:

16	16
----	----

Application schedule for stored manure, fertilizer and/or lime:

[illegible]

**NRCS**

Natural Resources Conservation Service

Nutrient Management

Specification 590

5/03

- 1 Method of nutrient application: Wheelbarrow and pitch fork
- 2 Split applications of nutrients are best. Make sure application equipment is calibrated, so that prescribed amounts of nutrients are being applied. See below for site-specific recommendations:

The nitrogen provided by the manure will provide 35% required by the pasture. Spread manure thinly over pasture, 1/2 inch deep or no more than 10 yards per acre and drag with harrow after. All 8 yards could be spread on pasture.

- 3 Don't apply nutrients when soils are saturated, or steady heavy rain is expected in the near future.
- 4 Don't apply nutrients if soils are frozen or snow-covered, & a potential for offsite movement of material is present.
- 5 See Filter Strip (393) specification sheet for setbacks from water and other sensitive areas.
- 6 Soils tests shall be taken at least every 3 years, for at least nitrogen, phosphorus, & potassium. Additionally, tests for pH, electrical conductivity, soil organic matter, nitrate-N, ammonium-N are required for the initial test.
- 7 Fall soil nitrate tests shall be taken until management indicated nitrate-N levels meet the requirement of the low or medium categories as listed in Agronomy Technical Note #35. The Tech Note also gives details on sampling dates & methods, & interpretation.
- 8 An manure test to determine nutrient values shall be made initially, and at each major feed change, as per the Waste Utilization (633) spec.
- 9 Nutrient application records shall be kept for at least 3 years, or longer if required by Ordinance or program or contract requirements. As a minimum, the records shall include actual application rate, location, date & method of application, and soil and manure test results. If manure is exported off the farm, records must also be kept of volumes, dates, and persons or locations who received the manure, as per the Waste Utilization (633) specification.
- 10 Other:

**NRCS**

Natural Resources Conservation Service

Prescribed Grazing

Specification 528a

5/03

Name: WreggelsworthDate: 8/31/06Location: 2 Horse**FORAGE - LIVESTOCK BALANCE:****Livestock Types:**

Horse				

Total Air-Dry Tons Feed Equivalent Needed/Year:	11
Total Air-Dry Ton Equivalents Grown as Forage/Year:	5
Percentage of Annual Feed Needs Grown (Air-Dry Ton Equivalents):	47%

Percentage of feed supplied by pasture/month:

October	November	December	January	February	March	April	May	June	July	August	September
34%	17%	6%	6%	23%	62%	96%	125%	114%	62%	6%	17%

Field:	Dominant Soil	Field Limitations:	Season of Use		Key Management Species	Stubble Height Minimums	
			Start Date	End Date		To Begin Grazing (inches)	To Remove Livestock (inches)
1	Norma	Soft in winter	3/15	10//15	Orchardgrass-Ryegrass	6 to 9	2 to 3
2	Norma	Soft in winter	3/15	10/15	Orchardgrass-Ryegrass	6 to 9	2 to 3
0							
0							
0							
0							
0							
0							
0							
0							

- Remove livestock whenever soils are saturated.
 - For fertilizer recommendations, see the Nutrient Management (590) specification sheet.
 - For weed control, monitor species and populations and control as needed. See the Pest Management (595) spec sheet, if included.
 - For fence locations and specifications, see the Fence (382) specification sheet, if included.
 - For wildlife grazing considerations, see Upland Wildlife Habitat Management Specification (645), if included.
- Other:

DESIGN OF A COMPOSTING STRUCTURE SMALL FARMS PROGRAM

Owner: **Wreggelsworth**

Scenario: **2 Horse**

Total Days of Confinement:	180
Winter Storage Needed In Days:	180
Manure Produced/Day/AU, Cu. Ft.:	0.8
Bedding Used/Day/AU in cu. ft.:	1
Maximum waste storage depth:	4
Length of 1 side of structure:	8

Amount Of Waste Produced = 440.16 Cubic Feet
16 Cubic Yards

Waste Storage Dimensions =

LENGTH = 8 Feet

WIDTH = 14 Feet

REFERENCES: 1) Ag. Waste Management Field Handbook. Chapter 4

Recommended compost bin size for effeicent composting:

2 8' x 8' bins, 4' tall for Composting

This will require emptying bins at least 1 - 2 times a year to ensure enough storage

P-Index Calculator for Max. Soil P test		Farm Name: Wreggelsworth		Field(s): Pasture		2 H	
Soil Erosion (tons/ac/yr)	< 1 0	1 - 3 1.5	4 - 6 3	7 - 15 6	> 15 12		
Soil Erosion from Sprinkler Irrigation	No sprinkler irrigation 0	Application rate < infiltration rate OR No visible runoff at field borders 0.75	Application rate = infiltration rate OR Little to no visible runoff at field borders 1.5	Application rate > infiltration rate OR Visible runoff at field borders 3	Application rate > infiltration rate OR Excessive runoff visible at field borders. Rills and gullies present. 6	0	0
Runoff Class	Negligible 0	Very low or low 1	Medium 2	High 4	Very High 8	2	
Flooding Frequency Class	None or very rare 0	Rare 0.75	Occasional 1.5	Frequent 3	Very Frequent 6	0.75	0
Distance to Perennial Surface Waters / Buffer Widths	> 500 feet OR buffer > 30 ft. wide (or meets NRCS standards) next to surface waters 0	300 - 500 feet OR buffer 20 - 30 ft. wide next to surface waters 0.75	200 - 299 feet OR buffer 10 -19 ft. wide next to surface waters 1.5	100 - 199 feet AND buffer < 10 ft. wide next to surface waters 3	< 100 feet AND No buffer next to surface waters 6	1.5	0
Subsurface Drainage	No Tile Drains 0	Tile drains present Soil Test P (Bray P1) < 60 ppm 0.5	Tile drains present Soil Test P (Bray P1) 61 - 140 ppm 1	Tile drains present Soil Test P (Bray P1) 141- 190 ppm 2	Tile drains present Soil Test P (Bray P1) > 190 ppm 4	0	0
Subtotal:						5.75	0
Commercial P Fertilizer Application Rate	(lbs/ac P2O5 / 50)			Current lb/ac P2O5: 0	Future lb/ac P2O5: 0	0	0
Commercial P Fertilizer Application Method	None Applied 0	Injected / banded deeper than 2 inches or incorporated 1	Incorporated within 5 days of application from October - February or surface applied March - August 2	Incorporated more than 5 days after application or surface applied Sept - Oct 4	Surface applied November through February 8	0	0
Organic P Source Application Rate	(lbs/ac P2O5 / 50)			Current lb/ac P2O5: 55	Future lb/ac P2O5:	1.1	0
Organic P Source Application Method	None Applied 0	Injected / banded deeper than 2 inches or incorporated 1	Incorporated within 5 days of application from October - February or surface applied March - August 2	Incorporated more than 5 days after application or surface applied Sept - Oct 4	Surface applied November through February 8	2	0
Subtotal:						3.1	0
Soil Test P - ppm (Bray P1)	(Soil Test P - 40) / 10		Max. Soil test P to meet:		Medium (14 - 27)	221.5	310
			Max. Soil test P to meet:		High (27.1 - 55)	501.5	590
Rating	Total Value	Rate					
	< 14	Low					
	14 - 27	Medium					
	27.1 - 55	High					
	> 55	Very High					

Current: Planned:
total: total:

18.15 27
46.15 55

FARM CONSERVATION PLAN

For John Wreggelsworth

Prepared by: Jay Mirro, King Conservation District

GENERAL DESCRIPTION:

Property location: 7550 NE 196th St Redmond, Washington 98053
Parcel # 082506-9032
(Section 08, Township 25N, Range 06E)
Total acreage: 2.88 acres

LANDOWNER OBJECTIVES:

- CAO Flexibility
- Horse Management Techniques

EXISTING CONDITIONS, using the NRCS 'swapah' classification system:

Soils Classification:

Soils present on the property are mapped (by Soil Conservation Service (1973)) as Indianola loamy fine sand, Mixed Alluvial Lands, and Norma sandy loam. The Norma soils dominate the pasture and have a potential to produce between 2 and 4.5 tons of hay per acre. See soil description for more details.

Water (Harbor, Streams, Wetlands, Drainage):

This property is in the Evans Creek Sub-basin of the Cedar/ Sammamish/ Lake Washington River watershed. There are wetlands and a salmon stream in the middle of the farm. The farm is generally flat with the stream being slightly lower.

Air:

None

Plants:

The pastures have had little grazing for several years. Reed canary grass dominates the fields.

Animals:

Livestock: There are 2 horses.
Facilities: There are no facilities.
Fencing: There are some perimeter fencing.
Wildlife: There is a fairly forested buffer along the creek that provides good quality habitat.

Humans:

Goal is to manage the property in a responsible manor, balancing the needs of the horses with the needs of the natural resources.

Cultural Resources: There is a NRCS listed cultural resources within the section according to NRCS information. Should cultural resources be discovered during installation of any planned practices, work should cease until a qualified site review is performed. If federal

payments are related to any installation, work must cease pending evaluation. Washington State laws RCW 27.53 and RCW 27.44 protect all Native American and archaeological sites. For questions about these laws, or to report the discovery of a cultural resource, contact Stephanie Kramer at the Office of Archaeology and Historic Preservation in Olympia at 360-586-3083.

CONSERVATION PRACTICES for this property:

MUD MANAGEMENT

Conservation Need: Confinement Area- Exclusion of animals from pasture during wet periods and protection from overgrazing. Design to minimize mud.

BMPs: Use Exclusion (472), Heavy Use Area Protection (561), Fencing (382), Roof Runoff Management (558)

Challenge:

Allowing livestock to walk on wet soils, especially during winter, can result in pasture health decline, which can be quite difficult to correct. In addition, various livestock health problems may be associated with standing on muddy ground.

In terms of grass management, possibly the most important problem associated with use of wet pastures is soil compaction. Compaction can affect pastures in a number of ways, one of which is reduced plant growth and vigor. This comes from reduced pore space in the soil. Adequate pore space is necessary for growth and spreading of roots, proper infiltration of water, proper movement of water through the soil, and proper movement and availability of nutrients in the soil. Poor plant vigor results in an unproductive stand; ability of weeds to out-compete forages, and increased runoff danger due to lower plant densities.

Overgrazing during the growing season can also damage long-term pasture health. Allowing livestock to graze forages to a height of less than 3" can also result in reduced plant vigor. This is due to damage of plant growing points of which plants have difficulty recovering. This will lead to reduced ability of plants to compete with weeds and cause lower production.

Solution:

The confinement area, or sacrifice area, is a great tool in the pasture management tool belt. This area should be used in both summer and wintertime. In the winter, this area should be used to protect the soils and the turf by providing an area for wintertime turnout. This will give the animals some exercise during the winter months so the animals can stay off the pasture. In the summer, the sacrifice area can help in protecting the pasture from being grazed below 3 inches.

Specifications:

The confinement areas will cover about **2400 ft² or 0.06 acres** for the animals.

When placing footing, here are some considerations:

When placing footing on bare ground, footing materials should be placed to a depth that will equal approximately twice that of the expected mud. This will keep animals from standing on muddy ground as well as reduce runoff from waste products. In most cases, depth of footings will be 6-12 inches. Prior to placing the footings, ground should be graded to an approximate 1% slope to shed water. Any standing mud should also be removed if possible.

Choice of footing materials will depend on cost, required labor and equipment, as well as personal preference.

OPTIONS-

1. One common, effective footing scheme would be to lay down filter fabric over the area. Then, place 6" of 5/8" minus gravel (screened or washed to avoid fine material).
2. Other options could include a two-layer gravel footing, using a coarse gravel (e.g. 1-1/4" screened rock.) as a base; cover it with a 3" layer of 3/8" or 5/8" (screened or washed to avoid fine material). Be sure to use a filter fabric between the two different rocks to keep the larger rock from working its way to the surface.

Gravel is a good choice because it drains well and thus remains drier and holds up well to animal traffic.

3. A rock base can be overlaid by 6" of washed, coarse sand. (Separate layers with a filter fabric.) In high traffic areas, such as the front of stalls, gravel used alone may hold up the best.
4. Another option is to use 6"-12" of coarse hog fuel alone. Hog fuel has a cheaper initial cost, but will need more frequent replacement as it wears out. Hog fuel does a better job of absorbing urine and thus controls odors better than gravel. We don't recommend mixing hog fuel and rock unless separated with a filter fabric because as the hog fuel decomposes it will fill the gaps in the rock and render the footing ineffective. ** Use a filter fabric between soil and hogfuel to prolong life.

Maintenance:

Collect manure from confinement areas daily. If hog fuel is used it may need to be removed every 2 or 3 years and replaced as it is organic and will decompose. In high traffic areas such as the front of stall doors and along fence lines, hog fuel may need replacement each year (high traffic areas are good candidates for gravel).

PASTURE MANAGEMENT SYSTEM:

Conservation Need: Management of pastures to increase forage production and decrease adverse environmental impacts.

BMP's: Prescribed Grazing (528A), Grazing Land Mechanical Treatment (548), Fencing (382), Pasture and Hayland Planting (512), Animal Trails & Walkways (575)

Challenge:

Production of forage will decline over time if livestock are allowed to continuously graze the same areas without allowing adequate rest and recovery time for plants. If grazing is not managed, favorite forages may be targeted and eventually eliminated from the stand. The end result is a weak forage stand, uneven in growth habit, which is dominated by weeds and less palatable grasses.

Solution:

Plan grazing according to plant height and degree of soil moisture as the determining factors.

Specifications:

Install fencing to create several individual grazing paddocks. We recommend using temporary fencing for the first year to best determine optimal fence configuration. After a year or two, you could make adjustments if needed. Some folks will then install permanent fences while others keep the temporary fences.

Given the planned for pasture acreage and soil-type productivity, under careful management, you can expect approximately **173 days** for grazing for all livestock. The key is to rest pasture grasses to keep the grasses healthy and functioning.

This can be managed by a rotational graze and sacrifice area, based on grass height. Introduce the livestock onto pasture when grass is at least 6" high. As soon as the grass is grazed down to 3", rest the pasture and allow it to regrow to 6" before turning out livestock again (typically 4 weeks).

In the spring, allow animals to start grazing on the pasture unit that dries first. *[NOTE: Gradually introduce livestock to grazing grass in the spring (over approximately two weeks)]*. Be sure the plants have reached 6-8" in height before grazing. Allow livestock to graze in a unit until plants are grazed down to 3" tall and do not allow grazing again until plants are 6-8" in height. Confinement will be required to meet these recommendations, even during the growing season, unless you are about to develop all of these pasture areas.

If plants are grazed to lower than 3" or if recovery time is not adequate before grazing is allowed, forage production will decrease.

Clipping (mowing) may be necessary in the spring to keep the grasses from going to seed. For optimal grazing, clip when grasses get to 8 to 10 inches. Additionally, clipping is a good weed management practice. Clip after animals finish grazing down a paddock. This controls those species that the animal doesn't eat and "levels the playing field."

Always make sure that animals are able to get enough water.

The pastures are dominated by reed canary grass. Overseeding will introduce more productive grasses into the pastures. Pasture should be harrowed in order to expose soil. Overseed with a pasture seed mix of Orchardgrass, Perennial Ryegrass, Tall Fescue and White clover. The fall is the best time to plant, late September or October. Overseeding is a good way to start renovating pastures. After all the other BMPs are installed and rotational grazing is followed for a few years, evaluate the pasture. If production is still poor or dominated by reed canary grass, then complete renovation could be preformed.

A bridge needs to be built across the stream in order to efficiently move animals and equipment to the other side of the creek. This bridge will require permits from the King County and from the Washington State Department of Fish & Wildlife. The KCD can help with these permits. Please contact us in the winter when ready to start the process. The KCD has a bridge design that is very permit "light". A private engineer and consulting firm could be used as well. Construction usually occurs in the summer.

Maintenance:

Maintain fencing to remain functional, effective, and safe. A consistent planned grazing program will prolong the health and life of a forage species in your pasture.

Clip and drag pastures regularly, preferably after each grazing period. Clipping will help to maintain uniform plant growth, will keep plants in a vegetative state, and help control weeds. Dragging the pasture will spread manure piles more evenly.

Maintain control of weeds, especially those toxic to livestock. This can be accomplished either by pulling, digging, clipping, or a combination of methods

WASTE MANAGEMENT SYSTEM:

Conservation Need: System for collection, storage, stabilization, and beneficial use of waste products.

BMPs: Waste Storage Structure (313), Waste Management System (312), & Nutrient Management (590)

Challenge:

Waste products, including manure and stall shavings, must be properly stored and used or disposed of to prevent environmental damages and associated health problems. Manure can be a free source of fertilizer and a good soil amendment, thus unused manure can lead to increased fertilizer costs. Additionally, allowing manure to continually pile up may result in a stockpile, which is difficult to dispose of and can lead to environmental degradation.

Specifications:

For the **2 horses good pasture management**, the manure and little stall waste could amount to **16 cubic yards** of material per year. All **16 yards** of compost could be applied to the pastures if pastures are well maintained.

Manure left in pastures during the growing season should be dragged out with a harrow to accelerate breakdown and to distribute evenly. Harrowing can be done after each grazing session when clipping (to save time, do together).

WILDLIFE HABITAT:

Conservation Need: Wildlife Habitat

BMPs: Upland Wildlife Habitat Management (645), Fencing (382), & Tree & Shrub Establishment (612)

Challenge:

Farmers are critical wildlife habitat managers. Through logging, farming and development, wildlife have lost critical habitat. Farms cover a lot of acreage over our landscape and wildlife utilizes the "wild-spots" and fields on the farms. These areas are very important as more and more natural habitat gets altered. Maintaining and enhancing wildlife habitat is an important part of farmland conservation.

Solutions:

In general, Wildlife requires a variety of food, water, and shelter sources. Property owners can provide for wildlife by leaving trees, shrubs, by planting additional native trees and shrubs, and by leaving/ creating wild spaces, and by protecting and enhancing water sources.

Actions that you could take to enhance beneficial wildlife on your property include:

1. Retain and enhance native trees and shrubs in riparian.
2. Leave a section of unmowed pasture from October 1 to July 15 for ground nesting birds.
3. Leave downed wood and snags for wildlife use.
4. For more ideas, see the "Wildlife Habitat" section at the back of this farm plan, &

To learn more about what you can do for wildlife; contact WDFW's Backyard Wildlife Sanctuary, WDFW, 16018 Mill Creek Blvd., Mill Creek, WA 98012. Or <http://www.wdfw.wa.gov/wlm/backyard/>

The buffer will have to be replanted as part of the development process with DDES. Have the consultant develop a planting plan for the buffer area around the stream and wetland. Choose plants for based on the sun, soil and water conditions present. Fence the buffer area off to delineate the buffer and the pasture areas. Fence should be place at least 25 feet away from the stream. Buffer averaging could be used to keep fencelines straight.

CONCLUSION

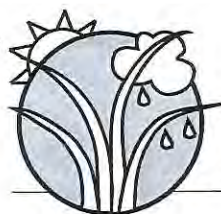
This plan reflects current and successful farm resource management operations to date for this property. King Conservation District has prepared this plan in compliance with federal, state and local codes and in accordance with NRCS conservation planning processes. As objectives, farm practices, farm inventory, or farm ownership changes, please notify King Conservation District to formally revise or update this plan.

Section 3 Fact Sheets



A. Pasture

Pasture management, through a planned grazing system, is the heart and sole of a farm plan. Overgrazed pastures are potential sources of pollution, whether it is mud or nutrients. Well-managed pastures will provide more feed for livestock and reduce overall feed costs. The appearance of the farm will look better with green fields year round.



PASTURE MANAGEMENT GUIDE

Coastal Pastures in Oregon and Washington

F. Lundin

The coastal regions of Oregon and Washington have different climate and soils than other parts of the states. Rainfall is high, ranging from 70 inches in southern Oregon to more than 100 inches in the coastal mountains.

Temperature is moderated by the Pacific Ocean, resulting in long seasons and mild temperatures. Astoria, Oregon, for example, averages 276 frost-free days and 50°F. Inland areas can have shorter seasons and more severe weather.

This moderate climate is ideal for growing grass. Grasses dominate all coastal pastures, with perennial ryegrass, tall fescue, and orchardgrass usually the preferred species.

Rainfall on the coast is seasonal, with 70 percent falling between October and March, and the rest falling from April through September (Table 1). There is little grass growth during the winter; the best growth occurs in the spring. In fact, half the total grass production is produced from

late April to early June. This is a challenge to livestock producers who want to optimize pasture-based livestock production.

Pasture is a crop, and, like other crops, benefits from the use of improved varieties, fertilization, weed control, and grazing management. Grasses respond well to increased management, rewarding the producer with higher production. To be successfully utilized, pastures must be managed properly for the goals of each producer.

Pasture renovation

Renewing an old pasture is easier than establishing a new one. Often, pastures can be brought back into good condition by controlling weeds, fertilizing, and managing stock.

The first step in improving a pasture is to take an inventory of what is there:

- Identify the grasses, forbs, and legumes, taking note of any that are toxic to livestock.

Table 1.—Temperature and precipitation, Astoria, Oregon 1953–1993.

	Temperature (°F)		Precipitation (inches)
	Average High	Average Low	
January	47.8	35.9	10.00
April	56.0	40.3	4.60
July	67.5	52.4	1.15
October	61.1	44.0	5.73
Total	58.3	43.4	66.40

Data from NOAA Technical Memorandum, NWS-236, January 1996.



OREGON STATE UNIVERSITY EXTENSION SERVICE

Fred Lundin, Extension agent, Clatsop
County, Oregon State University.

- Assess fencing and livestock water systems, and their impact on the current status of the pasture.
- Test soil to determine fertilizer needs.

Second, improve the pasture through better grazing management, clipping, fertilizer application, and pasture rest:

- Control undesirable plants by clipping, animal grazing, or chemical control.
- Fertilize to stimulate existing desirable plants.
- Improve pasture usage by adding water sources and/or changing fencing.
- Overseed the existing pasture with improved grasses and legumes.

Divide the pasture into the smallest possible units, depending on the management level available. The smaller the unit and the more intensively it is grazed, the better the production.

Destroy existing vegetation only as a last resort. Livestock utilize a wide variety of plant species, and pastures can be reclaimed more cheaply than they can be reseeded.

Pasture establishment

Fall planting is preferable because pastures become established and usable by late spring. Plant seed before fall rains or as soon as possible after fall rains begin. This allows the grass to germinate and mature enough to withstand cold winter weather.

The later the stand is established in the fall, the greater the chance of winter injury.

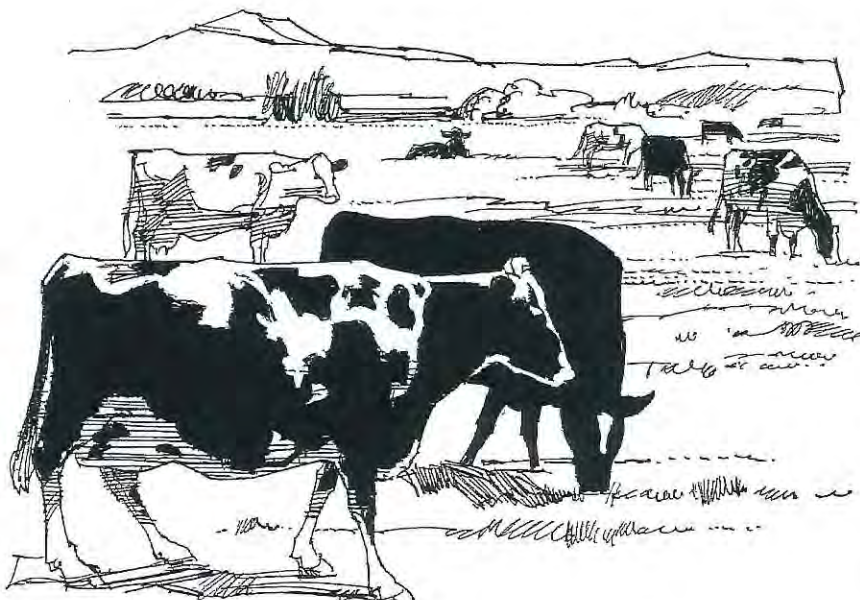
Planting in the spring is possible if the ground can be worked, but rainy weather frequently prevents field work. Late spring planting is effective if irrigation is available.

The first step in coastal pasture establishment is weed control. Weeds often outcompete new grass and defeat the best attempts at pasture renovation.

One method is to seed an annual crop such as oats or other grain the winter or spring before planting. A second is to let the field lie fallow and to control weeds mechanically. A third is to apply an herbicide before working the field.

If tillage is used, develop a fine, firm seedbed. A rule of thumb is that if your heel sinks more than a half inch into the soil, the bed is too soft for seeding. It is not necessary to till deeply, since perennial grasses are capable of sending roots into untilled soil.

No-till seeding is another way of establishing a perennial pasture. It is especially economical when the field is heavily sodded. Applying an herbicide before drilling the grass seed has proved an effective and economic way to renovate pastures when compared with the cost of fuel, equipment, and time of conventional tillage.



A soil test of the upper 4 to 6 inches of soil gives important information about nutrient and lime requirements. Perform a soil test well before seeding, since lime should be incorporated 4 to 6 months prior to seeding (see "Fertilization").

Clean seed is a must. The seed tag gives a lot of information about the seed, such as germination percentage. Obtain seed with the highest germination rate possible. Planting certified seed prevents introducing certain noxious weeds and guarantees varietal purity.

The biggest reason for failure during seeding is the failure to put the seed in contact with the soil, thus allowing the seed to dry out. Plant seed deeply enough that it has good seed/soil contact, about $\frac{1}{4}$ inch. If planting into a firm seedbed, the ground should be moist. If no-till planting, make sure the seed is drilled below the sod and into the soil, but no deeper than necessary for soil contact.

Including a legume has advantages and disadvantages. It reduces the amount of fertilizer needed due to nitrogen fixation by the legume. It also provides a source of protein in forage and increases production in summer, when grasses grow slowly.

Bloat problems can occur, however, if legumes exceed 50 percent of the total forage mix.

In addition, broadleaf weed control in mixed stands can be difficult without damaging the legume.

If you plant a legume, inoculate the seed. Use a fresh inoculant that has been properly stored, and be sure it is specific to the species you are planting. If the legume is not properly inoculated, it may not thrive, and you lose the benefit of including a legume in the pasture.

Mixing two grasses is not recommended, unless intensive grazing is practiced. With less intensive management, livestock graze selectively, and one species thrives while the preferred species is grazed out.

Fertilization

Coastal pastures typically require nitrogen, phosphorus, sulfur, and lime, though other nutrients are needed occasionally. Soil acidity (pH) determines the availability of many plant nutrients.

Nitrogen is the nutrient needed in largest amounts. It must be added frequently, since it is mobile in the soil, and excess amounts leach through the soil with rains.

A soil test is necessary to determine not only pH but also soil phosphorus, potassium, and other elements. Do not check nitrogen in a soil test of coastal pastures, since it is very mobile

and the results are meaningless due to nitrogen leaching when it rains.

Coastal bottomland soils should receive 4 tons of lime per acre if the soil pH is below 5.5. Incorporate lime into the top 2 inches of soil 4 to 6 months prior to seeding. It is essential to place lime in the rooting zone where it can do the most good. Top-dressing lime in a no-till program has had variable results.

Also add phosphorus before seeding since it, too, needs to be incorporated into the soil. Incorporate sufficient P to meet the needs based on a soil test. Banding is an excellent way to apply fertilizers such as phosphorus.

Other nutrients can be topdressed. Apply 40 lb N/a at planting time. Plan on applying 40–60 lb N/a in the fall and 30–60 lb N/a in late February or early March. Use the lower amount in the cooler, northern counties, and the higher amount in the south. Apply N in late spring or summer only if irrigation is available, or in a very wet year.

You can use fertilization to control the amount of forage produced. For example, cool-season pasture grasses typically produce most of their growth in late spring. By fertilizing in early fall and late winter and eliminating early spring fertilization, you can reduce forage supply in times

Solutions:

In general, Wildlife requires a variety of food, water, and shelter sources. Property owners can provide for wildlife by leaving trees, shrubs, by planting additional native trees and shrubs, and by leaving/ creating wild spaces, and by protecting and enhancing water sources.

Actions that you could take to enhance beneficial wildlife on your property include:

1. Retain and enhance native trees and shrubs in riparian.
2. Leave a section of unmowed pasture from October 1 to July 15 for ground nesting birds.
3. Leave downed wood and snags for wildlife use.
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The buffer will have to be replanted as part of the development process with DDES. Have the consultant develop a planting plan for the buffer area around the stream and wetland. Choose plants for based on the sun, soil and water conditions present. Fence the buffer area off to delineate the buffer and the pasture areas. Fence should be place at least 25 feet away from the stream. Buffer averaging could be used to keep fencelines straight.

CONCLUSION

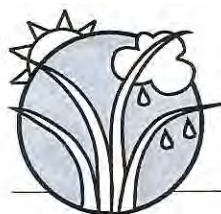
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Section 3 Fact Sheets



A. Pasture

Pasture management, through a planned grazing system, is the heart and sole of a farm plan. Overgrazed pastures are potential sources of pollution, whether it is mud or nutrients. Well-managed pastures will provide more feed for livestock and reduce overall feed costs. The appearance of the farm will look better with green fields year round.



PASTURE MANAGEMENT GUIDE

Coastal Pastures in Oregon and Washington

F. Lundin

The coastal regions of Oregon and Washington have different climate and soils than other parts of the states. Rainfall is high, ranging from 70 inches in southern Oregon to more than 100 inches in the coastal mountains.

Temperature is moderated by the Pacific Ocean, resulting in long seasons and mild temperatures. Astoria, Oregon, for example, averages 276 frost-free days and 50°F. Inland areas can have shorter seasons and more severe weather.

This moderate climate is ideal for growing grass. Grasses dominate all coastal pastures, with perennial ryegrass, tall fescue, and orchardgrass usually the preferred species.

Rainfall on the coast is seasonal, with 70 percent falling between October and March, and the rest falling from April through September (Table 1). There is little grass growth during the winter; the best growth occurs in the spring. In fact, half the total grass production is produced from

late April to early June. This is a challenge to livestock producers who want to optimize pasture-based livestock production.

Pasture is a crop, and, like other crops, benefits from the use of improved varieties, fertilization, weed control, and grazing management. Grasses respond well to increased management, rewarding the producer with higher production. To be successfully utilized, pastures must be managed properly for the goals of each producer.

Pasture renovation

Renewing an old pasture is easier than establishing a new one. Often, pastures can be brought back into good condition by controlling weeds, fertilizing, and managing stock.

The first step in improving a pasture is to take an inventory of what is there:

- Identify the grasses, forbs, and legumes, taking note of any that are toxic to livestock.

Table 1.—Temperature and precipitation, Astoria, Oregon 1953–1993.

	Temperature (°F)		Precipitation (inches)
	Average High	Average Low	
January	47.8	35.9	10.00
April	56.0	40.3	4.60
July	67.5	52.4	1.15
October	61.1	44.0	5.73
Total	58.3	43.4	66.40

Data from NOAA Technical Memorandum, NWS-236, January 1996.



OREGON STATE UNIVERSITY EXTENSION SERVICE

Fred Lundin, Extension agent, Clatsop
County, Oregon State University.

A soil test of the upper 4 to 6 inches of soil gives important information about nutrient and lime requirements. Perform a soil test well before seeding, since lime should be incorporated 4 to 6 months prior to seeding (see "Fertilization").

Clean seed is a must. The seed tag gives a lot of information about the seed, such as germination percentage. Obtain seed with the highest germination rate possible. Planting certified seed prevents introducing certain noxious weeds and guarantees varietal purity.

The biggest reason for failure during seeding is the failure to put the seed in contact with the soil, thus allowing the seed to dry out. Plant seed deeply enough that it has good seed/soil contact, about $\frac{1}{4}$ inch. If planting into a firm seedbed, the ground should be moist. If no-till planting, make sure the seed is drilled below the sod and into the soil, but no deeper than necessary for soil contact.

Including a legume has advantages and disadvantages. It reduces the amount of fertilizer needed due to nitrogen fixation by the legume. It also provides a source of protein in forage and increases production in summer, when grasses grow slowly.

Bloat problems can occur, however, if legumes exceed 50 percent of the total forage mix.

In addition, broadleaf weed control in mixed stands can be difficult without damaging the legume.

If you plant a legume, inoculate the seed. Use a fresh inoculant that has been properly stored, and be sure it is specific to the species you are planting. If the legume is not properly inoculated, it may not thrive, and you lose the benefit of including a legume in the pasture.

Mixing two grasses is not recommended, unless intensive grazing is practiced. With less intensive management, livestock graze selectively, and one species thrives while the preferred species is grazed out.

Fertilization

Coastal pastures typically require nitrogen, phosphorus, sulfur, and lime, though other nutrients are needed occasionally. Soil acidity (pH) determines the availability of many plant nutrients.

Nitrogen is the nutrient needed in largest amounts. It must be added frequently, since it is mobile in the soil, and excess amounts leach through the soil with rains.

A soil test is necessary to determine not only pH but also soil phosphorus, potassium, and other elements. Do not check nitrogen in a soil test of coastal pastures, since it is very mobile

and the results are meaningless due to nitrogen leaching when it rains.

Coastal bottomland soils should receive 4 tons of lime per acre if the soil pH is below 5.5. Incorporate lime into the top 2 inches of soil 4 to 6 months prior to seeding. It is essential to place lime in the rooting zone where it can do the most good. Top-dressing lime in a no-till program has had variable results.

Also add phosphorus before seeding since it, too, needs to be incorporated into the soil. Incorporate sufficient P to meet the needs based on a soil test. Banding is an excellent way to apply fertilizers such as phosphorus.

Other nutrients can be topdressed. Apply 40 lb N/a at planting time. Plan on applying 40–60 lb N/a in the fall and 30–60 lb N/a in late February or early March. Use the lower amount in the cooler, northern counties, and the higher amount in the south. Apply N in late spring or summer only if irrigation is available, or in a very wet year.

You can use fertilization to control the amount of forage produced. For example, cool-season pasture grasses typically produce most of their growth in late spring. By fertilizing in early fall and late winter and eliminating early spring fertilization, you can reduce forage supply in times

of excess and increase it in times of need. However, this may reduce the total amount of forage produced.

On the other hand, adding early spring fertilization to fall and winter fertilization can maximize production, especially if the extra forage can be captured with heavier stocking rates or other harvest means.

The economic return on fertilization depends on species, pH, management, time of fertilization, and the need for fertilization. For an excellent discussion of pasture fertilization, see FG 63, a fertilizer guide for western Oregon and western Washington pastures produced by Oregon State University and Washington State University Extension personnel.

Forage species

The species of grass to plant depends on the intended livestock species and the level of pasture management. Pastures intended for a high level of management can effectively use a species such as perennial ryegrass, while low-management pastures are better suited to tall fescue.

Grasses

Perennial ryegrass is the preferred species for dairies and sheep operations. It is a very high producer, adapted to the coastal environment. It is unequalled for digestibility and, of all the forage grasses, produces the most milk or meat.

Ryegrass is more shallow-rooted and less winter-hardy than either orchardgrass or tall fescue. In summer, it becomes dormant without irrigation, while in winter it continues to grow while other species are less productive.

Because it is very palatable, in mixed pastures, livestock often overgraze ryegrass and undergraze other species. Thus, perennial ryegrass will not persist unless it is intensively managed.

Orchardgrass is well adapted to the coastal environment and is excellent for cattle and horse pastures. It is more tolerant of heat and drought than ryegrass, timothy, or bluegrass, but less so than tall fescue. It requires at least moderately good drainage.

Orchardgrass responds very well to high management, although it also persists well under low. Tall fescue can compete with orchardgrass only under low fertility conditions. Because it gets a slow start in the spring, orchardgrass matures later than fescue, which makes it a better choice for hay production in the coastal environment.

Of all the desirable species, tall fescue is the toughest pasture grass in the coastal region. It makes excellent cattle and horse pasture. It is tolerant of poor drainage, particularly in the winter. It also is more drought-tolerant than any other grass species adapted to moist environments. It responds well to fertilizer, but also tolerates poor fertility.

However, digestibility and palatability decline rapidly with maturity. Another problem is tall fescue toxicosis, a problem associated with an endophytic fungus (see *Tall Fescue/Endophyte, Animal Relationships*, Oregon Tall Fescue Commission). Be sure to choose fescue varieties that are endophyte-free. There are several new varieties that are both more palatable and endophyte-free. Finally, fescue is slow to establish and may produce less forage during the summer than orchardgrass.

For flooded pasture areas, reed canarygrass is ideal. While it is difficult to establish, it produces abundant forage in coastal climates while tolerating the worst conditions.

If allowed to become too mature, the quality of the forage declines sharply. But if it is used while young (less than 18 inches tall), it produces excellent, high-quality forage. *One caution:* Reed canarygrass can become an

invasive weed in wetlands and riparian areas, and should not be used near them.

Other grass species may be used, but these four are the best adapted to the coastal environment.

Legumes

Big trefoil is a legume that is ideal for coastal pastures. It is particularly well adapted to the poorly drained, strongly acid soils found here, although it is hard to establish. Seed may be difficult to obtain, but if a legume is included in the pasture mix, big trefoil is a good choice. It generally is seeded in the spring.

New Zealand white clover also is well adapted to lowland coastal pastures and is the most common clover found in pastures on the Oregon coast. It is vigorous and has more slug resistance than other white clovers, including Ladino. Ladino stands may disappear in pasture mixtures after as few as 2 years due to slug damage, thus greatly reducing pasture yields.

Subterranean (sub) clover works well in drier, upland pastures. It is tolerant of acid soils, but requires removal of dead overburden material to allow for reseeding. It isn't recommended for the wetter north coastal areas.

Seeding recommendations

Seeding rates depend on conditions at seeding time and on the variety of grass. Consult your local Extension agent for recommendations for your pasture. Fact sheets on individual species of pasture grass are available from county Extension offices.

While pasture seeding recommendations vary depending on conditions and proposed use, you can use Table 2 as a guideline.

Increase the rate of seeding if the seedbed conditions are less than optimum. For example, use the smaller quantity if drilling seed and the larger quantity if broadcasting. If heavy clay or light sand soils exist, increase the seeding rate comparably.

If adding subclover to the mixture, use 8–10 lb/a.

Mixing numerous species of grasses and legumes is not recommended. Each forage species has its own optimum management conditions, and mixing several species complicates pasture management. One grass species fertilized with nitrogen is simplest to manage. One grass and one legume, as listed in the seeding recommendation table, takes advantage of the quality and nitrogen-fixing capabilities of legumes while keeping management simple.

Combining several grass and legume species can be successful, however, if livestock are managed to assure uniform grazing. This can be done with management-intensive grazing involving short-duration grazing and adequate regrowth periods.

Table 2.—Seeding recommendations (per acre).

Mixture 1

15–25 lb perennial ryegrass
2–3 lb New Zealand white clover *or* 6–10 lb big trefoil

Mixture 2

12–20 lb orchardgrass
2–3 lb New Zealand white clover *or* 6–10 lb big trefoil

Mixture 3

15–20 lb tall fescue
2–3 lb New Zealand white clover *or* 6–10 lb big trefoil

Mixture 4 (wet pastures)

15–25 lb reed canarygrass
6–10 lb big trefoil

Grazing management

As a grass plant changes from vegetative to reproductive, it becomes increasingly less palatable and less nutritious. Established pastures should be grazed while they are still young and succulent for highest production. Grazing should occur before excess forage is produced.

If left on their own in large pastures, livestock graze selectively, choosing the same plants continually, repeatedly grazing the new, succulent growth and ignoring the aging plants next to them. The result is a pasture with large clumps of mature grass and areas of overgrazed and weak grass. This leads to weed infestation, reduced production, and decreased forage quality.

Since grass does not grow uniformly throughout the year, it usually pays to harvest some mechanically in the spring, when growth is highest. This is

difficult in coastal counties due to wet weather, but can be done by ensiling the forage instead of haying it. On smaller operations, where owned equipment would not be economical, custom round bale haylage, with its wider window of timeliness, can be very successful. Another method of harvesting the spring abundance is to stock more heavily during that time.

For optimal plant growth, intensive grazing management is needed. This entails stocking pastures with enough livestock so that forage is uniformly grazed to 2 to 3 inches in 3 to 7 days. For dairy operations, maximum forage and milk production occur when 50 percent of available forage is used within 12 to 24 hours.

Research from New Zealand shows that perennial ryegrass/white clover pastures produce the most dry matter (grow the fastest) after they have reached 2 to 3 inches in height and before they

become so tall they begin to shade lower leaves—between 5 and 8 inches, depending on variety.

Intensive grazing management involves using very small pastures and moving animals often. It requires allowing the animals free access to water at all times. For success, intensive grazing must

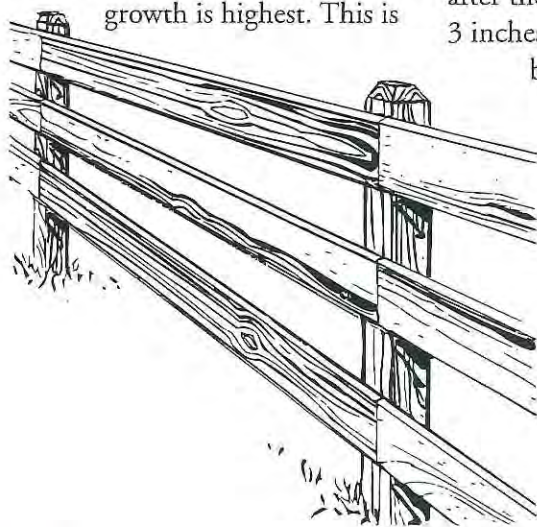
be coordinated with intensive fertility management. It also requires much more fencing, observation time, and a livestock watering system.

An intensive grazing system maximizes the fertilizer value of manure. It has the added benefit of helping maintain a solid stand, thus limiting weed infestations. Since all of the forage is used, competition from other species is minimal. The stand will last much longer than one that is managed at a lower level.

Be advised that intensive grazing can select against weaker animals, since they must compete for forage. Watch weaker animals closely.

It is possible to compromise between minimal management and intensive management. For example, mowing can be substituted for grazing. Mowing a pasture when weeds are tall and the pasture grass gets rank helps control weeds and encourages new growth. A resting period helps, especially if the grass can be allowed to go to seed so it can regenerate the pasture.

The degree of management given to a pasture depends on the goals of the producer, the species of animal being grazed, and the time available for management. The more intensively the pasture is managed, the higher the return on your investment.



Weed management

Any plant that is not wanted in the pasture is considered a weed, although most benign undesirable plants are eliminated with proper fertilization and grazing management. Some plants, however, are so bad that every effort must be made to eradicate them. For example, tansy ragwort, common groundsel, and brackenfern are toxic to livestock to some extent.

You can control weeds mechanically by mowing, culturally by intensively grazing, biologically with insects, or chemically with herbicides. For current control recommendations, call your county Extension agent, or consult the current edition of the *Pacific Northwest Weed Control Handbook* (see "For more information").

Insect management

The European crane fly can be a serious pest of pastures. The larvae feed heavily on the roots, crowns, stems, and leaves of pasture grasses, and can kill large areas of pasture. The adult is a large true fly and resembles a large mosquito. It emerges briefly in August or September to reproduce.

Presence of the adult does not indicate an economic threshold to

treat. Control is recommended in April if there are at least 15 larvae per square foot in the pasture. See EM 8411, *The European Crane Fly: A Serious Pasture Pest in Tillamook County*, for more information.

The sod webworm also can wipe out established stands. Adults are snout moths about $\frac{1}{2}$ inch long. Larvae are small and active and feed in the soil on roots, crowns, and leaves of grasses. Adults fly with a low, jerky flight as you walk across the pasture. Damaged pastures show browning and appear water stressed beginning in the summer. Identification and control of these pests is essential to good management.

Summary

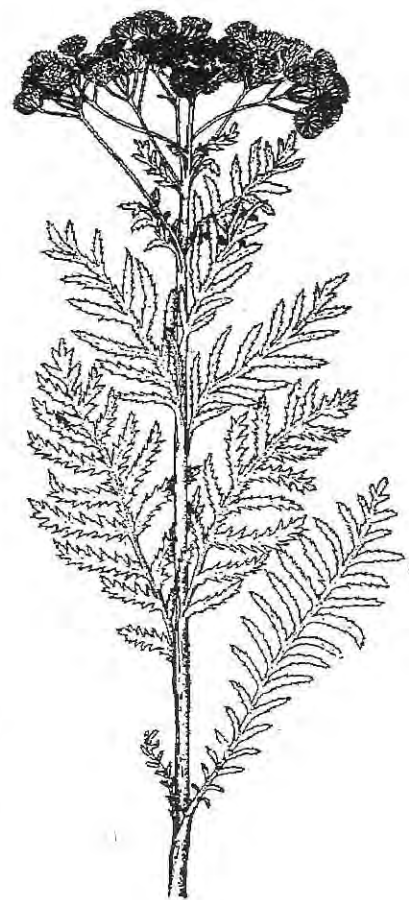
To successfully utilize your pastures, you must manage them properly based on your goals. Grasses respond well to increased management, rewarding the producer with higher production.

The first step in improving a pasture is to take an inventory of what is there. Second, improve the pasture through better grazing management, clipping, fertilizer application, and pasture rest.

Some pastures may be too poor to renovate and you may need to

reseed. Choose an appropriate forage variety or mix for your site. Each variety has advantages and disadvantages, depending on your goals and growing conditions.

Recognize that pastures do not produce evenly throughout the year. Maximize forage production by harvesting overproduction in the spring and avoiding overgrazing in the late summer.



For more information

OSU Extension publications available from Publication Orders

Fertilizer Guide for Pastures in Western Oregon and Western Washington, FG 63, by J. Hart, G. Pirelli, L. Cannon, and S. Fransen (Oregon State University, Corvallis, 1995).
No charge

Pacific Northwest Weed Control Handbook (revised annually by Oregon State University, Washington State University, and the University of Idaho).
\$19.50

To order copies of the above publications, or additional copies of this publication, send the complete title and series number, along with a check or money order for the amount listed, to:

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OSU Extension publications available from selected county offices

The European Crane Fly: A Serious Pasture Pest in Tillamook County, EM 8411, by J. Williams, R.C. Eichelberger, and G.C. Fisher (Oregon State University, Corvallis, reprinted 1992). Contact the OSU Extension Service Tillamook County office.

Endophyte Toxins in Grass Seed Fields and Straw: Effects on Livestock, EM 8598, by S. Aldrich-Markham and G. Pirelli (Oregon State University, Corvallis, 1995).
Contact your county Extension office for availability.

Other publications

Tall Fescue/Endophyte, Animal Relationships by D. Ball, et al. (Oregon Tall Fescue Commission, Salem).

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
 - Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
 - Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.
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- Assess fencing and livestock water systems, and their impact on the current status of the pasture.
- Test soil to determine fertilizer needs.

Second, improve the pasture through better grazing management, clipping, fertilizer application, and pasture rest:

- Control undesirable plants by clipping, animal grazing, or chemical control.
- Fertilize to stimulate existing desirable plants.
- Improve pasture usage by adding water sources and/or changing fencing.
- Overseed the existing pasture with improved grasses and legumes.

Divide the pasture into the smallest possible units, depending on the management level available. The smaller the unit and the more intensively it is grazed, the better the production.

Destroy existing vegetation only as a last resort. Livestock utilize a wide variety of plant species, and pastures can be reclaimed more cheaply than they can be reseeded.

Pasture establishment

Fall planting is preferable because pastures become established and usable by late spring. Plant seed before fall rains or as soon as possible after fall rains begin. This allows the grass to germinate and mature enough to withstand cold winter weather.

The later the stand is established in the fall, the greater the chance of winter injury.

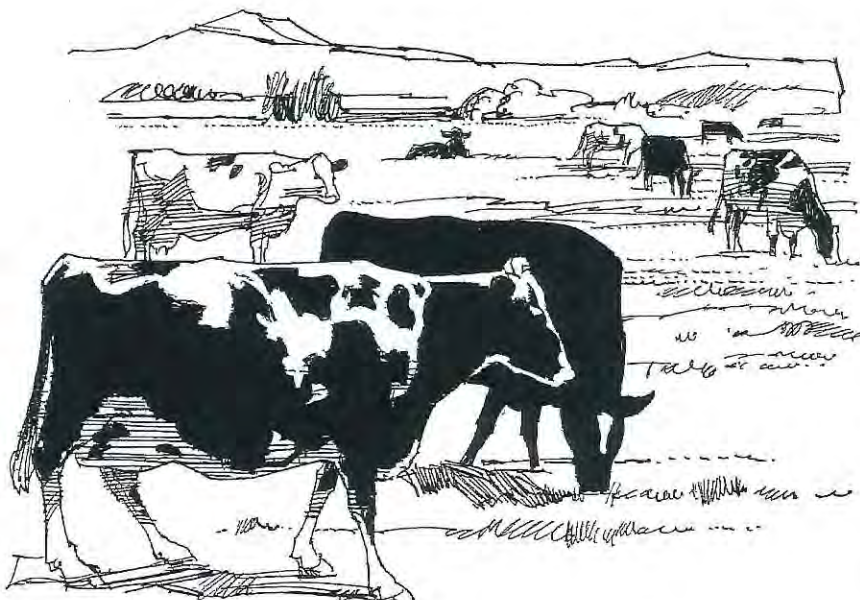
Planting in the spring is possible if the ground can be worked, but rainy weather frequently prevents field work. Late spring planting is effective if irrigation is available.

The first step in coastal pasture establishment is weed control. Weeds often outcompete new grass and defeat the best attempts at pasture renovation.

One method is to seed an annual crop such as oats or other grain the winter or spring before planting. A second is to let the field lie fallow and to control weeds mechanically. A third is to apply an herbicide before working the field.

If tillage is used, develop a fine, firm seedbed. A rule of thumb is that if your heel sinks more than a half inch into the soil, the bed is too soft for seeding. It is not necessary to till deeply, since perennial grasses are capable of sending roots into untilled soil.

No-till seeding is another way of establishing a perennial pasture. It is especially economical when the field is heavily sodded. Applying an herbicide before drilling the grass seed has proved an effective and economic way to renovate pastures when compared with the cost of fuel, equipment, and time of conventional tillage.



Solutions:

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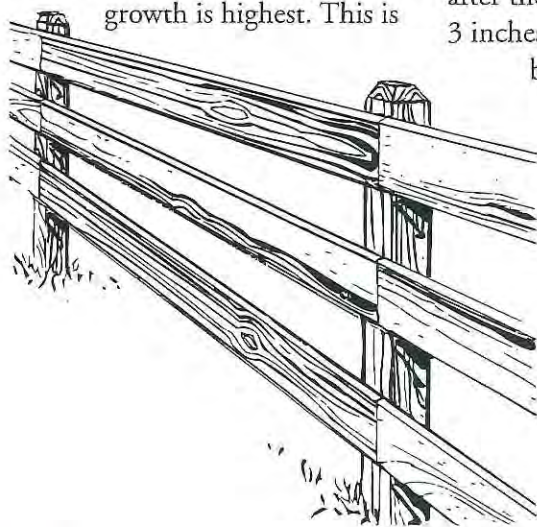
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Be advised that intensive grazing can select against weaker animals, since they must compete for forage. Watch weaker animals closely.

It is possible to compromise between minimal management and intensive management. For example, mowing can be substituted for grazing. Mowing a pasture when weeds are tall and the pasture grass gets rank helps control weeds and encourages new growth. A resting period helps, especially if the grass can be allowed to go to seed so it can regenerate the pasture.

The degree of management given to a pasture depends on the goals of the producer, the species of animal being grazed, and the time available for management. The more intensively the pasture is managed, the higher the return on your investment.



For more information

OSU Extension publications available from Publication Orders

Fertilizer Guide for Pastures in Western Oregon and Western Washington, FG 63, by J. Hart, G. Pirelli, L. Cannon, and S. Fransen (Oregon State University, Corvallis, 1995).
No charge

Pacific Northwest Weed Control Handbook (revised annually by Oregon State University, Washington State University, and the University of Idaho).
\$19.50

To order copies of the above publications, or additional copies of this publication, send the complete title and series number, along with a check or money order for the amount listed, to:

Publication Orders
Extension & Station
Communications
Oregon State University
422 Kerr Administration
Corvallis, OR 97331-2119
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World Wide Web

You can access our Educational Materials catalog and some of our publications through our Web page at <http://www.wagcomm.ads.orst.edu/>

OSU Extension publications available from selected county offices

The European Crane Fly: A Serious Pasture Pest in Tillamook County, EM 8411, by J. Williams, R.C. Eichelberger, and G.C. Fisher (Oregon State University, Corvallis, reprinted 1992). Contact the OSU Extension Service Tillamook County office.

Endophyte Toxins in Grass Seed Fields and Straw: Effects on Livestock, EM 8598, by S. Aldrich-Markham and G. Pirelli (Oregon State University, Corvallis, 1995).
Contact your county Extension office for availability.

Other publications

Tall Fescue/Endophyte, Animal Relationships by D. Ball, et al. (Oregon Tall Fescue Commission, Salem).

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
 - Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
 - Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.
-

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Conservation Information Sheet

August 2001

Pastures

Soil Compaction in Pastures

by Lyle Stoltman

Small Farms Program Manager

As an agronomist I've often been asked to evaluate lawns or pastures for people. They frequently wonder why the grasses are stunted with weedy, thin areas and assume the problems are due to lack of fertility, insects, or disease.

Sometimes it's a physical problem rather than a chemical one. A condition seen often is high bulk density, in other words, soil compaction.

When a soil is compacted, air space is squeezed out of the soil. Root growth takes place in the air spaces around soil particles. Reducing the amount of pore space a root has to grow restricts plant growth. Also, air and water essential for growth can't diffuse into the root zone.

Soil compaction also contributes mechanical resistance to root penetration and inhibits the emergence of seedlings and spreading of rhizomes.

A simple test to determine if soil compaction is evident is to take your finger and dig it into a dry soil. If you can't work it through the top 2-3 inches of soil, the soil is probably compacted.

Clay textured soils are the most easily compacted, while sandy soils are the least. Alluvial soils in bottom lands and fine textured silt loams are also easily compacted.

There are other problems associated with soil compaction, besides inhibiting plant growth by physical obstruction, compaction causes water to flow over the surface rather than infiltrating into the soil. Surface runoff prevents water from being utilized by plants, and can lead to surface and groundwater contamination if fertilizers are applied to correct a problem because of misdiagnosis. The chemicals cannot reach their target and ultimately run off into a stream, creek, or ditch. Literally money down the drain.

Compacted soils don't heat up in the spring as fast and retain heat in the summer. Roots unable to penetrate the soil accumulate near the soil surface, drying out during hot afternoons. The roots cannot get into the subsoil where moisture and cooler temperatures are more suitable.

Intensive livestock use of a pasture eventually reduces the lands productivity as the ground becomes compacted. When desired grasses start to diminish because of compaction, weeds take over. Weeds are aggressive and efficient at getting established. Many of the worst problem weeds are broadleaves, exhibiting taproot systems rather than fibrous roots common to pasture grasses. Weeds can survive in compacted conditions better than grasses because taproots can penetrate compacted soils. Also, weeds adapt to drier soils. As the seeds continue to thrive, the grasses suffer and go dormant. Once the weeds overtake grasses, the tendency is to apply herbicides for control. This amounts to costs that could have been avoided, and addition of unneeded pesticides into the environment.



Conservation Information Sheet

August 2001

Pastures

Soil Compaction in Pastures

Good soil structure is imperative for maximum yield of most agricultural crops, including forages. Table 1 shows the effects of compaction on the growth of corn, which is not a forage grass, but is a member of the grass family. Please note that the compacted unfertilized treatment produced more vegetative matter than the compacted fertilized treatment.

Maintaining a pasture with forage species growing at their optimum production level saves money. Livestock grazing on pastures is more cost effective than purchasing feed. Keeping pastures in an uncompacted state helps utilize water, fertilizers, and other pesticides more effectively. Less can be used to get into the root area where it is needed. This saves money as well.

One of the best methods commonly used to reduce soil compaction is to aerate. Aerators are available for purchase or rent and easily hook up to a tractor with a 3-point hitch. A walk behind model is available for use on smaller areas. There are also companies that provide that service.

The best time to aerate is in the spring or early summer when grasses are actively growing and fill in rapidly.

Has your lawn or pasture been aerated recently? Golf courses generally aerate 2 or more times a year to reduce bulk density!

Good pasture management can prevent soils from becoming compacted. This can be done by restricting grazing of animals on pastures during periods when soils are wet. This causes soil compaction, reduced plant growth, and can lead to water contamination.

The Effect of Moisture, Fertility Level, and Degree of Soil Compaction on the Growth of Corn plants*

Treatments	Weight of Total Plant (gm)
Loose, wet, fertilized	54.2
Compact, wet, fertilized	22.5
Loose, wet, unfertilized	33.7
Compact, wet, unfertilized	24.7

Bertrand & Kohnke, SSSA Proc., 21:137 (57).



Conservation Information Sheet

August 2001

Pastures Clipping and Dragging...

by Lyle T. Stoltman

Small Farms Program Manager

Maintaining productive pastures is one of the most challenging aspects of livestock keeping in Western Washington. Besides providing forage for livestock, healthy stands of grass are important for erosion control. Water quality can also be improved with good grass coverage because of the turfs' ability to uptake nutrients and reduce sedimentation.

Pastures should be clipped several times each year to reduce weeds from reaching-maturity and going to seed. If allowed to set seed, many types of weeds can out compete turf, especially if the pastures are compacted or stressed or because of poor soils. The lack of precipitation during the summer contributes to pasture grasses going dormant from heat stress and allows drought resistant weeds to grow.

Dragging pastures breaks up manure piles and promotes more uniform grazing of the pasture. The grasses benefit from the nutrients provided by increased manure coverage.

Although dragging breaks down manure faster, it is not enough to kill the worms present. Horses should be on a regular worming schedule and not fed on the ground to prevent problems.

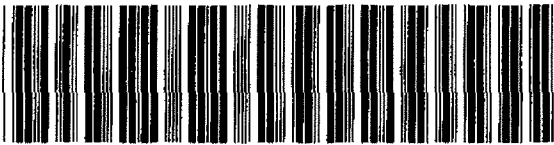
To get the best results from clipping and dragging, a rotational grazing system should be set up. Dividing pastures into smaller units and then moving livestock from area to area allows a regrowth period and prevents overgrazing. The best time to clip and drag is right after livestock are moved from a pasture.

Regular clippings make pastures more attractive and productive than if left unmanaged. On the other hand, clipping can reduce herbicide usage and possible pollution on farms where alternative management styles may be desired.



APPENDIX B

Sensitive Area Notice (Parcel A; Notice BOOL1239),
King County, 2003



20030307002177

PUBLIC N
PAGE 001 OF 004
03/07/2003 12:29
KING COUNTY, WA

22 00

20030306002757

PUBLIC N
PAGE 001 OF 003
03/06/2003 14:54
KING COUNTY, WA

21 00

Return Address:

JOHN R KENYON
12453 164th AVE N E
Redmond WA 98052

Please print or type information WASHINGTON STATE RECORDER'S Cover Sheet (RCW 65 04)

Document Title(s) (or transactions contained therein) (all areas applicable to your document must be filled in)

1 Notice Book 1239 2 Record to add map
3 4

Reference Number(s) of Documents assigned or released:

Additional reference #'s on page _____ of document

Grantor(s) (Last name, first name, initials)

1 KENYON JOHANNA J
2

Additional names on page _____ of document

Grantee(s) (Last name first, then first name and initials)

1 King County
2

Additional names on page _____ of document

Legal description (abbreviated i.e. lot, block, plat or section, township, range)

N HALF OF S HALF OF NW 1/4 OF NW 1/4 STR 8 25 5
Less W 30. FT FOR Rd Less E 233 FT Less Beg 15 W. CORNER 1/4 11
Additional legal is on page _____ of document

Assessor's Property Tax Parcel/Account Number

082506-9026-08127900A

☐ Assessor Tax # not yet assigned

The Auditor/Recorder will rely on the information provided on the form. The staff will not read the document to verify the accuracy or completeness of the indexing information provided herein

I am requesting an emergency nonstandard recording for an additional fee as provided in RCW 36 18 010. I understand that the recording processing requirements may cover up or otherwise obscure some part of the text of the original document

Signature of Requesting Party



King County
Dept. of Development and
Environmental Services
Land Use Services Division
900 Oakesdale Avenue Southwest
Renton, WA 98055-1219

Sensitive Area Notice

For Permit Number: B00 L1239

For Parcel Number: 082506-9026, more fully

described as (street address)

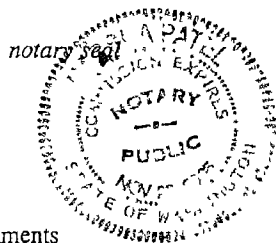
7702 196th Ave NE

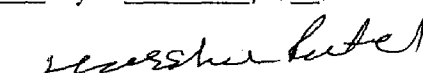
This property contains sensitive areas and/or sensitive area buffers, as defined by the King County Sensitive Areas Ordinance, KCC 21A.24. The provisions of the Sensitive Areas Ordinance apply to this property. Limitation may exist on actions in or affecting the sensitive areas or their buffers present on this property. For further information regarding such limitation, please contact the Land Use Services Division of King County or its successor agency. This notice shall run with the land and shall not be removed except upon specific written authorization recorded herein by King County.

I, (print) JOHANNA J. KENYON, hereby
certify that I am the owner of the above-referenced property.


(Owner's Signature)

SUBSCRIBED AND SWORN TO before me this 5th day of March, 192003




Notary Public in and for the
State of Washington, residing at

BELLEVUE

Attachments



King County
Dept. of Development and Environmental Services
Land Use Services Division
900 Oakesdale Avenue Southwest
Renton, Washington 98055-1219

LEGAL
DESCRIPTION

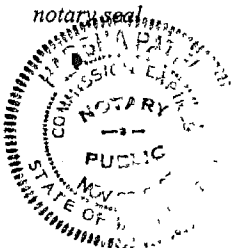
7702 1962 Ave. N.E. Redmond WA

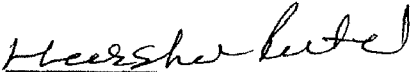
LEGAL DESCRIPTION: (FROM ASSESSOR'S OFFICE RECORDS)
NORTH HALF OF SOUTH HALF OF NW QUARTER OF NW QUARTER OF SECTION TOWNSHIP RANGE 8-25-5 LESS WEST 30 FEET FOR ROAD LESS EAST 233 FEET LESS BEGINNING AT SW CORNER OF NORTH HALF OF SOUTH HALF OF NW QUARTER OF NW QUARTER OF SAID SECTION 8 THE EAST 270 FEET THEN NORTH 160 FEET THEN WEST 270 FEET THEN SOUTH 180 FEET TO THE TRUE POINT OF BEGINNING. AND LESS BEGINNING AT THE SW CORNER OF THE SAID SUBDIVISION THEN SOUTH 89-15-39 EAST ALONG SOUTH LINE OF SUBDIVISION 270.00 FEET TO TRUE POINT OF BEGINNING. THEN CONTINUING SOUTH 89-15-39 EAST 475.21 FEET THEN NORTH 00-44-46 EAST TO POINT ON LINE WITH WEST LINE SAID SECTION 175.50 FEET THEN NORTH 89-15-39 WEST 715.21 FEET TO EAST LINE OF WEST 30 FEET SAID SUBDIVISION THEN SOUTH 00-44-46 WEST ALONG SAID EAST LINE 15. 50 FEET THEN SOUTH 89-15-39 EAST 240.00 FEET THEN SOUTH 00-44-46 WEST PROPERTY LINE WITH SAID WEST LINE 160 FEET TO TRUE POINT OF BEGINNING.

I, (print) JOHANNA J KENYON, hereby certify that I am the owner of the above- referenced property.


(Owner's Signature)


SUBSCRIBED AND SWORN TO before me this 5th day of March, 2003




Notary Public in and for the

State of Washington, residing at

BELLEVUE


(owner's signature)

Notice 1 - For Use With Non-Surveved Sensitive Areas

This site plan is a sketch for informational purposes only. The location(s) of the sensitive area(s) and buffer(s) is/are not surveyed. All sensitive area(s) may be subject to further review upon any alteration of the site or its sensitive area(s) or buffer(s).

This site plan for parcel number 082506 9026 depicts the approximate location(s) of the sensitive area(s) and buffer(s).

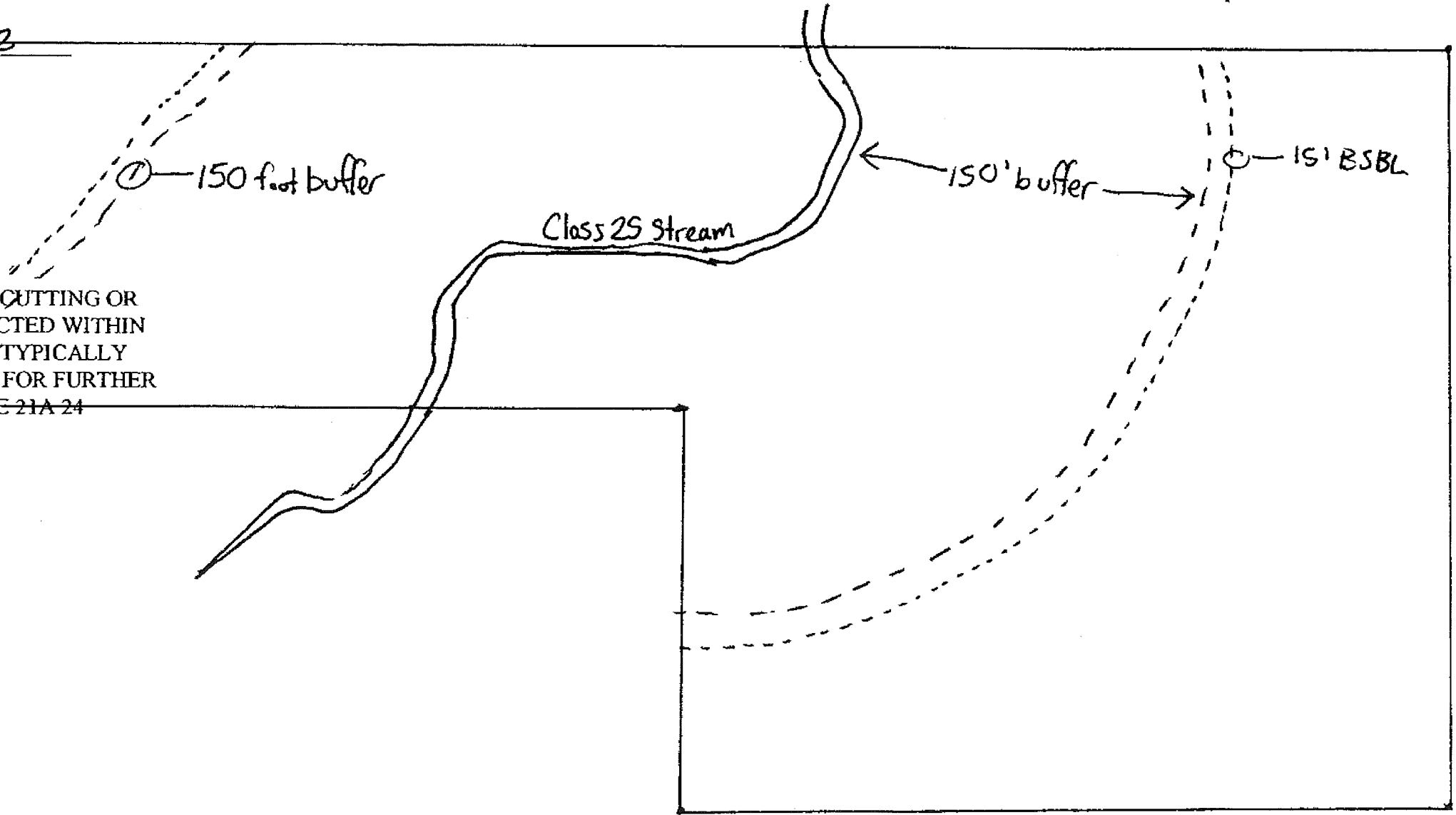
Elizabeth M. M...
Signature

8-13-02
Date

SR Ecologist
Title

B000L1239
King County Activity Number

NOTE: DEVELOPMENT ACTIVITIES (INCLUDING CUTTING OR PRUNING OF NATIVE VEGETATION) ARE RESTRICTED WITHIN SENSITIVE AREAS AND BUFFERS. BUFFERS ARE TYPICALLY TO REMAIN UNALTERED NATIVE VEGETATION. FOR FURTHER INFORMATION, SEE KING COUNTY ZONING CODE 21A-24.

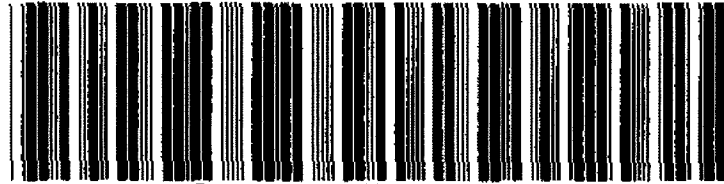


7702 196th Ave.

20030306002757.001

Return Address:

JOHN R KENYON
12453 164th AVE NE
Redmond WA 98052



20030306002757

PUBLIC N
PAGE 001 OF 003
03/06/2003 14:54
KING COUNTY, WA

21 00

Please print or type information **WASHINGTON STATE RECORDER'S Cover Sheet** (RCW 65.04)

Document Title(s) (or transactions contained therein) (all areas applicable to your document must be filled in)

1 Notice BOOK 1239 2 _____
3 _____ 4 _____

Reference Number(s) of Documents assigned or released:

Additional reference #'s on page _____ of document

Grantor(s) (Last name, first name, initials)

1 KENYON JOHANNA J _____
2 _____

Additional names on page _____ of document

Grantee(s) (Last name first, then first name and initials)

1 KING COUNTY _____
2 _____

Additional names on page _____ of document

Legal description (abbreviated i.e. lot, block, plat or section, township, range)

N HALF OF S HALF OF NW 1/4 OF NW 1/4 STR 8255
LESS W 30 FT FOR RD LESS E 233 FT LESS BEG AT SW CORNER N 1/4
Additional legal is on page _____ of document

Assessor's Property Tax Parcel/Account Number

082506-9026-08127900A

☐ Assessor Tax # not yet assigned

The Auditor/Recorder will rely on the information provided on the form. The staff will not read the document to verify the accuracy or completeness of the indexing information provided herein.

I am requesting an emergency nonstandard recording for an additional fee as provided in RCW 36.18.010. I understand that the recording processing requirements may cover up or otherwise obscure some part of the text of the original document.

Signature of Requesting Party



King County
Dept. of Development and
Environmental Services
Land Use Services Division
900 Oakesdale Avenue Southwest
Renton, WA 98055-1219

Sensitive Area Notice

Note New
Address.

WAS this Kenyon's
property?

For Permit Number: B00 L1239

For Parcel Number: 082506-9026, more fully

described as (street address)

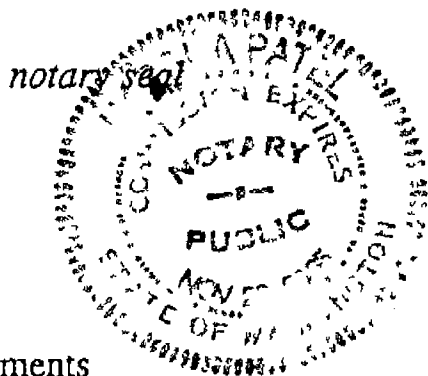
7702 196th Ave NE ✓

This property contains sensitive areas and/or sensitive area buffers, as defined by the King County Sensitive Areas Ordinance, KCC 21A.24. The provisions of the Sensitive Areas Ordinance apply to this property. Limitation may exist on actions in or affecting the sensitive areas or their buffers present on this property. For further information regarding such limitation, please contact the Land Use Services Division of King County or its successor agency. This notice shall run with the land and shall not be removed except upon specific written authorization recorded herein by King County.

I, (print) JOHANNA J. KENYON, hereby
certify that I am the owner of the above-referenced property.

[Signature]
(Owner's Signature)

SUBSCRIBED AND SWORN TO before me this 5th day of March, 192003



[Signature]
Notary Public in and for the
State of Washington, residing at
BELLEVUE

Attachments



King County
Dept of Development and Environmental Services
Land Use Services Division
900 Oakesdale Avenue Southwest
Renton, Washington 98055-1219

LEGAL DESCRIPTION

7702 1962 Ave. N.E. Renton, WA

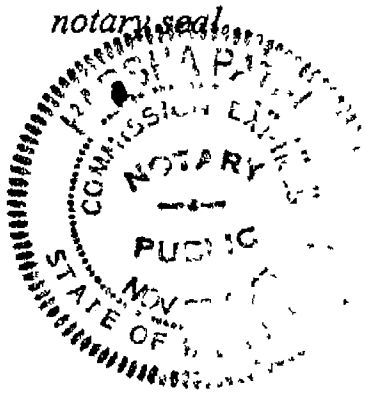
LEGAL DESCRIPTION: (FROM ASSESSOR'S OFFICE RECORDS)

NORTH HALF OF SOUTH HALF OF NW QUARTER OF NW QUARTER OF SECTION TOWNSHIP RANGE 8-25-5 LESS WEST 30 FEET FOR ROAD LESS EAST 233 FEET LESS BEGINNING AT SW CORNER OF NORTH HALF OF SOUTH HALF OF NW QUARTER OF NW QUARTER OF SAID SECTION 8 THE EAST 270 FEET THEN NORTH 160 FEET THEN WEST 270 FEET THEN SOUTH 180 FEET TO THE TRUE POINT OF BEGINNING. AND LESS BEGINNING AT THE SW CORNER OF THE SAID SUBDIVISION THEN SOUTH 89-15-39 EAST ALONG SOUTH LINE OF SUBDIVISION 270.00 FEET TO TRUE POINT OF BEGINNING. THEN CONTINUING SOUTH 89-15-39 EAST 475.21 FEET THEN NORTH 00-44-46 EAST TO POINT ON LINE WITH WEST LINE SAID SECTION 175.50 FEET THEN NORTH 89-15-39 WEST 715.21 FEET TO EAST LINE OF WEST 30 FEET SAID SUBDIVISION THEN SOUTH 00-44-46 WEST ALONG SAID EAST LINE 15. 50 FEET THEN SOUTH 89-15-39 EAST 240.00 FEET THEN SOUTH 00-44-46 WEST PROPERTY LINE WITH SAID WEST LINE 160 FEET TO TRUE POINT OF BEGINNING.

I, (print) JOHANNA J KEAYON, hereby certify that I am the owner of the above- referenced property

[Signature]
(Owner's Signature)

SUBSCRIBED AND SWORN TO before me this 5th day of March, 2003



Heather Butler

Notary Public in and for the
State of Washington, residing at

BELLEVUE

[Signature]
(owner's signature)

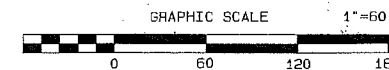
NOTES

1. THE LEGAL DESCRIPTION AND EASEMENTS FOR THE SUBJECT PROPERTY WERE TAKEN FROM STEWART TITLE COMPANY TITLE NO. 267492 DATED APRIL 24, 1995. HARSTAD CONSULTANTS HAS CONDUCTED NO INDEPENDENT TITLE SEARCH NOR IS HARSTAD CONSULTANTS AWARE OF ANY TITLE ISSUES AFFECTING THE SURVEYED PROPERTY OTHER THAN THOSE SHOWN ON THE MAP AND DISCLOSED IN THE ABOVE DESCRIBED POLICY WARRANTY DEED.
2. WORK PERFORMED IN CONJUNCTION WITH THIS SURVEY UTILIZED THE FOLLOWING EQUIPMENT AND PROCEDURES.
 - A. NIKON TOTAL STATION MAINTAINED TO MANUFACTURER'S SPECIFICATIONS PER WAC-332-130-100.
 - B. FIELD TRAVERSE EXCEEDING REQUIREMENTS OF WAC-332-130-090.
3. PROPERTY SUBJECT TO AN UNDERGROUND ELECTRIC DISTRIBUTION SYSTEM EASEMENT TEN FEET IN WIDTH HAVING FIVE FEET OF SAID WIDTH ON EACH SIDE OF A CENTERLINE AS CONSTRUCTED OR TO BE CONSTRUCTED AS DESCRIBED IN INSTRUMENT UNDER KING COUNTY RECORDING NO. 9211101795. HARSTAD CONSULTANTS IS NOT ABLE TO LOCATE SAID EASEMENT AS THE UTILITY IS UNDERGROUND. A UTILITY LOCATOR WILL NEED TO LOCATE THE UTILITY BEFORE THE EASEMENT CAN BE PLOTTED ON THE DRAWING.
4. PROPERTY SUBJECT TO SENSITIVE AREA NOTICE WHICH SHOWS A STREAM, A 50 FOOT BUFFER AND 15 FOOT BUILDING SETBACK LINE ON SUBJECT PROPERTY. A PICTURE IS SHOWN IN INSTRUMENT IN KING COUNTY RECORDING NO. 9206041296.
5. A PORTION OF TAX LOT 082506-9032 SUBJECT TO GRANT OF EASEMENT IN FAVOR OF WAYNE SEMINOFF DESCRIBED IN INSTRUMENT UNDER RECORDING NO. 9211101679 TO CONSTRUCT, MAINTAIN, AN EXTENSION OF HIS RESIDENCE AND THE RIGHT TO THE USE AND ENJOYMENT OF PROPERTY, AS SHOWN ON THIS SURVEY.

LEGAL DESCRIPTION

THE NORTH HALF OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 8, TOWNSHIP 25 NORTH, RANGE 6 EAST, W.M., IN KING COUNTY WASHINGTON;
 LESS THE WEST 30' FOR ROAD;
 LESS THE EAST 233 FEET;
 LESS BEGINNING AT THE SOUTHWEST CORNER OF THE NORTH ONE HALF OF THE SOUTH ONE HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 8, TOWNSHIP 25 NORTH, RANGE 6 EAST, W.M., IN KING COUNTY, WASHINGTON;
 THENCE EAST 270 FEET;
 THENCE NORTH 160 FEET;
 THENCE WEST 270 FEET;
 THENCE SOUTH 160 FEET TO THE TRUE POINT OF BEGINNING;
 LESS BEGINNING AT THE SOUTHWEST CORNER OF SAID SUBDIVISION;
 THENCE SOUTH 89°15'39" EAST ALONG THE SOUTH LINE OF SAID SUBDIVISION 270.00 FEET TO THE TRUE POINT OF BEGINNING;
 THENCE CONTINUING SOUTH 89°15'39" EAST 475.21 FEET;
 THENCE NORTH 00°44'46" EAST PARALLEL TO THE WEST LINE OF SAID SECTION 175.50 FEET;
 THENCE NORTH 89°15'39" WEST 715.21 FEET TO THE EAST LINE OF THE WEST 30.00 FEET OF SAID SUBDIVISION;
 THENCE SOUTH 00°44'46" WEST ALONG SAID EAST LINE 15.50 FEET;
 THENCE SOUTH 89°15'39" EAST 240.00 FEET;
 THENCE SOUTH 00°44'46" WEST PARALLEL TO SAID WEST LINE 160.00 FEET TO THE TRUE POINT OF BEGINNING.

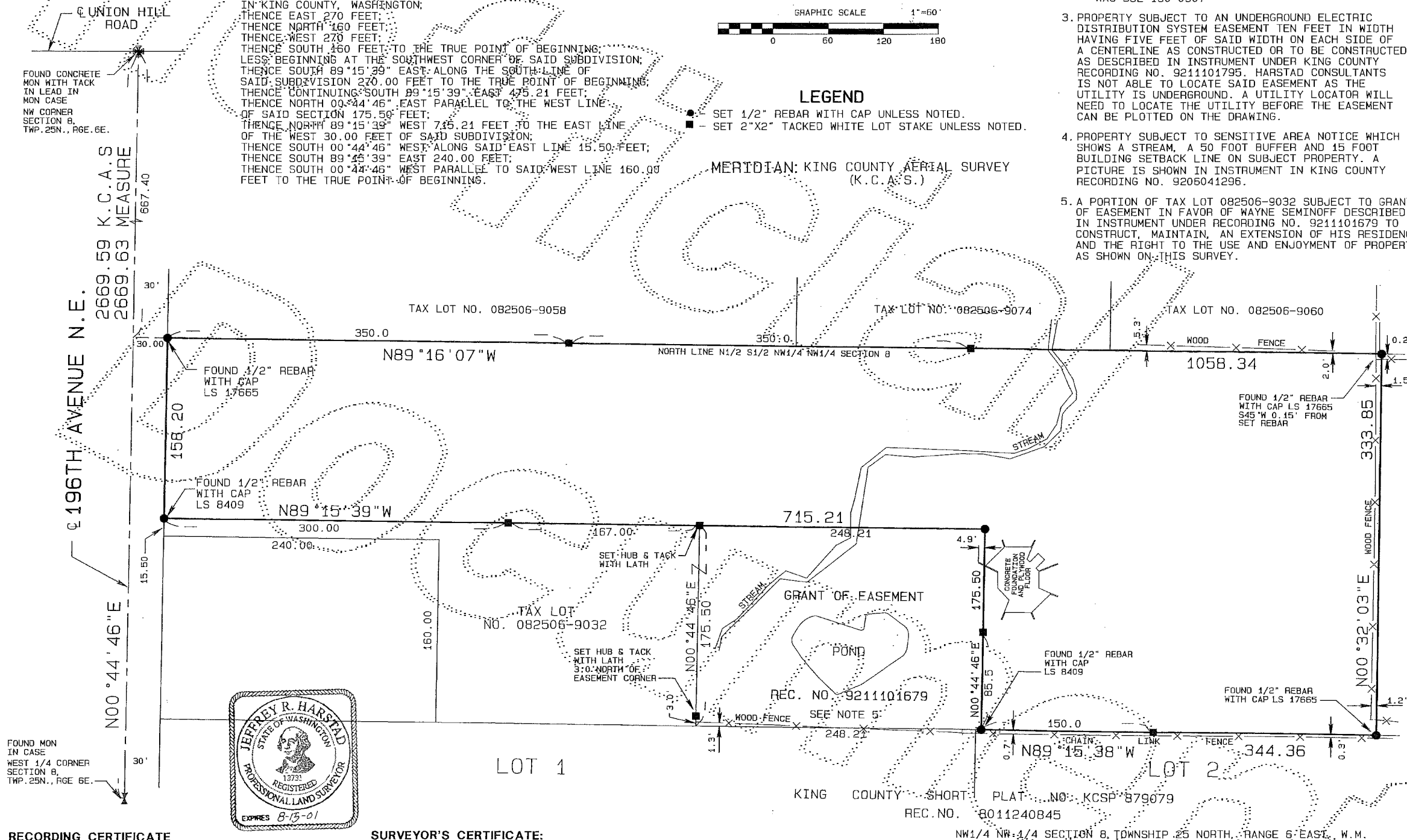
1"=60'



LEGEND

- SET 1/2" REBAR WITH CAP UNLESS NOTED.
- SET 2"x2" TACKED WHITE LOT STAKE UNLESS NOTED.

MERIDIAN: KING COUNTY AERIAL SURVEY (K.C.A.S.)



RECORDING CERTIFICATE

FILED FOR RECORD BY Harstad Consultants
 THIS 18 DAY OF Oct 1999 A.D. AT 38
 MINUTES PAST 00 O'CLOCK A.M. AND RECORDED IN
 VOLUME 22 OF King ON PAGE 20
 RECORDS OF King COUNTY, WASHINGTON.

Bob Brown MANAGER
Superintendent of Records SUPERINTENDENT OF RECORDS

SURVEYOR'S CERTIFICATE:

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE SURVEY RECORDING ACT, AT THE REQUEST OF JOHN KENYON
 THIS 20TH DAY OF JUNE 1999.

Jeff R. Harstad 13731
 REGISTERED LAND SURVEYOR LAND SURVEYOR NO.

HARSTAD CONSULTANTS

CIVIL ENGINEERS • LAND SURVEYORS

2024 W. L.K. SAMMAMISH PKY. NE
 REDMOND, WA. 98052
 (425) 747-8336

JOHN KENYON

PROPERTY SURVEY

PORTION OF THE NW1/4 NW1/4
 SECTION 8, TWP. 25N., RGE. 6E., W.M.

JOB NO. 99034
 DATE JUNE 1999
 SCALE AS SHOWN
 DRAWING BY JKH
 CHECKED BY JKH
 APPROVED JKH

SHEET 1
 OF 1

APPENDIX C

Sensitive Area Notice (Offsite Parcel; Notice B03L0825),
King County, 2003



20030924001676

 MCJUNKIN, PATR NOSA
 PAGE 001 OF 004
 09/24/2003 13:14
 KING COUNTY, WA

22 00

PATRICK M. MCJUNKIN
 5605 196TH AVE. NE RED. WASH
 98053

Document Title(s) (or transactions contained herein): _____

Sensitive Areas Notice

Reference Number(s) of Documents assigned or released: _____

Additional reference numbers on page _____ of document(s)

Grantor(s) (last name, first name, initials): SCOTT NIELSEN

5605 196TH AVE NE RED. WASH. 98053

Additional names on page _____ of document(s)

Grantee(s) (last name, first name, initials): King Co.

Additional names on page _____ of document(s)

Legal description (abbreviated):

Lot: _____ Block: _____ Plat/Section: 8 Township: 25 Range: 06

Additional legal is on page _____ of document(s)

Lot: _____ Block: _____ Plat/Section: _____ Township: _____ Range: _____

Additional legal is on page _____ of document(s)

Lot: _____ Block: _____ Plat/Section: _____ Township: _____ Range: _____

Additional legal is on page _____ of document(s)

Lot: _____ Block: _____ Plat/Section: _____ Township: _____ Range: _____

Additional legal is on page _____ of document(s)

Assessor's Property Tax Parcel/Account Number(s): 082506 9010

DO NOT WRITE IN MARGINS

The Auditor/Recorder will rely on the information provided on this form. The staff will not read the attached document to verify the accuracy or completeness of the indexing information provided herein.



King County
Dept of Development and
Environmental Services
Land Use Services Division
900 Oakesdale Avenue Southwest
Renton, WA 98055-1219

Sensitive Area Notice

For Permit Number: B0340825

For Parcel Number: 082506 - 9010, more fully

described as (street address)

7520 196th Ave NE

This property contains sensitive areas and/or sensitive area buffers, as defined by the King County Sensitive Areas Ordinance, KCC 21A.24. The provisions of the Sensitive Areas Ordinance apply to this property. Limitation may exist on actions in or affecting the sensitive areas or their buffers present on this property. For further information regarding such limitation, please contact the Land Use Services Division of King County or its successor agency. This notice shall run with the land and shall not be removed except upon specific written authorization recorded herein by King County.

DANA RANDECKER

I, (print) Scott Nielsen, hereby
certify that I am the owner of the above-referenced property.

Dana Randecker
Scott Nielsen
(Owner's Signature)

SUBSCRIBED AND SWORN TO before me this 19 day of September, 2003

notary seal

James C. Munn
Notary Public in and for the
State of Washington, residing at
Redmond, King County

Attachments

F36/SensArea.not/July 29, 1997/mh



King County
Dept. of Development and Environmental Services
Land Use Services Division
900 Oakesdale Avenue Southwest
Renton, Washington 98055-1219

LEGAL DESCRIPTION

I, (print) DANA RANDECKER
Scott Nielsen, hereby certify that I am the owner
of the above- referenced property.

Dana Randecker
(Owner's Signature)

SUBSCRIBED AND SWORN TO before me this 19th day of September, 2003.

notary seal

Lisa C. Thuma
Notary Public in and for the
State of Washington, residing at

Redmond, King County

Dana Randecker
(owner's signature)

Notice 1 – For Use With Non-Surveyed Sensitive Areas

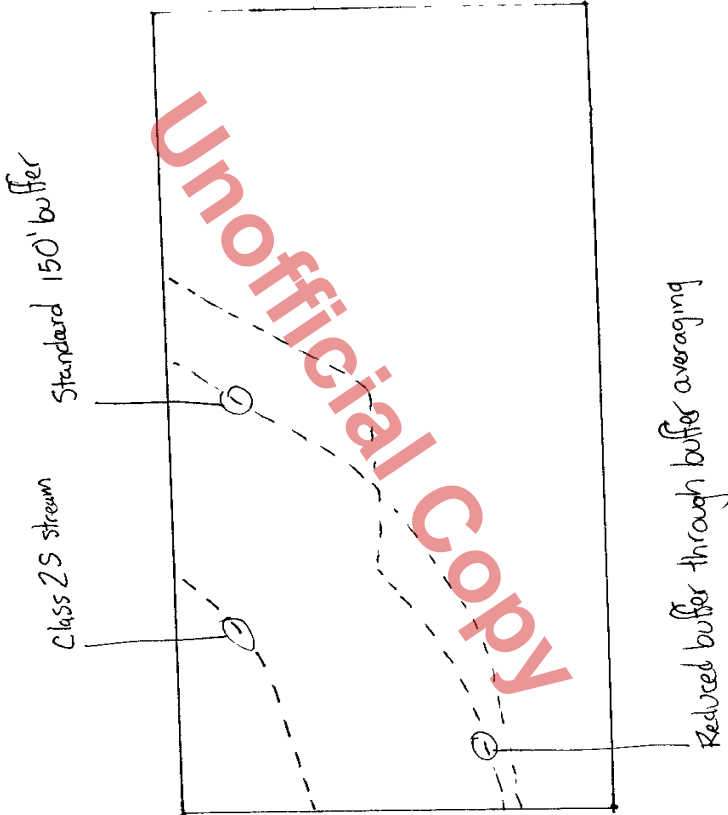
This site plan is a sketch for informational purposes only. The location(s) of the sensitive area(s) and buffer(s) is/are not surveyed. All sensitive area(s) may be subject to further review upon any alteration of the site or its sensitive area(s) or buffer(s).

This site plan for parcel number 082506-9010 depicts the approximate location(s) of the sensitive area(s) and buffer(s).

Elizabeth M. [Signature] 9-18-03
Signature Date

SR Ecologist
Title

B03L0825
King County Activity Number



APPENDIX D
Wetland Determination Datasheets,
Talasaea Consultants, 2020

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-1
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672997, Long: -122.075917 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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"/>	Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Sample plot located approximately 50ft southwest of Martin Creek Bridge. Wetland criteria met. Wetland is associated with Martin Creek (Riverine). Vegetation was cleared and grubbed in Nov. 2019. Approximately 5 inches of topsoil was placed in this area. In contrast to nearby uplands, this area is saturated within 14 inches of the surface and contains OBL wetland vegetation (skunk cabbage).		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Alnus rubra</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Fraxinus latifolia</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet:
	<u>90</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)				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 = _____
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <u>Lolium perenne</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Lolium arundinaceum</u>	<u>35</u>	<u>Yes</u>	<u>NL</u>	
3. <u>Taraxacum officinale</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Lamium galeobdolon</u>	<u>10</u>	<u>No</u>	<u>NL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>90</u>	= Total Cover		
Woody Vine Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust <u>0</u>				
Remarks: Hydrophytic vegetation criteria met. Vegetation (mostly blackberry) was recently cleared around Nov. 2019 and re-seeded with pasture grass mix. Topsoil was also added to a depth of 3-8 inches across the cleared areas of the Site.				

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/2	100	-	-	-	-	SLo	
5-16	10YR 4/1	70	10YR 4/3	30	C	PL, M	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/>
--	--

Remarks: Hydrophytic vegetation criteria met (Depleted Matrix). Topsoil added in November 2019 - Approximately 3 inches in this location.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>14</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soils saturated approximately 14 inches below surface. Hydrology is supported entirely by groundwater associated with Martin Creek. Soils are likely saturated within 12 inches of the soil surface for greater than 14 consecutive days during the early growing season. Thus this sample plot meets the definition for wetland hydrology through best professional judgement.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-2
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.673023 Long: -122.075973 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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 type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: Sample plot located approximately 10ft north of TP-1. Wetland criteria not met. This sample plot represents the upland areas surrounding Wetland A.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>Alnus rubra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	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 = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>80</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Herb Stratum (Plot size: 5 ft)				
1. <u>Lolium perenne</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Lolium arundinaceum</u>	<u>30</u>	<u>Yes</u>	<u>NL</u>	
3. <u>Lapsana communis</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
4. <u>Lamium galeobdolon</u>	<u>10</u>	<u>No</u>	<u>NL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>85</u>	= Total Cover		
Woody Vine Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. <u>Hedera helix</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
	<u>10</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>15</u>	% Cover of Biotic Crust <u>0</u>			
Remarks: Hydrophytic vegetation criteria not met. Dominance test not greater than 50%.				

SOIL

Sampling Point: TP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/3	100	-	-	-	-	SLo	
16-20	10YR 3/3	90	10YR 4/4	10	C	M	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks: Hydric soil criteria not met. Redox concentrations located too deep within soil strata to qualify for F6 criteria. Also, matrix color throughout strata too high-chroma to qualify for F6 indicator.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indication of wetland hydrology in this area.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-3
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672858 Long: -122.075641 Datum: NAD 83
 Soil Map Unit Name: Indianola loamy sand 0-5% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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 Soil 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: Sample plot located 10ft west of driveway and 8ft east of flag B-3. Sample plot does not meet wetland criteria and represents the upland areas surrounding Wetland B.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Alnus rubra</u>	80	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		80 = Total Cover		Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	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 = _____	
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 = _____																				
Sapling/Shrub Stratum (Plot size: 15 ft)																				
1. <u>None</u>	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
		0 = Total Cover																		
Herb Stratum (Plot size: 5 ft)																				
1. <u>Lolium perenne</u>	40	Yes	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Lolium arundinaceum</u>	40	Yes	NL																	
3. <u>Ranunculus repens</u>	10	No	FAC																	
4. <u>Taraxacum officinale</u>	10	No	FACU																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
		100 = Total Cover																		
Woody Vine Stratum (Plot size: 15 ft)																				
1. <u>None</u>	_____	_____	_____																	
2. _____	_____	_____	_____																	
		0 = Total Cover																		
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>																		
Remarks: Hydrophytic vegetation criteria met. However, only FAC and drier species are present.																				

SOIL

Sampling Point: TP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR 2/2	100	-	-	-	-	SLo	
7-10	10YR 3/2	100	-	-	-	-	SLo	
10-20	10YR 3/2	80	10YR 4/1	10	D	M	SLo	
10-20	10YR 3/2	80	10YR 4/4	10	C	M	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: _____ Depth (inches): _____	

Remarks: Hydric soil criteria not met. Redoximorphic features are located too deep in the soil strata to qualify for the F6 indicator.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations:	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indication of wetland hydrology in this location.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-4
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672899 Long: -122.075671 Datum: NAD 83
 Soil Map Unit Name: Indianola loamy sand 0-5% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: Sample plot located 4ft west of flag B-3. Sample plot meets wetland criteria and represents wetland areas of Wetland B.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>Betula papyrifera</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Alnus rubra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
		<u>80</u>	= Total Cover	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 = _____
Sapling/Shrub Stratum (Plot size: 15 ft) 1. <u>None</u> 2. _____ 3. _____ 4. _____ 5. _____				
		<u>0</u>	= Total Cover	
Herb Stratum (Plot size: 5 ft) 1. <u>Lolium perenne</u> 2. <u>Lolium arundinaceum</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____				
		<u>30</u>	= Total Cover	
Woody Vine Stratum (Plot size: 15 ft) 1. <u>None</u> 2. _____				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
		<u>0</u>	= Total Cover	
% Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust <u>0</u>				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Remarks: Hydrophytic vegetation criteria met.				

SOIL

Sampling Point: TP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
*0-6	10YR 2/1	100	-	-	-	-	LoS	*See remarks below
6-11	Gley 1 4/10Y	80	10YR 4/6	100	C	M	Clay loam	
11-20	10YR 4/1	80	10YR 4/6	20	C	M	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____ Depth (inches): _____	

Remarks: * upper layer from 0 to 6 inches is topsoil placed in Nov. 2019 and does not represent native soil. Therefore, the evaluation of hydric soil indicators starts at 6 inches below the soil surface. Multiple hydric soil indicators met.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations:	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>18</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upper layer from 0 to 6 inches is topsoil placed in Nov. 2019 and does not represent native soil. Therefore, the evaluation of hydrology starts at 6 inches below the soil surface. Saturation likely present within this area early in the growing season for more than 14 consecutive days. Best professional judgement used to determine presence of wetland hydrology.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-5
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672834, Long: -122.076288 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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"/>	Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Sample plot located 10' north of of flag C-2 and represents wetland areas located within northeastern portion of Wetland C.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	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>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B)
1. <u>Fraxinus latifolia</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Thuja plicata</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>45</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)				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 = _____
1. <u>Rubus spectabilis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	_____	= Total Cover		
Herb Stratum (Plot size: 5 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Lolium perenne</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Lolium arundinaceum</u>	<u>30</u>	<u>Yes</u>	<u>NL</u>	
3. <u>Urtica dioica</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
	<u>75</u>	= Total Cover		
Woody Vine Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>25</u> % Cover of Biotic Crust <u>0</u>				
Remarks: Hydrophytic vegetation criteria met. Rubus spectabilis is young and sprouting back up after clearing in November 2019.				

SOIL

Sampling Point: TP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
* 0-3	10YR 2/1	-	-	-	-	-	SLo	* See remarks below
3-12	10YR 3/2	90	10YR 3/6	10	C	M	SLo	
12-20	10YR 4/1	85	10YR 3/6	15	C	M	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____ Depth (inches): _____	

Remarks: * upper layer from 0 to 3 inches is topsoil placed in Nov. 2019 and does not represent native soil. Therefore, the evaluation of hydric soil indicators starts at 3 inches below the soil surface. Redox Dark Surface (Indicator F6) met.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations:	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>15</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upper layer from 0 to 3 inches is topsoil placed in Nov. 2019 and does not represent native soil. Therefore, the evaluation of hydrology starts at 3 inches below the soil surface. Consequently, saturation is present within 12 inches of the native soil surface, meeting criteria for wetland hydrology.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-6
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672789 Long: -122.076208 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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 type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Remarks: Sample plot located 10ft east of flag C-2 and represents upland areas surrounding Wetland C.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>) 1. <u>Betula papyrifera</u> <u>10</u> Yes <u>FAC</u> 2. _____ _____ _____ _____ 3. _____ _____ _____ _____ 4. _____ _____ _____ _____ <u>10</u> = Total Cover Sapling/Shrub Stratum (Plot size: <u>15 ft</u>) 1. <u>None</u> _____ _____ _____ 2. _____ _____ _____ _____ 3. _____ _____ _____ _____ 4. _____ _____ _____ _____ 5. _____ _____ _____ _____ <u>0</u> = Total Cover Herb Stratum (Plot size: <u>5 ft</u>) 1. <u>Lolium perenne</u> <u>45</u> Yes <u>FAC</u> 2. <u>Lolium arundinaceum</u> <u>45</u> Yes <u>NL</u> 3. _____ _____ _____ _____ 4. _____ _____ _____ _____ 5. _____ _____ _____ _____ 6. _____ _____ _____ _____ 7. _____ _____ _____ _____ 8. _____ _____ _____ _____ <u>90</u> = Total Cover Woody Vine Stratum (Plot size: <u>15 ft</u>) 1. <u>None</u> _____ _____ _____ 2. _____ _____ _____ _____ <u>0</u> = Total Cover % Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust <u>0</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B) Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: right;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table> Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	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 = _____	
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 = _____																	
Remarks: Hydrophytic vegetation criteria met. However, only FAC and NL species are present. This area was seeded with Lolium species listed above in November.																	

SOIL

Sampling Point: TP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
* 0-2	10YR 2/1	100	-	-	-	-	LoS	* See remarks below
2-20	10YR 3/3	100	-	-	-	-	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks: * upper layer from 0 to 2 inches is topsoil placed in Nov. 2019 and does not represent native soil. Therefore, the evaluation of hydric soil indicators starts at 2 inches below the soil surface. No hydric soil indicator criteria met.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indication of wetland hydrology in this sample plot.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-7
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672370, Long: -122.076785 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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 type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil 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: Sample plot located 6ft southeast of flag C-22, 40ft west of the recreational pond area. Sample plot does not meet wetland criteria and represents the upland areas surrounding the southwestern areas of Wetland C.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>) 1. <u>Acer macrophyllum</u> <u>50</u> <u>Yes</u> <u>FACU</u> 2. _____ 3. _____ 4. _____ <u>50</u> = Total Cover Sapling/Shrub Stratum (Plot size: <u>15 ft</u>) 1. <u>None</u> 2. _____ 3. _____ 4. _____ 5. _____ <u>0</u> = Total Cover Herb Stratum (Plot size: <u>5 ft</u>) 1. <u>Lolium perenne</u> <u>50</u> <u>Yes</u> <u>FAC</u> 2. <u>Lolium arundinaceum</u> <u>50</u> <u>Yes</u> <u>NL</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ <u>100</u> = Total Cover Woody Vine Stratum (Plot size: <u>15 ft</u>) 1. <u>None</u> 2. _____ <u>0</u> = Total Cover % Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table> Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	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 = _____	
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 = _____																	
Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																	
Remarks: Hydric soil criteria not met. Dominance test not greater than 50%.																	

SOIL

Sampling Point: TP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-13	10YR 3/2	100	-	-	-	-	SLo	
13-20	10YR 3/2	80	10YR 3/4	20	C	M	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks: Sample plot does not meet any hydric soil indicators. Redoximorphic features occur too deep within the soil strata to qualify for indicator F6. Topsoil does not appear to have been placed in this area.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indication of wetland hydrology in this sample plot.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-8
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672445 Long: -122.076856 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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 Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Sample plot located 8ft north of flag C-2 and represents wetland areas within the southwestern portion of Wetland C.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>) 1. <u>Salix lasiandra</u> Absolute % Cover: <u>10</u> Dominant Species? <u>Yes</u> Indicator Status: <u>FACW</u> 2. _____ 3. _____ 4. _____ <u>10</u> = Total Cover Sapling/Shrub Stratum (Plot size: <u>15 ft</u>) 1. <u>None</u> 2. _____ 3. _____ 4. _____ 5. _____ <u>0</u> = Total Cover Herb Stratum (Plot size: <u>5 ft</u>) 1. <u>Phalaris arundinacea</u> Absolute % Cover: <u>25</u> Dominant Species? <u>Yes</u> Indicator Status: <u>FACW</u> 2. <u>Lolium perenne</u> Absolute % Cover: <u>15</u> Dominant Species? <u>Yes</u> Indicator Status: <u>FAC</u> 3. <u>Lolium arundinaceum</u> Absolute % Cover: <u>15</u> Dominant Species? <u>Yes</u> Indicator Status: <u>NL</u> 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ <u>55</u> = Total Cover Woody Vine Stratum (Plot size: <u>15 ft</u>) 1. <u>None</u> 2. _____ <u>0</u> = Total Cover % Bare Ground in Herb Stratum <u>45</u> % Cover of Biotic Crust <u>0</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B) Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table> Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	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 = _____	
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 = _____																	
Remarks: Hydrophytic wetland criteria met. Lolium species were seeded in Nov. 2019.																	

SOIL

Sampling Point: TP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
* 0-4	10YR 2/1	100	-	-	-	-	SLo	* see remarks below
4-16	10YR 3/2	90	10YR 3/6	10	C	M	SLo	
16-20	10YR 5/1	100	-	-	-	-	Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____ Depth (inches): _____	

Remarks: Upper layer from 0 to 4 inches is topsoil placed in Nov. 2019 and does not represent native soil. Therefore, the evaluation of hydric soils starts at 4 inches below the soil surface. Redox Dark Surface (F6) indicator met. Hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations:	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 11 (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upper layer from 0 to 4 inches is topsoil placed in Nov. 2019 and does not represent native soil. Therefore, the evaluation of hydrology starts at 4 inches below the soil surface. Consequently, saturation is present within 7 inches of the native soil surface, meeting criteria for wetland hydrology.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-9
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672582 Long: -122.076675 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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"/>	Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Sample plot located 8ft south of flag A-16 and represents wetland areas associated with the southwestern portion of Wetland A.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>Alnus rubra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>80</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: 15 ft)				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 = _____
1. <u>Rubus spectabilis</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>30</u> = Total Cover				
Herb Stratum (Plot size: 5 ft)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Phalaris arundinacea</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Lamium galeobdolon</u>	<u>10</u>	<u>Yes</u>	<u>NL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>20</u> = Total Cover				
Woody Vine Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust <u>0</u>				
Remarks: Hydrophytic vegetation criteria met. Bare soils are present due to recent streamwashout in this area.				

SOIL

Sampling Point: TP-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 5/1	100	-	-	-	-	sand	alluvial deposit from overbank flood.
1-5	10YR 2/2	100	-	-	-	-	SLo	
5-20	10YR 3/1	85	10YR 3/6	15	C	M, PL	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____ Depth (inches): _____	

Remarks: Hydric soil criteria met (Indicator F6 - Redox Dark Surface). No topsoil appears to have been placed within this area, or has been washed out from overbank stream flooding since November 2019.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (2 or more required) <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations:	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>13</u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology criteria met. Soils area likely saturated within 12 inches of the surface for a 14 day consecutive period earlier in the growing season.

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

Project/Site: TAL-1855 City/County: King Sampling Date: 4-20-2020
 Applicant/Owner: Lennox Scott State: WA Sampling Point: TP-10
 Investigator(s): KM Section, Township, Range: NW 1/4 S8, T25N, R6E W.M.
 Landform (hillslope, terrace, etc.): Alluvial terrace Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): A Lat: 47.672631, Long: -122.076723 Datum: NAD 83
 Soil Map Unit Name: Norma Sandy Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation X, Soil X, 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 type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: Sample plot located 10ft north of flag A-16 and represents the upland conditions north of the southwestern portion of Wetland A.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>30</u> (A/B)
1. <u>Alnus rubra</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Thuja plicata</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
		<u>80</u>	= Total Cover	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 = _____
Sapling/Shrub Stratum (Plot size: 15 ft)				
1. <u>Sambucus racemosa</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
		<u>5</u>	= Total Cover	
Herb Stratum (Plot size: 5 ft)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Lamium galeobdolon</u>	<u>70</u>	<u>Yes</u>	<u>NL</u>	
2. <u>Cirsium vulgare</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
3. <u>Geranium robertianum</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Lolium perenne</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Lolium arundinaceum</u>	<u>5</u>	<u>No</u>	<u>NL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
		<u>100</u>	= Total Cover	
Woody Vine Stratum (Plot size: 15 ft)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
		<u>0</u>	= Total Cover	
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>		
Remarks: Hydrophytic vegetation criteria not met. Dominance test not greater than 50%.				

SOIL

Sampling Point: TP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/3	100	-	-	-	-	SLo	
16-20	10YR 4/1	90	10YR 4/4	10	C	M	SLo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1 (except MLRA 1)) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks: Hydric soil criteria not met. Redoximorphic features and depleted layer occur too deep in the soil strata.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1)(LRR A) <input type="checkbox"/> Other (Explain in Remarks)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No indication of wetland hydrology.

APPENDIX E
Wetland Rating Forms and Rating Figures,
Talasaea Consultants, 2020

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A

Date of site visit: 4-20-2020

Rated by KM

Trained by Ecology? ☒ Yes ☐ No Date of training 10-2018

HGM Class used for rating Riparian

Wetland has multiple HGM classes? ☐ Y ☒ N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY III (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

- ☐ **Category I** – Total score = 23 - 27
☐ **Category II** – Total score = 20 - 22
☒ **Category III** – Total score = 16 - 19
☐ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	L	M	L	
Landscape Potential	M	M	M	
Value	H	H	H	TOTAL
Score Based on Ratings	6	7	6	19

Score for each function based on three ratings (order of ratings is not important)

9 = H,H,H
 8 = H,H,M
 7 = H,H,L
 7 = H,M,M
 6 = H,M,L
 6 = M,M,M
 5 = H,L,L
 5 = M,M,L
 4 = M,L,L
 3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine <input type="checkbox"/>	I II
Wetland of High Conservation Value <input type="checkbox"/>	I
Bog <input type="checkbox"/>	I
Mature Forest <input type="checkbox"/>	I
Old Growth Forest <input type="checkbox"/>	I
Coastal Lagoon <input type="checkbox"/>	I II
Interdunal <input type="checkbox"/>	I II III IV
None of the above	<input checked="" type="checkbox"/>

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	A
Hydroperiods	H 1.2	A
Ponded depressions	R 1.1	A
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	A
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	B
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ NO – go to 2

☐ YES – the wetland class is **Tidal Fringe** – go to 1.1

- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☒ NO – **Saltwater Tidal Fringe (Estuarine)**

☐ YES – **Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO – go to 3

☐ YES – The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size; ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO – go to 4

☐ YES – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

☐ The wetland is on a slope (*slope can be very gradual*),

☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,

☐ The water leaves the wetland **without being impounded**.

☒ NO – go to 5

☐ YES – The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?

☒ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

☒ The overbank flooding occurs at least once every 2 years.

☐ NO – go to 6

☒ YES – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

Wetland A

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☒ NO – go to 7

☐ YES – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☒ NO – go to 8

☐ YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality**R 1.0. Does the site have the potential to improve water quality?****R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:**

Depressions cover $> \frac{3}{4}$ area of wetland	points = 8	0
Depressions cover $> \frac{1}{2}$ area of wetland	points = 4	
Depressions present but cover $< \frac{1}{2}$ area of wetland	points = 2	
No depressions present	points = 0	

R 1.2. Structure of plants in the wetland (areas with $> 90\%$ cover at person height, **not Cowardin classes)**

Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 8	0
Trees or shrubs $> \frac{1}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{2}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{1}{3}$ area of the wetland	points = 3	
Trees, shrubs, and ungrazed herbaceous $< \frac{1}{3}$ area of the wetland	points = 0	

Total for R 1 Add the points in the boxes above

0

Rating of Site Potential If score is: ☐ 12-16 = H ☐ 6-11 = M ☒ 0-5 = L

Record the rating on the first page

R 2.0. Does the landscape have the potential to support the water quality function of the site?**R 2.1. Is the wetland within an incorporated city or within its UGA?**

Yes = 2 No = 0

0

R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?

Yes = 1 No = 0

0

R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?

Yes = 1 No = 0

0

R 2.4. Is $> 10\%$ of the area within 150 ft of the wetland in land uses that generate pollutants?

Yes = 1 No = 0

1

R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4

Other sources _____

Yes = 1 No = 0

0

Total for R 2

Add the points in the boxes above

1

Rating of Landscape Potential If score is: ☐ 3-6 = H ☒ 1 or 2 = M ☐ 0 = L

Record the rating on the first page

R 3.0. Is the water quality improvement provided by the site valuable to society?**R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi?**

Yes = 1 No = 0

1

R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?

Yes = 1 No = 0

1

R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (answer YES if there is a TMDL for the drainage in which the unit is found)

Yes = 2 No = 0

2

Total for R 3

Add the points in the boxes above

4

Rating of Value If score is: ☒ 2-4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**Hydrologic Functions** - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. Characteristics of the overbank storage the wetland provides:

Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).

If the ratio is more than 20 points = 9
 If the ratio is 10-20 points = 6
 If the ratio is 5-<10 points = 4
 If the ratio is 1-<5 points = 2
 If the ratio is < 1 points = 1

2

R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).*

Forest or shrub for $> \frac{1}{3}$ area OR emergent plants $> \frac{2}{3}$ area points = 7

Forest or shrub for $> \frac{1}{10}$ area OR emergent plants $> \frac{1}{3}$ area points = 4

Plants do not meet above criteria points = 0

4

Total for R 4

Add the points in the boxes above

4

Rating of Site Potential If score is: ☐ 12-16 = H ☒ 6-11 = M ☐ 0-5 = L

Record the rating on the first page

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

R 5.1. Is the stream or river adjacent to the wetland downcut?

Yes = 0 No = 1

0

R 5.2. Does the up-gradient watershed include a UGA or incorporated area?

Yes = 1 No = 0

0

R 5.3. Is the up-gradient stream or river controlled by dams?

Yes = 0 No = 1

1

Total for R 5

Add the points in the boxes above

1

Rating of Landscape Potential If score is: ☐ 3 = H ☒ 1 or 2 = M ☐ 0 = L

Record the rating on the first page

R 6.0. Are the hydrologic functions provided by the site valuable to society?

R 6.1. Distance to the nearest areas downstream that have flooding problems?

Choose the description that best fits the site.

The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2

Surface flooding problems are in a sub-basin farther down-gradient points = 1

No flooding problems anywhere downstream points = 0

2

R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?

Yes = 2 No = 0

0

Total for R 6

Add the points in the boxes above

2

Rating of Value If score is: ☒ 2-4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page

These questions apply to wetlands of all HGM classes. HABITAT

FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- | | | |
|---|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 | 0 |
| <input type="checkbox"/> Emergent | 3 structures: points = 2 | |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 | |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 | |
| <i>If the unit has a Forested class, check if:</i> | | |
| <input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon | | |

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- | | | |
|---|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 | 1 |
| <input type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 | |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 | |
| <input checked="" type="checkbox"/> Saturated only | 1 type present: points = 0 | |
| <input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

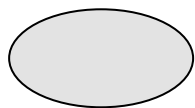
Count the number of plant species in the wetland that cover at least 10 ft².

*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

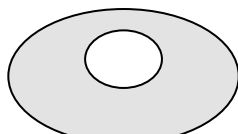
- | | | |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species | points = 1 | |
| < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

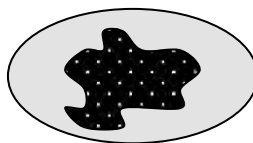
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



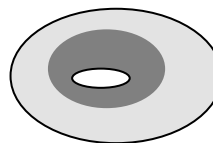
None = 0 points



Low = 1 point

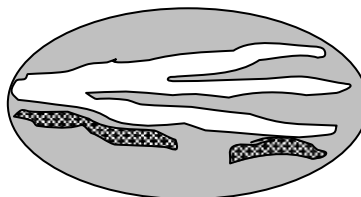
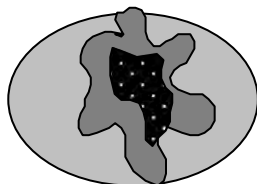
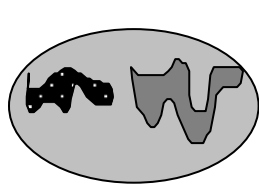


Moderate = 2 points



2

All three diagrams
in this row
are **HIGH** = 3points



Wetland A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)		2
Total for H 1 Add the points in the boxes above		6
Rating of Site Potential If score is: <input type="checkbox"/> 15-18 = H <input type="checkbox"/> 7-14 = M <input checked="" type="checkbox"/> 0-6 = L <i>Record the rating on the first page</i>		
H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). <i>Calculate:</i> % undisturbed habitat _____ + [(% moderate and low intensity land uses)/2] _____ = % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0		0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. <i>Calculate:</i> % undisturbed habitat 24 + [(% moderate and low intensity land uses)/2] 16 = 40% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0		0
Total for H 2 Add the points in the boxes above		1
Rating of Landscape Potential If score is: <input type="checkbox"/> 4-6 = H <input checked="" type="checkbox"/> 1-3 = M <input type="checkbox"/> < 1 = L <i>Record the rating on the first page</i>		
H 3.0. Is the habitat provided by the site valuable to society?		
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose <i>only the highest score that applies to the wetland being rated</i>. Site meets ANY of the following criteria: points = 2 <input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0		2
Rating of Value If score is: <input checked="" type="checkbox"/> 2 = H <input type="checkbox"/> 1 = M <input type="checkbox"/> 0 = L <i>Record the rating on the first page</i>		

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here: <http://wdfw.wa.gov/conservation/phs/list/>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** *This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☒ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <input type="checkbox"/> Yes –Go to SC 1.1 <input type="checkbox"/> No= Not an estuarine wetland	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 1.2	No
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = Category I No = Category II	No
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <input type="checkbox"/> Yes – Go to SC 2.2 <input type="checkbox"/> No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf <input type="checkbox"/> Yes – Contact WNHP/WDNR and go to SC 2.4 <input type="checkbox"/> No = Not a WHCV SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a WHCV	No
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <input type="checkbox"/> Yes – Go to SC 3.3 <input type="checkbox"/> No – Go to SC 3.2 SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <input type="checkbox"/> Yes – Go to SC 3.3 <input type="checkbox"/> No = Is not a bog SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No – Go to SC 3.4 NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No = Is not a bog	No

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</p> <p><input type="checkbox"/> Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a forested wetland for this section</p>	No
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p><input type="checkbox"/> Yes – Go to SC 5.1 <input type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than $\frac{1}{10}$ ac (4350 ft²)</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	No
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i> In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes – Go to SC 6.1 <input type="checkbox"/> No = not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No – Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? <input type="checkbox"/> Yes = Category II <input type="checkbox"/> No – Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? <input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	No
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	N/A

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RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B

Date of site visit: 4-20-2020

Rated by KM

Trained by Ecology? ☒ Yes ☐ No Date of training 10-2018

HGM Class used for rating Riparian

Wetland has multiple HGM classes? ☐ Y ☒ N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY III (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

- ☐ **Category I** – Total score = 23 - 27
☐ **Category II** – Total score = 20 - 22
☒ **Category III** – Total score = 16 - 19
☐ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	L	L	L	
Landscape Potential	M	M	M	
Value	H	H	H	TOTAL
Score Based on Ratings	6	6	6	18

Score for each function based on three ratings (order of ratings is not important)

9 = H,H,H
 8 = H,H,M
 7 = H,H,L
 7 = H,M,M
 6 = H,M,L
 6 = M,M,M
 5 = H,L,L
 5 = M,M,L
 4 = M,L,L
 3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine <input type="checkbox"/>	I II
Wetland of High Conservation Value <input type="checkbox"/>	I
Bog <input type="checkbox"/>	I
Mature Forest <input type="checkbox"/>	I
Old Growth Forest <input type="checkbox"/>	I
Coastal Lagoon <input type="checkbox"/>	I II
Interdunal <input type="checkbox"/>	I II III IV
None of the above	<input checked="" type="checkbox"/>

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ NO – go to 2

☐ YES – the wetland class is **Tidal Fringe** – go to 1.1

- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☒ NO – **Saltwater Tidal Fringe (Estuarine)**

☐ YES – **Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO – go to 3

☐ YES – The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size; ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO – go to 4

☐ YES – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

☐ The wetland is on a slope (*slope can be very gradual*),

☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,

☐ The water leaves the wetland **without being impounded**.

☒ NO – go to 5

☐ YES – The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?

☒ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

☒ The overbank flooding occurs at least once every 2 years.

☐ NO – go to 6

☒ YES – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

Wetland B

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☒ NO – go to 7

☐ YES – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☒ NO – go to 8

☐ YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality**R 1.0. Does the site have the potential to improve water quality?****R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:**

Depressions cover $> \frac{3}{4}$ area of wetland	points = 8	0
Depressions cover $> \frac{1}{2}$ area of wetland	points = 4	
Depressions present but cover $< \frac{1}{2}$ area of wetland	points = 2	
No depressions present	points = 0	

R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not Cowardin classes)**

Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 8	0
Trees or shrubs $> \frac{1}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{2}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{1}{3}$ area of the wetland	points = 3	
Trees, shrubs, and ungrazed herbaceous $< \frac{1}{3}$ area of the wetland	points = 0	

Total for R 1 Add the points in the boxes above

0

Rating of Site Potential If score is: ☐ 12-16 = H ☐ 6-11 = M ☒ 0-5 = L

Record the rating on the first page

R 2.0. Does the landscape have the potential to support the water quality function of the site?**R 2.1. Is the wetland within an incorporated city or within its UGA?**

Yes = 2 No = 0

0

R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?

Yes = 1 No = 0

0

R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?

Yes = 1 No = 0

0

R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?

Yes = 1 No = 0

1

R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4

Other sources _____

Yes = 1 No = 0

0

Total for R 2

Add the points in the boxes above

1

Rating of Landscape Potential If score is: ☐ 3-6 = H ☒ 1 or 2 = M ☐ 0 = L

Record the rating on the first page

R 3.0. Is the water quality improvement provided by the site valuable to society?**R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi?**

Yes = 1 No = 0

1

R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?

Yes = 1 No = 0

1

R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (answer YES if there is a TMDL for the drainage in which the unit is found)

Yes = 2 No = 0

2

Total for R 3

Add the points in the boxes above

4

Rating of Value If score is: ☒ 2-4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**Hydrologic Functions** - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. Characteristics of the overbank storage the wetland provides:

Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).

If the ratio is more than 20	points = 9	2
If the ratio is 10-20	points = 6	
If the ratio is 5-<10	points = 4	
If the ratio is 1-<5	points = 2	
If the ratio is < 1	points = 1	

R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).*

Forest or shrub for $> \frac{1}{3}$ area OR emergent plants $> \frac{2}{3}$ area	points = 7	0
Forest or shrub for $> \frac{1}{10}$ area OR emergent plants $> \frac{1}{3}$ area	points = 4	
Plants do not meet above criteria	points = 0	

Total for R 4

Add the points in the boxes above

2

Rating of Site Potential If score is: ☐ 12-16 = H ☐ 6-11 = M ☒ 0-5 = L

Record the rating on the first page

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

R 5.1. Is the stream or river adjacent to the wetland downcut?

Yes = 0 No = 1

0

R 5.2. Does the up-gradient watershed include a UGA or incorporated area?

Yes = 1 No = 0

0

R 5.3. Is the up-gradient stream or river controlled by dams?

Yes = 0 No = 1

1

Total for R 5

Add the points in the boxes above

1

Rating of Landscape Potential If score is: ☐ 3 = H ☒ 1 or 2 = M ☐ 0 = L

Record the rating on the first page

R 6.0. Are the hydrologic functions provided by the site valuable to society?

R 6.1. Distance to the nearest areas downstream that have flooding problems?

Choose the description that best fits the site.

The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2	2
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	

R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?

Yes = 2 No = 0

0

Total for R 6

Add the points in the boxes above

2

Rating of Value If score is: ☒ 2-4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page

These questions apply to wetlands of all HGM classes. HABITAT

FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- | | | |
|---|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 | 0 |
| <input type="checkbox"/> Emergent | 3 structures: points = 2 | |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 | |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 | |
| <i>If the unit has a Forested class, check if:</i> | | |
| <input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon | | |

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- | | | |
|---|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 | 1 |
| <input type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 | |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 | |
| <input checked="" type="checkbox"/> Saturated only | 1 type present: points = 0 | |
| <input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

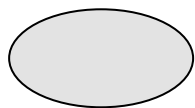
Count the number of plant species in the wetland that cover at least 10 ft².

*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

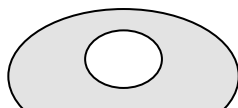
- | | | |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species | points = 1 | |
| < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



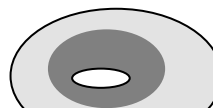
None = 0 points



Low = 1 point

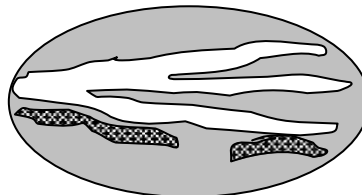
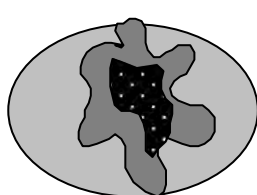
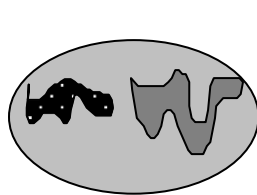


Moderate = 2 points



2

All three diagrams
in this row
are **HIGH** = 3points



Wetland B

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)		1
Total for H 1		5
Rating of Site Potential If score is: <input type="checkbox"/> 15-18 = H <input type="checkbox"/> 7-14 = M <input checked="" type="checkbox"/> 0-6 = L <i>Record the rating on the first page</i>		
H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). <i>Calculate:</i> % undisturbed habitat $0 + [(\% \text{ moderate and low intensity land uses}) / 2]$ $0 = 0\%$ If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0		0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. <i>Calculate:</i> % undisturbed habitat $24 + [(\% \text{ moderate and low intensity land uses}) / 2]$ $16 = 40\%$ Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0		0
Total for H 2		1
Rating of Landscape Potential If score is: <input type="checkbox"/> 4-6 = H <input checked="" type="checkbox"/> 1-3 = M <input type="checkbox"/> < 1 = L <i>Record the rating on the first page</i>		
H 3.0. Is the habitat provided by the site valuable to society?		
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose <i>only the highest score that applies to the wetland being rated</i>. Site meets ANY of the following criteria: points = 2 <input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0		2
Rating of Value If score is: <input checked="" type="checkbox"/> 2 = H <input type="checkbox"/> 1 = M <input type="checkbox"/> 0 = L <i>Record the rating on the first page</i>		

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here: <http://wdfw.wa.gov/conservation/phs/list/>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** *This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☒ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <input type="checkbox"/> Yes –Go to SC 1.1 <input type="checkbox"/> No= Not an estuarine wetland	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 1.2	No
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = Category I No = Category II	No
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <input type="checkbox"/> Yes – Go to SC 2.2 <input type="checkbox"/> No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf <input type="checkbox"/> Yes – Contact WNHP/WDNR and go to SC 2.4 <input type="checkbox"/> No = Not a WHCV SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a WHCV	No
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <input type="checkbox"/> Yes – Go to SC 3.3 <input type="checkbox"/> No – Go to SC 3.2 SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <input type="checkbox"/> Yes – Go to SC 3.3 <input type="checkbox"/> No = Is not a bog SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No – Go to SC 3.4 NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No = Is not a bog	No

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</p> <p><input type="checkbox"/> Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a forested wetland for this section</p>	No
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p><input type="checkbox"/> Yes – Go to SC 5.1 <input type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than $\frac{1}{10}$ ac (4350 ft²)</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	No
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i> In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes – Go to SC 6.1 <input type="checkbox"/> No = not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No – Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? <input type="checkbox"/> Yes = Category II <input type="checkbox"/> No – Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? <input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	No
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	N/A

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RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C

Date of site visit: 4-20-2020

Rated by KM

Trained by Ecology? ☒ Yes ☐ No Date of training 10-2018

HGM Class used for rating Riparian

Wetland has multiple HGM classes? ☐ Y ☒ N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY II (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

- ☐ Category I – Total score = 23 - 27
☒ Category II – Total score = 20 - 22
☐ Category III – Total score = 16 - 19
☐ Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	M	M	M	
Landscape Potential	M	M	M	
Value	H	H	H	TOTAL
Score Based on Ratings	7	7	7	21

Score for each function based on three ratings (order of ratings is not important)

9 = H,H,H
 8 = H,H,M
 7 = H,H,L
 7 = H,M,M
 6 = H,M,L
 6 = M,M,M
 5 = H,L,L
 5 = M,M,L
 4 = M,L,L
 3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine <input type="checkbox"/>	I II
Wetland of High Conservation Value <input type="checkbox"/>	I
Bog <input type="checkbox"/>	I
Mature Forest <input type="checkbox"/>	I
Old Growth Forest <input type="checkbox"/>	I
Coastal Lagoon <input type="checkbox"/>	I II
Interdunal <input type="checkbox"/>	I II III IV
None of the above	<input checked="" type="checkbox"/>

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ NO – go to 2

☐ YES – the wetland class is **Tidal Fringe** – go to 1.1

- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☒ NO – **Saltwater Tidal Fringe (Estuarine)**

☐ YES – **Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO – go to 3

☐ YES – The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size; ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO – go to 4

☐ YES – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

☐ The wetland is on a slope (*slope can be very gradual*),

☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,

☐ The water leaves the wetland **without being impounded**.

☒ NO – go to 5

☐ YES – The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?

☒ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

☒ The overbank flooding occurs at least once every 2 years.

☐ NO – go to 6

☒ YES – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

Wetland C

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO – go to 7

☒ YES – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☐ NO – go to 8

☐ YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality**R 1.0. Does the site have the potential to improve water quality?****R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:**

Depressions cover $> \frac{3}{4}$ area of wetland	points = 8	0
Depressions cover $> \frac{1}{2}$ area of wetland	points = 4	
Depressions present but cover $< \frac{1}{2}$ area of wetland	points = 2	
No depressions present	points = 0	

R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not Cowardin classes)**

Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 8	6
Trees or shrubs $> \frac{1}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{2}{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) $> \frac{1}{3}$ area of the wetland	points = 3	
Trees, shrubs, and ungrazed herbaceous $< \frac{1}{3}$ area of the wetland	points = 0	

Total for R 1 Add the points in the boxes above

6

Rating of Site Potential If score is: ☐ 12-16 = H ☒ 6-11 = M ☐ 0-5 = L

Record the rating on the first page

R 2.0. Does the landscape have the potential to support the water quality function of the site?**R 2.1. Is the wetland within an incorporated city or within its UGA?**

Yes = 2 No = 0

0

R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?

Yes = 1 No = 0

0

R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?

Yes = 1 No = 0

0

R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?

Yes = 1 No = 0

1

R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4

Other sources _____

Yes = 1 No = 0

0

Total for R 2

Add the points in the boxes above

1

Rating of Landscape Potential If score is: ☐ 3-6 = H ☒ 1 or 2 = M ☐ 0 = L

Record the rating on the first page

R 3.0. Is the water quality improvement provided by the site valuable to society?**R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi?**

Yes = 1 No = 0

1

R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?

Yes = 1 No = 0

1

R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (answer YES if there is a TMDL for the drainage in which the unit is found)

Yes = 2 No = 0

2

Total for R 3

Add the points in the boxes above

4

Rating of Value If score is: ☒ 2-4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**Hydrologic Functions** - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. Characteristics of the overbank storage the wetland provides:

Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).

If the ratio is more than 20 points = 9
 If the ratio is 10-20 points = 6
 If the ratio is 5-<10 points = 4
 If the ratio is 1-<5 points = 2
 If the ratio is < 1 points = 1

4

R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).*

Forest or shrub for $> \frac{1}{3}$ area OR emergent plants $> \frac{2}{3}$ area points = 7

Forest or shrub for $> \frac{1}{10}$ area OR emergent plants $> \frac{1}{3}$ area points = 4

Plants do not meet above criteria points = 0

4

Total for R 4

Add the points in the boxes above

8

Rating of Site Potential If score is: ☐ 12-16 = H ☒ 6-11 = M ☐ 0-5 = L

Record the rating on the first page

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

R 5.1. Is the stream or river adjacent to the wetland downcut?

Yes = 0 No = 1

0

R 5.2. Does the up-gradient watershed include a UGA or incorporated area?

Yes = 1 No = 0

0

R 5.3. Is the up-gradient stream or river controlled by dams?

Yes = 0 No = 1

1

Total for R 5

Add the points in the boxes above

1

Rating of Landscape Potential If score is: ☐ 3 = H ☒ 1 or 2 = M ☐ 0 = L

Record the rating on the first page

R 6.0. Are the hydrologic functions provided by the site valuable to society?

R 6.1. Distance to the nearest areas downstream that have flooding problems?

Choose the description that best fits the site.

The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2

Surface flooding problems are in a sub-basin farther down-gradient points = 1

No flooding problems anywhere downstream points = 0

2

R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?

Yes = 2 No = 0

0

Total for R 6

Add the points in the boxes above

2

Rating of Value If score is: ☒ 2-4 = H ☐ 1 = M ☐ 0 = L

Record the rating on the first page

These questions apply to wetlands of all HGM classes. HABITAT

FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- | | | |
|---|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 | 1 |
| <input checked="" type="checkbox"/> Emergent | 3 structures: points = 2 | |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 | |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 | |
- If the unit has a Forested class, check if:*
- ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- | | | |
|---|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 | 2 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 | |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 | |
| <input checked="" type="checkbox"/> Saturated only | 1 type present: points = 0 | |
| <input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

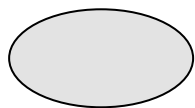
Count the number of plant species in the wetland that cover at least 10 ft².

*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

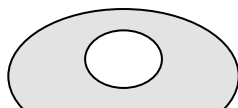
- | | | |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species | points = 1 | |
| < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



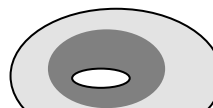
None = 0 points



Low = 1 point

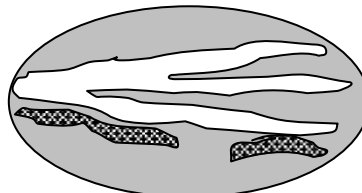
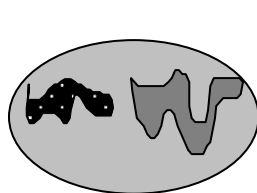


Moderate = 2 points



3

All three diagrams
in this row
are **HIGH** = 3points



Wetland C

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)		2
Total for H 1 Add the points in the boxes above		9
Rating of Site Potential If score is: <input type="checkbox"/> 15-18 = H <input checked="" type="checkbox"/> 7-14 = M <input type="checkbox"/> 0-6 = L <i>Record the rating on the first page</i>		
H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). <i>Calculate:</i> % undisturbed habitat $0 + [(\% \text{ moderate and low intensity land uses}) / 2]$ $0 = 0\%$ If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0		0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. <i>Calculate:</i> % undisturbed habitat $24 + [(\% \text{ moderate and low intensity land uses}) / 2]$ $16 = 40\%$ Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0		0
Total for H 2 Add the points in the boxes above		1
Rating of Landscape Potential If score is: <input type="checkbox"/> 4-6 = H <input checked="" type="checkbox"/> 1-3 = M <input type="checkbox"/> < 1 = L <i>Record the rating on the first page</i>		
H 3.0. Is the habitat provided by the site valuable to society?		
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i> Site meets ANY of the following criteria: points = 2 <input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0		2
Rating of Value If score is: <input checked="" type="checkbox"/> 2 = H <input type="checkbox"/> 1 = M <input type="checkbox"/> 0 = L <i>Record the rating on the first page</i>		

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here: <http://wdfw.wa.gov/conservation/phs/list/>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** *This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☒ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

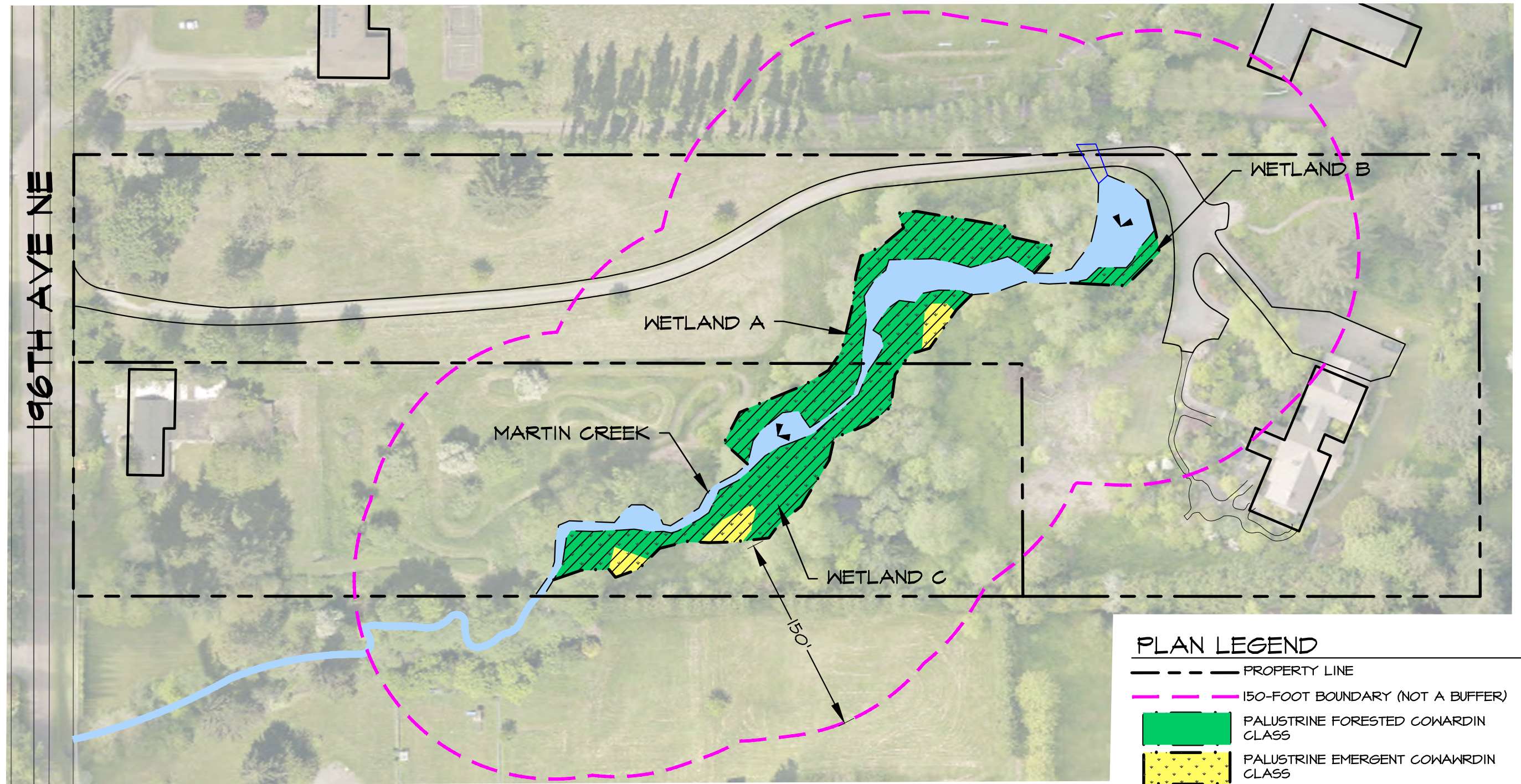
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <input type="checkbox"/> Yes –Go to SC 1.1 <input type="checkbox"/> No= Not an estuarine wetland	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 1.2	No
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = Category I No = Category II	No
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <input type="checkbox"/> Yes – Go to SC 2.2 <input type="checkbox"/> No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf <input type="checkbox"/> Yes – Contact WNHP/WDNR and go to SC 2.4 <input type="checkbox"/> No = Not a WHCV SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a WHCV	No
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <input type="checkbox"/> Yes – Go to SC 3.3 <input type="checkbox"/> No – Go to SC 3.2 SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <input type="checkbox"/> Yes – Go to SC 3.3 <input type="checkbox"/> No = Is not a bog SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No – Go to SC 3.4 NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No = Is not a bog	No

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</p> <p><input type="checkbox"/> Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not a forested wetland for this section</p>	No
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p><input type="checkbox"/> Yes – Go to SC 5.1 <input type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft²)</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	No
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i> In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes – Go to SC 6.1 <input type="checkbox"/> No = not an interdunal wetland for rating</p> <p>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No – Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? <input type="checkbox"/> Yes = Category II <input type="checkbox"/> No – Go to SC 6.3</p> <p>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? <input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	No
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	N/A

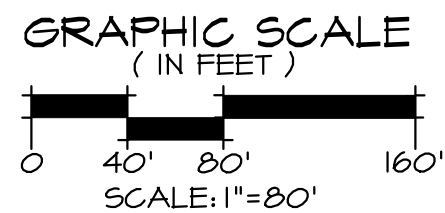
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PLAN LEGEND

- PROPERTY LINE
- - - 150-FOOT BOUNDARY (NOT A BUFFER)
- PALUSTRINE FORESTED COWARDIN CLASS
- PALUSTRINE EMERGENT COWARDIN CLASS
- STREAM ORDINARY HIGH-WATER MARK (OHWM)
- SATURATED ONLY HYDROPERIOD

RATING FIGURE A - COWARDIN AND HYDROPERIOD CLASSES



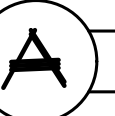
TALASAEA CONSULTANTS, INC.

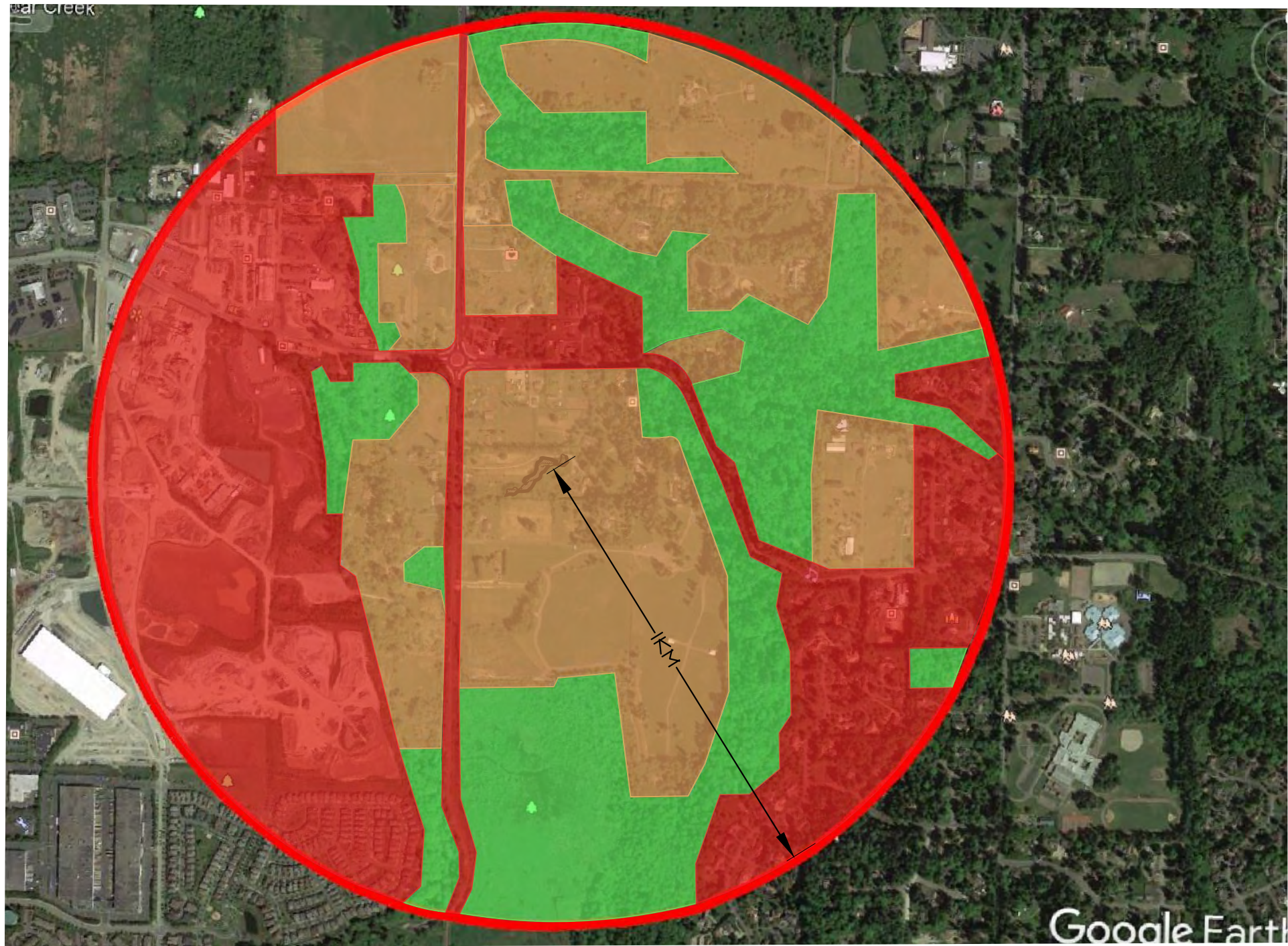
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #A

RATING FIGURE A - COWARDIN & HYDROPERIOD
SCOTT RESIDENCE
KING COUNTY, WASHINGTON

DESIGN	DRAWN	PROJECT
KM	KM	1855
SCALE		
AS SHOWN		
DATE		
5-8-2020		
REVISED		





PLAN LEGEND

	1KM BOUNDARY	
	UNDISTURBED HABITAT	24%
	MODERATE IMPACT LAND USE	37%
	HIGH IMPACT LAND USE	39%

HABITAT WITHIN ONE KILOMETER

NOTE: SEE FIGURE 5 IN THE FIGURES SECTION OF THE REPORT FOR MORE DETAIL ON EXISTING CONDITIONS.



TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #B

RATING FIGURE B - HABITAT WITHIN 1 KILOMETER
SCOTT RESIDENCE
KING COUNTY, WASHINGTON

DESIGN KM	DRAWN KM	PROJECT 1855
SCALE AS SHOWN	<div style="border: 2px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">B</div>	
DATE 3-31-2020		
REVISED 4-21-2020		

APPENDIX B

King County Critical Areas Designation CADS20-0124 & -0125, issued 15 June 2021

**King County**

Permitting Division
Department of Local Services
35030 SE Douglas St., Ste. 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

www.kingcounty.gov

June 15, 2021

Talasaea Consultants, Inc.
Attn: Alana Vidmar
15020 Bear Creek Rd NE
Woodinville, WA 98077
avidmar@talasaea.com
bshiels@talasaea.com

RE: Critical Areas Designation CADS20-0125, Parcel 0825069026**Status: Complete**

Dear Ms. Vidmar:

Your property was recently reviewed for a Critical Areas Designation. Our review consisted of a site visit, an in-office review of existing background data, and review of Talasaea Consultants, Inc., critical areas report and response documents. The result of our study is that we have determined that your parcel is host to the critical areas discussed separately below. Specific impacts to development on your parcel are also discussed.

The determinations reported in this letter as to the existence, location, and classification of critical areas and critical area buffers are effective for five years from the date of this letter if there has been no change in site conditions. The Department of Local Services, Permitting Division (Permitting) shall rely on these determinations of the existence, location and classification of critical areas and critical area buffers in its review of complete applications for permits or approvals filed for the subject development site or parcel within five years after the letter is issued.

If you do not plan to develop your property soon after receiving this letter, it may be in your interest to contact us to see if any of the conclusions in this letter have changed or are no longer valid.

Critical Aquifer Recharge Area (21A.24.311 to 21A.24.316)

Your parcel is within a Category II Critical Aquifer Recharge Area (CARA). However, because your site is greater than one acre in size, no restrictions apply for normal residential development.

Seismic Hazard Area (21A.24.290)

Your parcel is within a possible seismic hazard area. Seismic hazards, as defined here, include areas that host foundation soils that might liquefy during an earthquake, leading to loss of bearing capacity and settling or collapse of part of the structure. It is possible to build within a seismic

hazard area, but only if mitigation is incorporated into the design of the structure (usually in the form of a special foundation) that eliminates or minimizes the impact of the hazard.

In order to determine the nature of the hazard, and hence the type of mitigation, we usually require an evaluation of the development site by a geological engineer or engineering geologist for developments that include new or modified structures. The report should be a complete assessment of soil susceptibility to seismically induced liquefaction or other seismically induced settlement. Subsurface sampling is usually done, sometimes including deep borings, and if problematic soils are encountered, the engineer recommends appropriate changes to the building plans.

The presence of a seismic hazard area does NOT, however, affect the location of a septic system, water well, or typical minor clearing or grading activities. For this reason, we do not require a geological study until the building permit application review phase, although it is prudent to be aware of this issue prior to finalizing your building plans.

Wetlands (21A.24.318 to 21A.24.345)

Your parcel contains portions of three wetlands. Wetland A on the northwest side of the Creek is Category III wetland with 6 habitat points. Wetland B is a small wetland on the southeast side of the Creek and is rated Category III with 6 habitat points. Wetland C is a large wetland on the southeast side of the Creek and is rated Category II with 7 habitat points. The standard buffer width for these wetlands for moderate impact residential uses is 110 feet. Buffers on undisturbed sites are intended to remain in native vegetation. New structures must honor an additional 15-foot building setback beyond the buffer. Within a currently undeveloped buffer, no development of any kind is usually allowed, including clearing, grading, or any other alteration of the existing vegetation. Within legally developed buffers, maintenance of existing structures and landscaping is allowed as well as limited expansions of some structures.

In your particular case, the parcel is developed with a residence, landscaping and pasture, as well as native vegetation along the stream and in portions of the wetlands. Unpermitted alterations to the aquatic area, wetlands and their buffers resulted in Code Enforcement Case ENFR19-1129. This Critical Areas Designation is part of the process to resolve the Code Enforcement Case.

Talasaea Consultants, Inc., the applicant's ecological consultant, suggests in a response letter dated February 3, 2021, that the pond which is part of Wetland C should have a reduced buffer per KCC 21A.24.325.D. This Code section allows modification of buffer width requirements when a wetland was created or its characterization was upgraded as part of a voluntary enhancement or restoration project. There is no evidence that the pond in Wetland C was created as part of a voluntary enhancement or restoration project. It appears more likely that it was created as a livestock watering pond or for stormwater management purposes. This Code provision does not apply to this wetland and the standard 110-foot buffer will be required through this Critical Areas Designation.

Aquatic Areas (21A.24.355 to 21A.24.380)

Your parcel contains a Type F aquatic area known as Martin Creek. The standard buffer width for this type of aquatic area (which on an undeveloped lot is to remain unaltered native vegetation) is 165 feet. Structures must honor an additional 15-foot building setback beyond the buffer. Within a currently undeveloped buffer, no development of any kind is usually allowed, including clearing, grading, or any other alteration of the existing vegetation. Within legally developed buffers, maintenance of existing structures and landscaping is allowed as well as limited expansions of some structures.

In your particular case, the parcel is developed with a residence, landscaping and pasture, as well as native vegetation along the stream and in portions of the wetlands. Unpermitted alterations to the aquatic area, wetlands and their buffers resulted in Code Enforcement Case ENFR19-1129. This Critical Areas Designation is part of the process to resolve the Code Enforcement Case.

FEMA Floodway and Floodplain (21A.24.223 to 21A.24.272)

There is an unmapped flood plain (21A.24.230) associated with the wetlands and aquatic area on this parcel. If the elevation change between the boundary of the wetland or ordinary high water mark of the aquatic area and the proposed development site is less than 10 feet, then a minor flood study may be required to demonstrate the proposed development is not located within the flood hazard area during review of a subsequent permit.

If you have questions regarding how these flood hazard regulations may affect your future development plans, you can contact Permitting by phone at 206-296-6600, by email at ddeswebinquiries@kingcounty.gov.

Closure

When you are applying to the Health Department for septic system design approval or water well site approval, please include a copy of this letter and any attachments with your application to them. Similarly, a copy should be included with any building permit application. This critical area determination is not based on a professional survey of the site. As a result, this CAD may be relied on for the type and general location of critical areas, but does not represent a confirmation of the precise boundaries of identified critical areas. Depending on the scope and type of development proposed on the site, a survey may be required with a permit application. If additional critical areas that are not reflected in the CAD become known during permit review, the development would still need to comply with applicable critical areas regulations.

The purpose of this review is to determine the location and classification of critical areas on your site that might affect your proposed development activities, and is not an approval of existing or

CADS20-0125

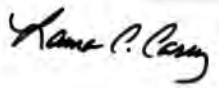
June 15, 2021

Page 4 of 4

proposed development. Additional reviews, including but not limited to drainage, floodplain, clearing, grading, compliance with critical area codes, and fire flow may occur during the building permit review process.

For wetland or aquatic area questions, contact Permitting at 206-296-6600 or PermitCenter.DPER@kingcounty.gov and ask for the environmental staff assigned to this project. Contact Ryan Scheffler at 206-477-2373 or rscheffler@kingcounty.gov for any geotechnical questions.

Sincerely,



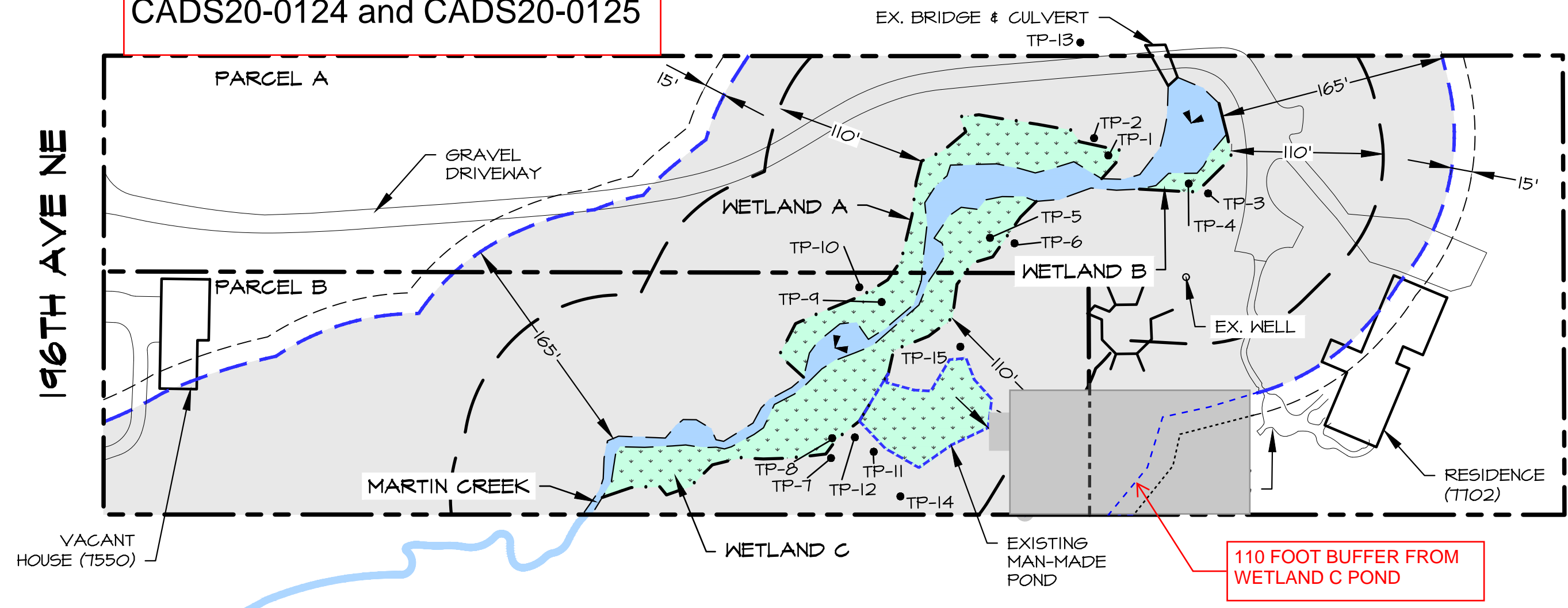
Laura Casey
Environmental Scientist III-Ecologist



Ryan Scheffler, P.E.
Geotechnical Engineer II

Attachments: Site Map

CADS20-0124 and CADS20-0125



EXISTING CONDITIONS - NATURAL AREAS

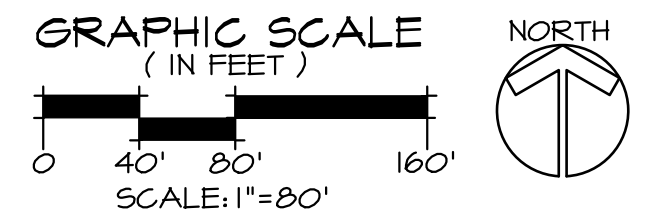
PLAN LEGEND

- PROPERTY LINE
- [Green hatched box] EXISTING WETLAND
- WETLAND BUFFER - STANDARD (110-FT)
- TP-# WETLAND TEST PIT LOCATION
- [Blue line] STREAM ORDINARY HIGH-WATER MARK (OHWM)
- [Blue dashed line] STREAM BUFFER - STANDARD (165-FT)
- BUILDING SETBACK (15-FT)
- [Grey box] COMBINED BUFFER AREA (5.04 AC)

FEATURE	TYPE / CATEGORY (HABITAT SCORE)	STANDARD BUFFER
MARTIN CREEK	TYPE F (FISH-BEARING)	165 FEET
WETLAND A	CAT. III, HABITAT SCORE: 6	110 FEET
WETLAND B	CAT. III, HABITAT SCORE: 6	110 FEET
WETLAND C	CAT. II, HABITAT SCORE: 7	110 FEET

NOTE: ALL CRITICAL AREAS REQUIRE A 15-FOOT BUILDING SETBACK, MEASURED FROM THE EDGE OF THE STANDARD BUFFER.

NOTE: ALL ONSITE CRITICAL AREA BOUNDARIES WERE LOCATED WITH AN EOS ARROW 100 GNSS RECEIVER. THESE POINTS ARE NOT SURVEYED. OFFSITE BOUNDARIES WERE ESTIMATED.



ENTIRE SITE: SEISMIC HAZARD AREA
CRITICAL AQUIFER RECHARGE AREA II

TALASAEA
CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

King County
Department of Local Services - Permitting Division
Critical Areas Review
APPROVED
By: *Laura Casey* Date: **06/15/2021**
Laura Casey, Environmental Scientist III

APPENDIX C

Resumes

Jennifer M. Marriott, PWS
8201 164th Avenue Northeast, Suite 200, PMB 141, Redmond, WA 98052
jen@wet.land
Work: 206-309-8100 | Cell: 813-846-1684



QUALIFICATIONS

- 🌿 Master of Science, Soil Science, University of Florida, Gainesville, FL, 2010
- 🌿 Master of Science, Biology (Ecology), University of Central Florida, Orlando, FL, 2003
- 🌿 Bachelor of Science, Biology, University of Central Florida, Orlando, FL, 2001
- 🌿 Professional Wetland Scientist (No. 1891)

FOCUS AND EXPERTISE

- 🌿 Project Management
- 🌿 Project Summaries and Rapid Environmental Due Diligence Reports
- 🌿 Wetland and Stream Delineations/Habitat Evaluation
- 🌿 Wetland (Critical Areas) Permitting
- 🌿 Mitigation Planning
- 🌿 Wetland Functional Assessment
- 🌿 Hydric Soil Determinations
- 🌿 Training and mentoring of Junior staff.

EXPERIENCE

- 🌿 Senior Ecologist/Owner; Wet.land, LLC; March 2020 - Present
- 🌿 Senior Ecologist/Project Manager; Talasaea Consultants, Inc.; June 2015 – March 2020
- 🌿 Senior Project Scientist; BL Companies, Inc.; July 2012 – July 2014
- 🌿 Environmental Scientist 3; RETTEW Associates, Inc.; March 2011 – February 2012
- 🌿 Ecologist; Cardno-ENTRIX, Inc. (formerly known as ENTRIX, Inc., fka Biological Research Associates); July 2003 – March 2011

SKILLS, TRAINING & PROFESSIONAL MEMBERSHIPS

- 🌿 Washington (Coastal Training Program Workshops)
 - Revised Washington State Wetland Rating System, 2014 (April 2015)
 - Using the Credit-Debit Method for Estimating Mitigation Needs (October 2015)
 - Using Field Indicators for Hydric Soils (November 2015)
 - Grass, Sedge, and Rush Identification for Western WA Puget Lowland Habitats (March 2016)
 - How to Determine the Ordinary High Water Mark (September 2016)
- 🌿 Other Technical Training
 - Soil Workshop, PAPSS, 2011
 - Hydric Soils Workshops, 2004, 2008, 2009
 - FAESS Florida State Certification Short Course, March 12-13, 2009

Kristen Numata, PWS
8201 164th Avenue Northeast, Suite 200, PMB 141, Redmond, WA 98052
kristen@wet.land
Work: 206-309-8100 | Cell: 206-930-4845



QUALIFICATIONS

- 🌿 Wetland Science and Management Certificate, University of Washington Professional Continuing Education, Seattle, WA, 2016
- 🌿 Bachelor of Science, Biology, Santa Clara University, Santa Clara, CA, 2014
- 🌿 Bachelor of Science, Environmental Science, Santa Clara University, Santa Clara, CA, 2014
- 🌿 Professional Wetland Scientist (No. 3412)
- 🌿 Certified Erosion and Sediment Control Lead (No. 70592)

FOCUS AND EXPERTISE

- 🌿 Critical Areas Delineations and Site Assessments
- 🌿 Wetland Functional Assessment
- 🌿 Geographic Information Systems
- 🌿 Critical Area Permitting
- 🌿 Mitigation Planning and Performance Monitoring
- 🌿 Environmental Compliance and Construction Oversight

EXPERIENCE

- 🌿 Ecologist/Owner; Wet.land, LLC; January 2022 – Present
- 🌿 Project Biologist; PBS Engineering and Environmental, Inc.; July 2019 – December 2021
- 🌿 Biologist/Environmental Scientist; David Evans and Associates, Inc.; July 2018 – July 2019
- 🌿 Ecologist; Talasaea Consultants, Inc.; July 2015 – July 2018

SKILLS, TRAINING & PROFESSIONAL MEMBERSHIPS

- 🌿 Washington (Coastal Training Program Workshops)
 - Revised Washington State Wetland Rating System, 2014 (March 2016)
 - Using the Credit-Debit Method for Estimating Mitigation Needs (April 2017)
 - How to Determine Ordinary High Water Mark (June 2017)
 - Grass, Sedge, and Rush Identification for Western WA Puget Lowland Habitats (February 2018)
 - Winter Tree and Shrub Identification for Western WA Puget Lowland Habitats (February 2019)
 - Navigating SEPA (March 2019)
 - 🌿 Other Technical Training
 - Junior Author, Washington State Department of Transportation (WSDOT) Biological Assessment Preparation for Transportation Projects Training (March 2020)
 - Fish Passage: Inventory and Assessment, Washington Department of Fish and Wildlife, (WDFW) (August 2020)
 - Fish Passage: Habitat Survey, WDFW (August 2020)
-

APPENDIX D

Photodocument



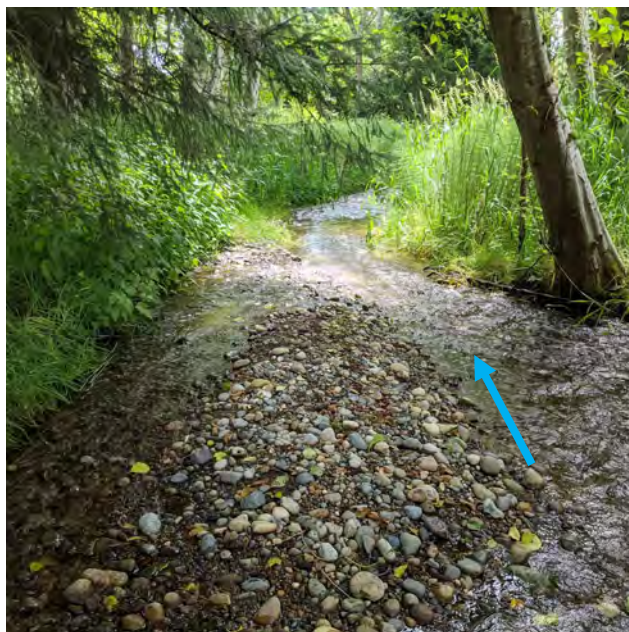
Photo facing west down driveway from Martin Creek bridge (8 July 2022)



Downstream side of Martin Creek bridge, facing north. Blue arrow is direction of flow. (8 July 2022)



Downstream side of Martin Creek bridge, facing north (13 January 2020)



Martin Creek facing downstream from just south of bridge (8 July 2022)

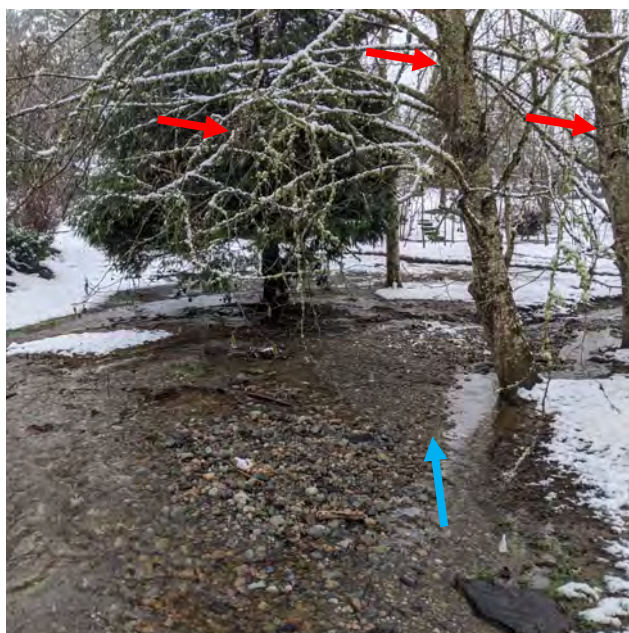


Photo facing south—downstream—from Martin Creek bridge.

Note red arrows in left photo (8 July 2022) & right photo (13 January 2020) are the same trees.



Unpermitted rocks placed along OHWM of Martin Creek to be removed (7 June 2022)



Photo facing upstream towards bridge—red arrows are same trees from opposite direction (8 July 2022)



Photo facing north showing typical area of Wetland A, a riparian wetland that occurs along the right bank of Martin Creek (8 July 2022)



Photo facing south of Wetland B on left bank of Martin Creek (8 July 2022)



Photo of Wetland C facing west (8 July 2022)



Pipe discharging into Wetland C (8 July 2022)



Photo facing north towards Martin Creek riparian corridor showing landscape outside of canopy limits. This area was cleared of blackberry and reseeded with a native/pasture grass seed blend. (8 July 2022)



Photo of Martin Creek riparian corridor facing west from open field west of house. (8 July 2022)



Photo of Martin Creek riparian corridor facing northwest from open field west of house. (8 July 2022)

APPENDIX E

Mitigation Plan Sheets:

W1.0 Existing Conditions & Impacts Overview Plan

W1.1 Historical Aerial Overview

W1.2 Mitigation Plan

W1.3 In-Water Work Isolation Plan & Details

W2.0 Planting Specifications & Details

W3.0 Performance Monitoring Plan & Bond Quantity Worksheet



SOURCE: KING COUNTY AERIAL 2021, KING COUNTY GIS

EXISTING CONDITIONS AND IMPACTS OVERVIEW PLAN

LEGEND

Song Property

Existing Structures and Landscaping

Existing Bridge and Culvert

Limits of Canopy

Martin Creek OHW

Martin Creek Stream Channel

Rocks Placed Along OHW (323 LF)

Wetlands

Buffers

110' Wetland Buffer

165' Stream Buffer

BSBL (15')

NOTE: Critical area delineations shown above were pulled from CADS20-0124 and CADS20-0125, as issued by King County.

Existing structures and landscaping based on CADS and aerial imagery.

VICINITY MAP (NTS)

SOURCE: ESRI NATIONAL GEOGRAPHIC STYLE BASEMAP
ACCESSED 08-18-2022

CONTACTS

APPLICANT/OWNER
NAME: TANG SONG

ENVIRONMENTAL CONSULTANT
NAME: WET.LAND
ADDRESS: 8201 164TH AVE NE, SUITE 200
REDMOND, WASHINGTON 98052
(206) 309 - 8100
PHONE: JENNIFER MARRIOTT, PWS
CONTACT: JEN@WET.LAND
EMAIL: JEN@WET.LAND

SHEET INDEX


SHEET NUMBER AND SHEET TITLE	
W1.0	EXISTING CONDITIONS & IMPACTS OVERVIEW PLAN
W1.1	HISTORICAL AERIAL OVERVIEW
W1.2	MITIGATION PLAN
W1.3	IN-WATER WORK ISOLATION PLAN & DETAILS
W2.0	PLANTING SPECS & DETAILS
W3.0	PERFORMANCE MONITORING PLAN & BOND QUANTITY WORKSHEET

NOTES

- Delineations shown are based on work performed by others. See Critical Areas - Existing Conditions Report for 7550 and 7702 196th Ave NE, 26 May 2020 by Talasaea Consultants, Inc. for additional information. Critical areas shown were pulled from CADS20-0124 and CADS20-0125, as issued by King County.
- Source drawing was modified by Wet.Land for visual enhancements.
- This plan is an attachment to the Critical Areas Report and Restoration Plan dated 19 August 2022 prepared by Wet.Land, LLC.

REVISIONS

DATE/DESCRIPTION
2025-1-10: Response to County Comments



(206) 309 - 8100

EXISTING CONDITIONS & IMPACTS OVERVIEW PLAN

Song Restoration Project
7702/7550 196th Ave NE, Redmond
King County, Washington

JOB NUMBER: #0096

DESIGNED BY: JMM

DRAWN BY: KAN

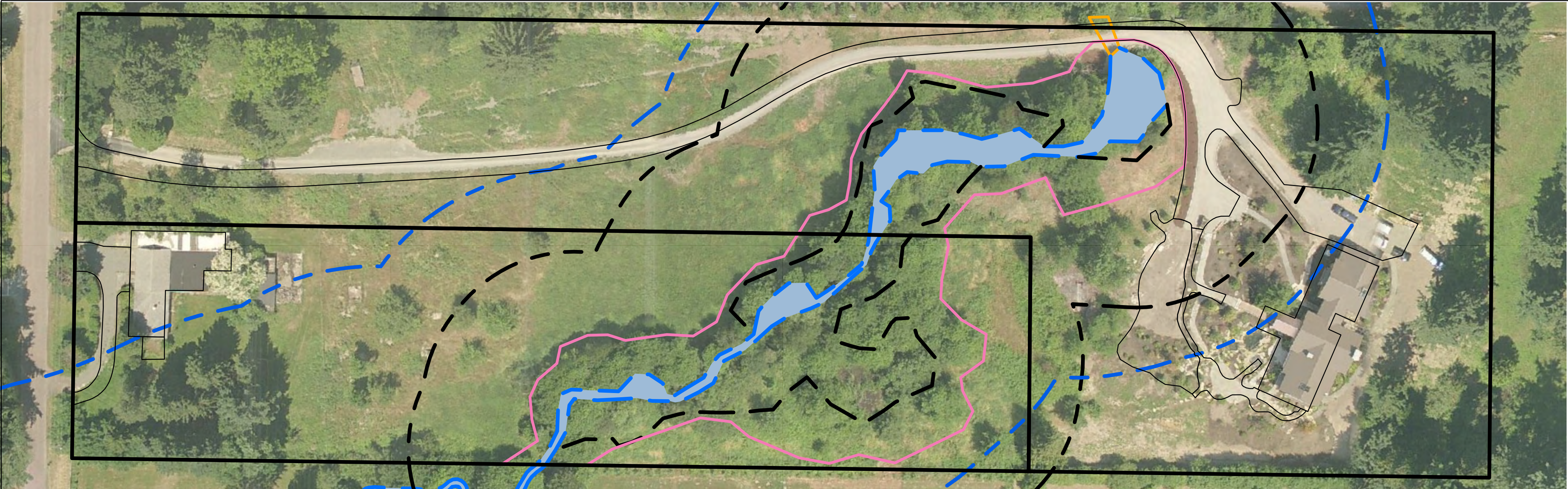
CHECKED BY: JMM

DATE: 09/20/2022

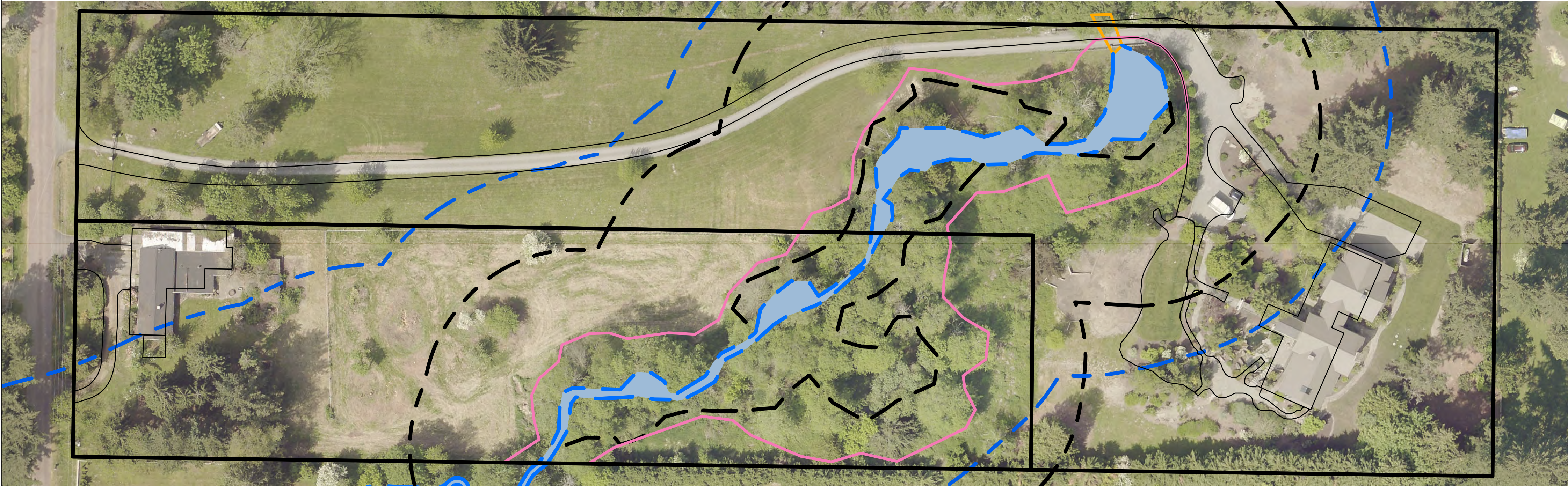
811

Know what's below.
Call before you dig.

W1.0



SOURCE: KING COUNTY AERIAL 2007, KING COUNTY GIS



SOURCE: KING COUNTY AERIAL 2019, KING COUNTY GIS



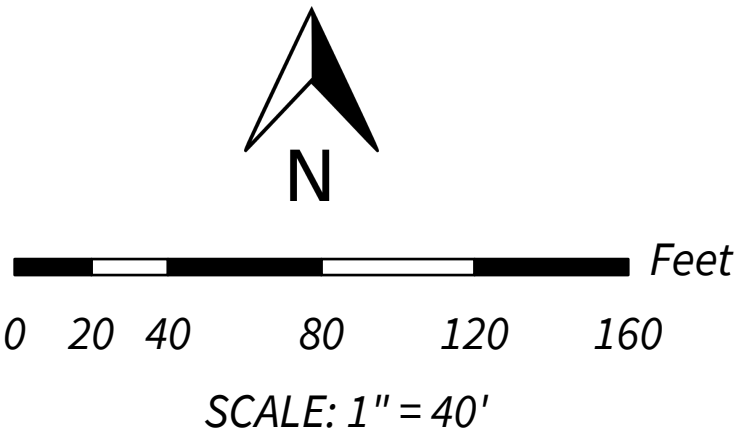
SOURCE: KING COUNTY AERIAL 2021, KING COUNTY GIS

LEGEND

- Song Property
- Existing Structures
- Existing Bridge and Culvert
- Limits of Canopy
- Martin Creek OHWM
- Martin Creek Stream Channel
- Wetlands

- Buffers
- 110' Wetland Buffer
 - 165' Stream Buffer


NOTE: Critical area delineations shown above were pulled from CADS20-0124 and CADS20-0125, as issued by King County.

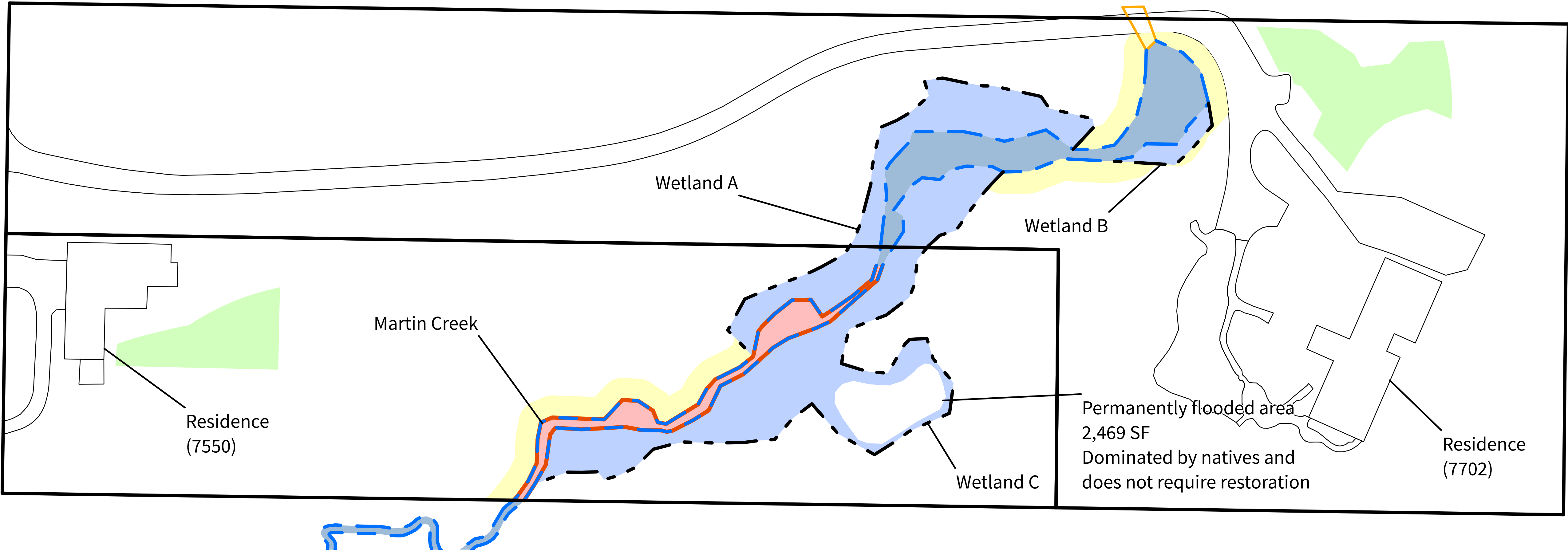


NOTES

- Delineations shown are based on work performed by others. See Critical Areas - Existing Conditions Report for 7550 and 7702 196th Ave NE, 26 May 2020 by Talasaea Consultants, Inc. for additional information. Critical areas shown were pulled from CADS20-0124 and CADS20-0125, as issued by King County.
- Source drawing was modified by Wet.land for visual enhancements.
- This plan is an attachment to the Critical Areas Report and Restoration Plan dated 19 August 2022 prepared by Wet.land, LLC.



REVISIONS	
DATE/DESCRIPTION	
2025-1-10: Response to County Comments	
 wet.land (206) 309 - 8100	
HISTORICAL AERIAL OVERVIEW	Song Restoration Project 7702/7550 196th Ave NE, Redmond King County, Washington
JOB NUMBER:	#0096
DESIGNED BY:	JMM
DRAWN BY:	KAN
CHECKED BY:	JMM
DATE:	09/20/2022
W1.1	



SOURCE: KING COUNTY GIS

MITIGATION PLAN

LEGEND

- Song Property
- Existing Structures and Landscaping
- Existing Bridge and Culvert
- Martin Creek OHWM
- Martin Creek Stream Channel
- Wetlands

NOTE: Critical area delineations shown above were pulled from CADS20-0124 and CADS20-0125, as issued by King County.

MITIGATION LEGEND

Buffer Restoration - Planting	7,619 SF (0.17-ac.)
Buffer Restoration - Hydroseed	10,099 SF (0.23-ac.)
Wetland Restoration	20,507 SF (0.47-ac.)
Stream Channel Restoration	2,850 SF (0.06-ac.)
Stream Channel Restoration	323 LF

TOTAL RESTORATION: 41,075 SF (0.94-ac.)

NOTES

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BUFFER RESTORATION PLANT SCHEDULE

SCIENTIFIC NAME	COMMON NAME	WIS	QUANTITY	SPACING	SIZE (MIN)	NOTES
Alnus rubra	Red alder	FAC	20	See Notes	2-3'	Hand placed, 1 gal, full & bushy
Thuja plicata	Western red cedar	FAC	10	See Notes	1 - 2'	Hand placed, 1 gal, full & bushy
Acer circinatum	Vine maple	FAC	30	6' O.C.	24" Ht	Full & bushy
Holodiscus discolor	Oceanspray	FACU	50	6' O.C.	24" Ht	Full & bushy
Symphoricarpos albus	Common snowberry	FACU	60	6' O.C.	1 gal.	Multi-cane (3 min.)
Sambucus racemosa	Red elderberry	FACU	60	6' O.C.	24" Ht	Full & bushy

WETLAND RESTORATION PLANT SCHEDULE

SCIENTIFIC NAME	COMMON NAME	WIS	QUANTITY	SPACING	SIZE (MIN)	NOTES
Thuja plicata	Western red cedar	FAC	50	See Notes	1 - 2'	Hand placed, 1 gal, full & bushy
Cornus alba	Red-osier dogwood	FACW	125	6' O.C.	1 gal or stake	Multi-cane (3 min)
Lonicera involucrata	Black twinberry	FACW	140	6' O.C.	1 gal	Full & bushy
Salix lasiandra	Pacific willow	FACW	125	6' O.C.	1 gal or stake	Multi-cane (3 min)
Rubus spectabilis	Salmonberry	FAC	140	6' O.C.	1 gal	Full & bushy

BUFFER RESTORATION HYDROSEED MIX

Hydroseed with native seed mix:
30% Elymus glaucus
25% Bromus carinatus
10% Hordeum brachyantherum
10% Deschampsia elongata
5% Agrostis exarata
5% Deschampsia cespitosa
5% Festuca rubra


(River Refuge Native Upland Grass Mix #9)



REVISIONS

DATE/DESCRIPTION

2025-1-10: Response to County Comments

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(206) 309 - 8100

MITIGATION PLAN

Song Restoration Project
7702/7550 196th Ave NE, Redmond
King County, Washington

JOB NUMBER:

#0096

DESIGNED BY:

JMM

DRAWN BY:

KAN

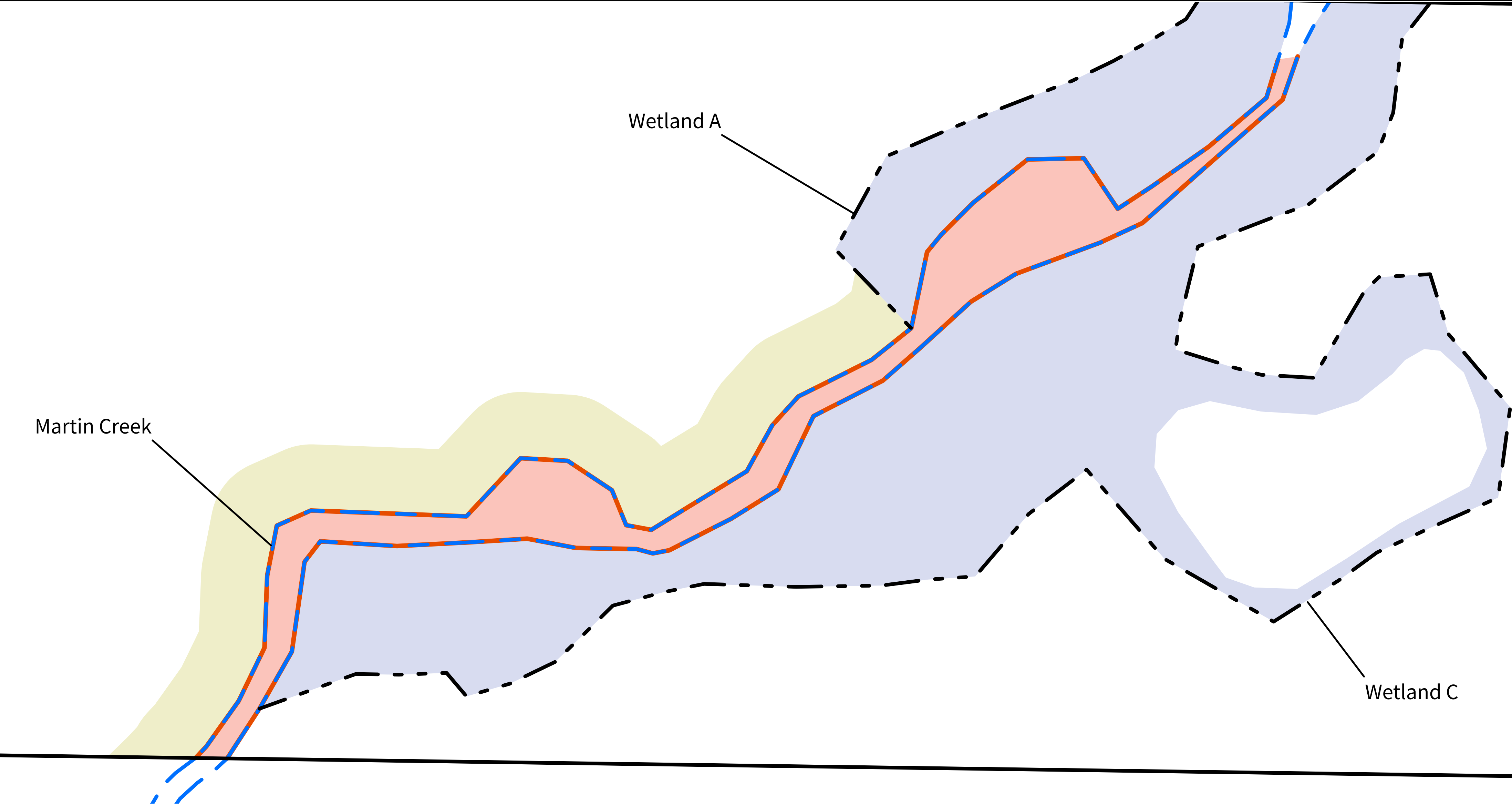
CHECKED BY:

JMM

DATE:

09/20/2022

W1.2



STREAM RESTORATION PLAN

LEGEND

Song Property

Martin Creek OHWM

Wetlands

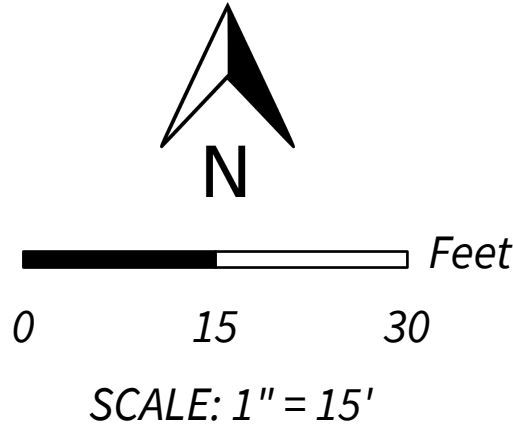
Stream Channel Restoration

Buffer Restoration

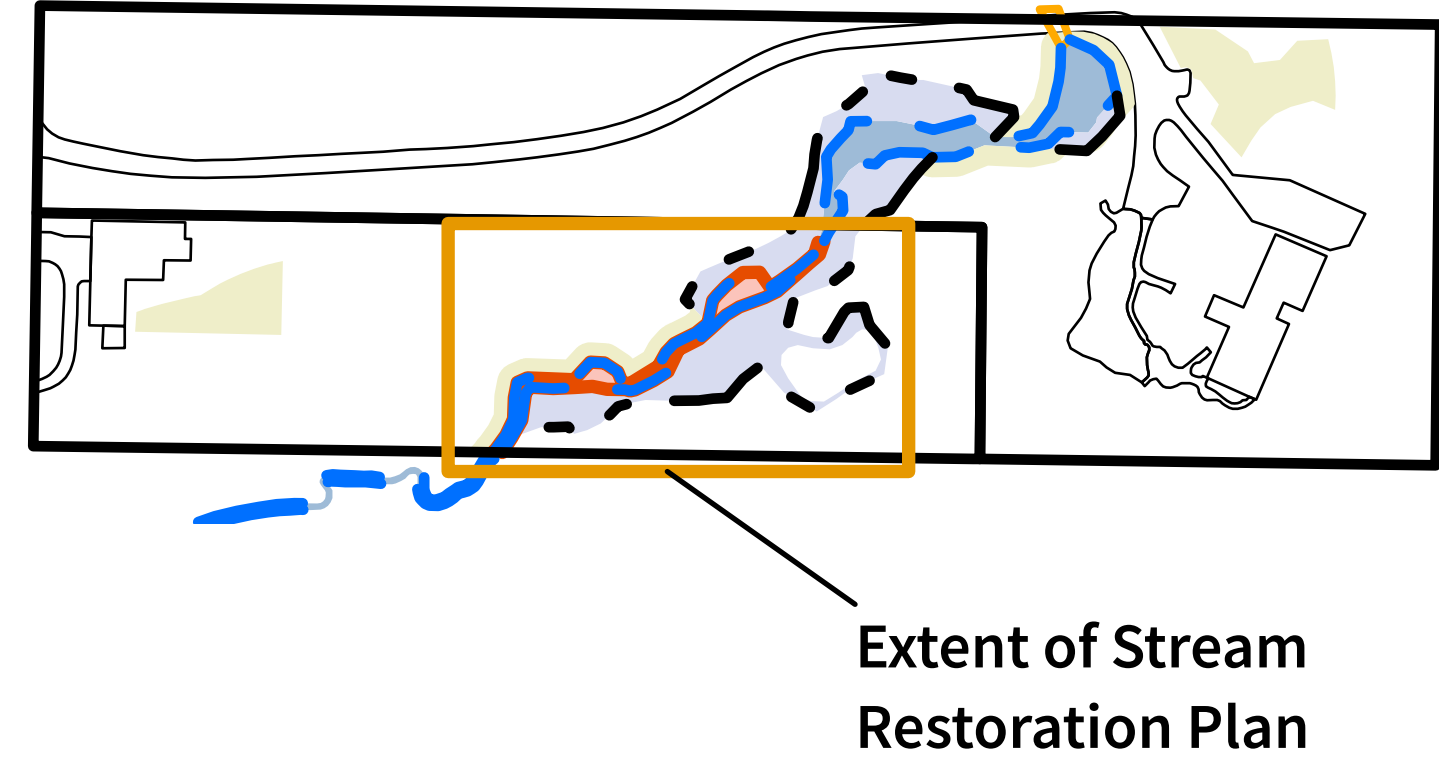
Wetland Restoration

Stream Channel Restoration

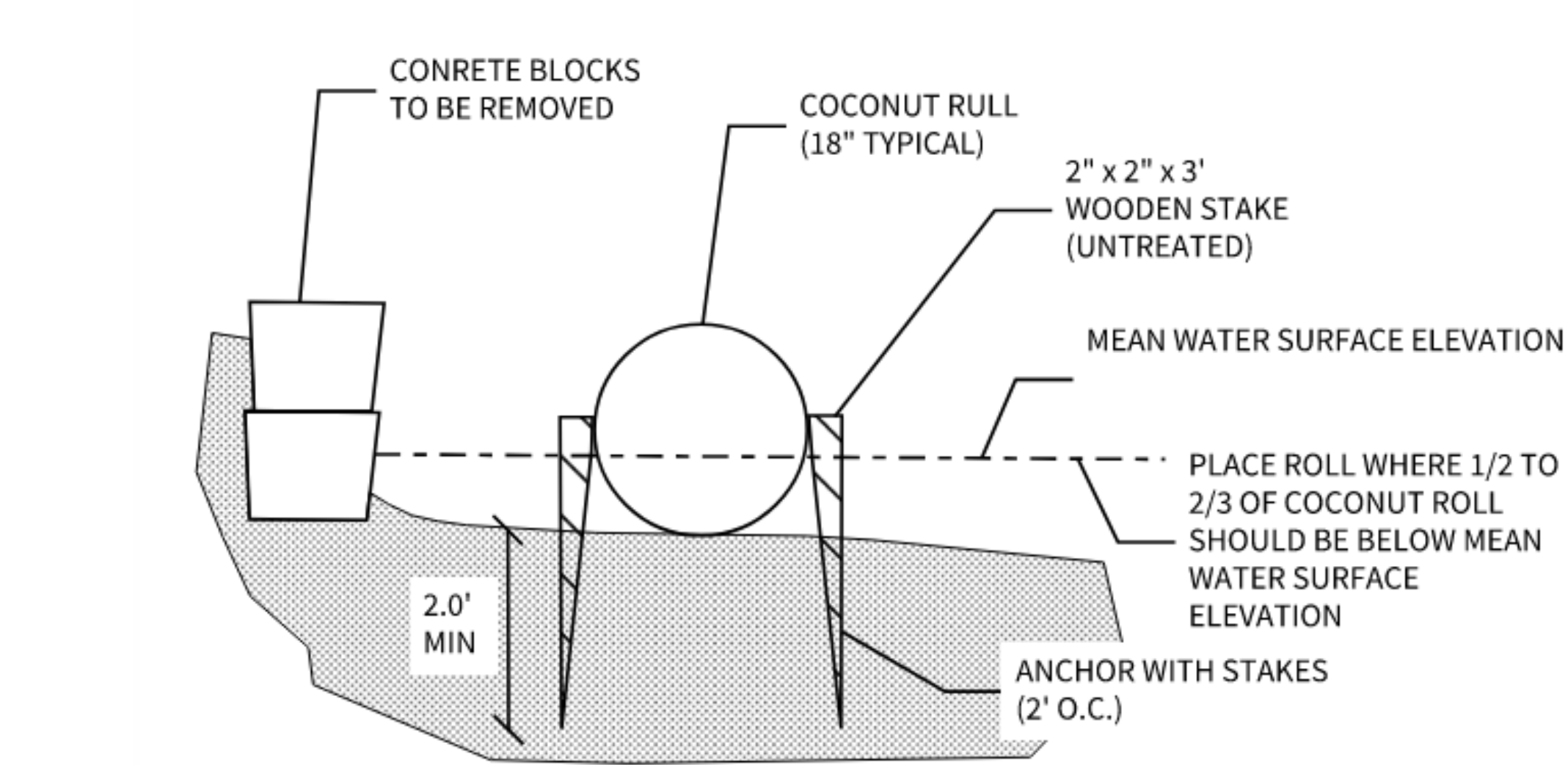
SOURCE: KING COUNTY GIS



PROPERTY MAP



NOTE: Stream channel restoration will only include removal of rocks from stream banks and addition of large wood. Stream channel substrate and configuration will remain in pre-existing undisturbed condition.




IN-WATER WORK ISOLATION - COIR LOG INSTALLATION SPECIFICATIONS

- No vegetation removal around rock removal area is proposed except where invasive species are targeted for removal.
- Coir logs to be placed within stream channel immediately waterward of rocks to be removed.
- Coir logs to be staked per detail to temporarily anchor logs into place.
- Once coir logs are placed to redirect flow towards the center of the stream channel, rock removal may begin from the landward side of the OHWM.
- Once rocks are removed, bank stabilization measures will be installed, including slope layback, coir matting where taller slopes exist, and hydroseed slopes. Final stabilization measures to be determined in the field.
- Once slope is stabilized post rock removal, coir logs may be removed from within the stream channel.

NOTES

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- Source drawing was modified by Wet.Land for visual enhancements.
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REVISIONS	
DATE/DESCRIPTION	
2025-1-10: Response to County Comments	
 <div> <div>wet.land</div> <div>(206) 309 - 8100</div> </div>	
<div>STREAM RESTORATION PLAN & DETAILS</div>	<div>Song Restoration Project</div> <div>7702/7550 196th Ave NE, Redmond</div> <div>King County, Washington</div>
JOB NUMBER:	#0096
DESIGNED BY:	JMM
DRAWN BY:	KAN
CHECKED BY:	JMM
DATE:	08/19/2022
<div>W1.3</div>	

PLANTING SPECIFICATIONS & DETAILS

1. GENERAL

1.1. Sequencing

1.1.1. General Construction

- 1.1.1.1. Contractor shall give the project biologist or ecologist a minimum of ten (10) days notice prior to beginning of construction.
- 1.1.1.2. No construction work shall commence until there is a meeting between the client, the project biologist or ecologist, general, clearing, and/or earthwork contractors, and the landscape contractor. The approved plans and specifications shall be reviewed to ensure that all parties involved understand the intent and the specific details related to the construction documents, specifications, and site constraints.
- 1.1.1.3. Locations of existing utilities have been established by field survey or obtained from available records and should be considered approximate only and not necessarily complete. It is the sole responsibility of the contractor to: (1) independently verify the accuracy of utility locations and (2) discover and avoid any utilities within the mitigation plan area(s) that are not shown, but which may be affected by implementation of the plan. Such area(s) are to be clearly marked in the field. The project biologist or ecologist shall review any conflicts with the approved grading plan prior to start of construction.
- 1.1.1.4. A copy of the approved plans must be on-site whenever construction is in progress, and shall remain on-site until project completion.
- 1.1.1.5. Construction must be performed in accordance with all agency standards, rules, codes, permit conditions, and/or other applicable ordinances and policies.
- 1.1.1.6. Work below the ordinary high water line shall occur within the authorized window of the Hydraulic Project Approval (HPA) and other permits.
- 1.1.1.7. The project owner/applicant is responsible for obtaining any other related or required permits prior to the start of construction.
- 1.1.1.8. A qualified wetland consultant shall be on-site, as necessary, to monitor construction and approve minor revisions to the plan, to be included in as-built drawings.
- 1.1.1.9. During construction, the contractor must use materials and construction methods that prevent toxic substances and other pollutants from entering mitigation areas or other natural waters of the state.
- 1.1.1.10. Preventative measures shall be used to protect existing storm drainage systems, existing utilities, and roads.
- 1.1.1.11. The contractor shall provide sediment and erosion controls around the project area prior to soil disturbance from construction activity.

1.1.2. Mitigation Construction: The following provides the general sequence of activities anticipated to be necessary to complete this mitigation project. Some of these activities may be conducted concurrently as the project progresses.

- 1.1.2.1. Conduct a site meeting between the contractor, the project biologist or ecologist, and the owner's representative to review the project plans, work areas, staging/stockpile areas, material disposal areas, and existing vegetation to be retained.
- 1.1.2.2. Conduct a site meeting between the Contractor, project Biologist or Ecologist, and the Owner's Representative to review the project plans, staging/stockpile areas, and material disposal areas.
- 1.1.2.3. A pre-construction meeting with County staff will be required in advance of beginning any construction activities.
- 1.1.2.4. Two to three weeks prior to the installation of BMP's for clearing, grading, or restoration a wildlife survey will be conducted to establish pre-clearing existing conditions and presence/absence of protected species. Any wildlife discovered that is Local, State, or Federally protected or protected under KCC 21A.24.382 B through J and K will need to be protected during construction. This condition would apply during the nesting/breeding season of protected species (March – July).
- 1.1.2.5. Survey work limits.
- 1.1.2.6. Install silt fence and any other erosion and sedimentation control BMPs necessary for work in the project areas.
- 1.1.2.7. Mow entire understory within work limits to cut down grasses to the greatest extent practicable to prepare area for restoration activities.
- 1.1.2.8. Martin Creek:
- 1.1.2.8.1. Install in-water work isolation plan.
- 1.1.2.8.2. Remove rocks from stream banks.
- 1.1.2.8.3. Stabilize stream banks:
- 1.1.2.8.3.1. If exposed bank is more than 12" height of soil, lay back soil to prevent erosion.
- 1.1.2.8.3.2. If exposed bank is less than 12" height of soil, no bank modification is necessary.
- 1.1.2.8.3.3. Stabilize bare dirt banks with coir matting. Stake coir mats at edge of streambed substrate, over exposed banks. Any extra coir matting should be on landward side of stream bank.
- 1.1.2.8.4. Plant per the planting typicals/plans.
- 1.1.2.9. Wetland and Buffers:
- 1.1.2.9.1. Remove non-native, invasive species from designated areas.
- 1.1.2.9.2. Plant areas per the planting typicals/plans.
- 1.1.2.9.3. Mulch all buffer areas and provide a three-inch-deep mulch ring around all container-planted material outside of OHWM and wetlands.
- 1.1.2.10. Install irrigation system. Ensure that the system is capable of head-to-head coverage.
- 1.1.2.11. Complete site cleanup.

1.2. Project Conditions

- 1.2.1. Protection and Maintenance of Off-Site Areas: Contractor shall ensure that construction related activities do not damage off-site features or adjacent vegetation. The project biologist or ecologist shall be notified immediately if accidental damage occurs. Contractor shall ensure that adjacent roads are maintained and kept clear of soil and/or other debris at all times during construction. Contractor shall comply with the governing jurisdiction's codes regarding street maintenance/cleaning during construction.
- 1.2.2. Plan Changes and Modifications: Any changes or modifications to the mitigation plans or specifications must receive prior approval from the owner's representative, the project biologist or ecologist, and applicable agencies.

1.3. Submittals

- 1.3.1. Product Data: Furnish the following with each plant material delivery:
- 1.3.1.1. Invoices indicating sizes and variety of plant material.
- 1.3.1.2. Certificates of inspection required by state and federal agencies.
- 1.3.2. Quality Control Submittals. Prior to delivery of materials, certificates of compliance attesting that materials meet the specified requirements shall be furnished for the following: plants, topsoil, fertilizer, and organic mulch. Certified copies of the material certificates shall include the following:
- 1.3.2.1. Plant materials: botanical name, common name, size, quantity by species, and location where grown.
- 1.3.2.2. Imported topsoil: particle size, pH, organic matter content, textural class, soluble salts, chemical and mechanical analyses.
- 1.3.2.3. Fertilizer: chemical analysis and percent composition.
- 1.3.2.4. Imported mulch: composition and source.

1.4. References

- 1.4.1. Size and Grading Standards: Shall conform to the current edition of the American Standard for Nursery Stock, published by the American Nursery and Landscape Association.

1.5. Quality Assurance

- 1.5.1. Worker's Qualifications: The persons performing the planting and their supervisor(s) shall be personally experienced with planting and caring for plant material, and shall have been regularly employed by a company engaged in planting and caring for plant material for a minimum of 2 years.

1.5.2. Plant Material: All plant materials shall be locally grown for regionally acclimatized to the Pacific Northwest.

1.6. Delivery, Inspection, Storage and Handling

- 1.6.1. Delivery: A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery. Plant materials shall be delivered to the job site not more than 7 working days prior to their respective planting dates.
- 1.6.2. Protection during Delivery: Plant material shall be protected during delivery to prevent desiccation and damage to the branches, trunk, root system, or earth ball. Branches shall be protected by tying-in. Exposed branches shall be covered during transport.
- 1.6.3. Inspection: All plant materials shall be inspected upon arrival at the job site by the owner's representative for conformity to type and quantity with regard to their respective specifications.
- 1.6.4. Mulch: A mulch sample shall be inspected by the project biologist or ecologist prior to the mulch being delivered to the site.
- 1.6.5. Storage:
- 1.6.5.1. Plant material not installed on the day of arrival at the site shall be stored and protected in designated areas. Plants stored on the project site shall be protected from extreme weather conditions by insulating the roots, root balls or contains with sawdust, soil, compost, bark or woodchips. Plant material shall be protected from direct exposure to wind and sun. Bare-root plant material shall be heeled-in. Cuttings and emergent plants must be protected from drying at all times and shall be heeled-in with moist soil or other insulating material. All plant material stored on-site shall be watered daily until installed.

- 1.6.5.2. Storage of other materials shall be in designated areas.

1.7. Scheduling

- 1.7.1. Planting Season: Install woody plants between October 1 and February 15 whenever the temperature is above 32 degrees F and the soil is in a workable condition, unless otherwise approved in writing. Cuttings shall only be used if planting occurs between December 1st and April 1st.
- 1.7.2. Plant Installation: Except for container-grown plant material, the maximum time between the digging and installation of plant material shall be 21 days. The maximum time between plant installation and mulch placement shall be 72 hours.

1.8. Warranty

- 1.8.1. Warranty Period: A contractor-provided warranty shall extend for a period of one year from the date of physical completion. Physical completion for the work of this section is the date when all grading, planting, irrigation, and related phases of such work have been completed and are accepted by the owner's representative, the project biologist or ecologist, and applicable agencies.
- 1.8.2. Warranty Terms: Contractor's warranty shall include replacement of plants due to mortality (same size and species shown on the drawings). Plants replaced under this warranty shall be warranted for an additional year after replacement.
- 1.8.3. Exceptions: Loss due to excessively severe climatological conditions (substantiated by 10-year recorded weather charts), or cases of neglect by owner, or cases of abuse/damage by others.

2. PRODUCTS AND MATERIALS

2.1. In-Water Work Isolation - Coir Log Installation Specs

- 2.1.1. No vegetation removal around rock removal area is proposed except where invasive species are targeted for removal.
- 2.1.2. Coir logs to be placed within stream channel immediately waterward of rocks to be removed.
- 2.1.3. Coir logs to be staked per detail to temporarily anchor logs into place.
- 2.1.4. Once coir logs are placed to redirect flow towards the center of the stream channel, rock removal may begin from the landward side of the OHWM.
- 2.1.5. Once rocks are removed, bank stabilization measures will be installed, including slope layback, coir matting where taller slopes exist, hydroseeded slopes. Final stabilization measures to be determined in the field.
- 2.1.6. Once slope is stabilized post rock removal, coir logs may be removed from within stream channel.

2.2. Plants

- 2.2.1. General: All plant material will conform to the varieties specified or shown in the plant list(s) indicated on the mitigation plants and be true to botanical name as listed in: Hitchcock, C.L., and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press.

2.2.2. Shrubs and Trees:

- 2.2.2.1. The project biologist or ecologist shall examine plant material prior to planting. Any material not meeting the required specifications shall be immediately removed from the site and replaced with like material that meets the required standards. Plant material shall meet the requirements of state and federal laws with respect to plant disease and infestations. Inspection certificates, required by law, shall accompany each and every shipment and shall be submitted to the project biologist or ecologist upon contractor's receipt of plant material.
- 2.2.2.2. Plant materials shall be locally grown (western Washington, western Oregon, or western BC), healthy, bushy, in vigorous growing condition, and guaranteed to be true to size, name, and variety. If replacement of plant material is necessary due to construction damage or plant failure within one year of installation, the sizes, species, and quantities shall be equal to specified plants, as indicated on the plans.
- 2.2.2.3. Plants shall be nursery grown, well-rooted, or normal growth and character, and free from disease or infestation. The project biologist or ecologist reserves the right to require replacement of substitution of any plants deemed unsuitable.
- 2.2.2.4. Trees shall have uniform branching, single straight trunks (unless specified as multi-stem, multi-cane, or multi-trunk), and an intact and undamaged central leader. Container stock shall have been grown in a container for at least one full growing season and shall have a well developed root system. Plant material that is root-bound or has damaged root zones or broken root balls will not be accepted.
- 2.2.2.5. Coniferous trees shall be nursery grown, full and bushy, with uniform branching and a natural non-sheared form. Original central leader must be healthy and undamaged. Maximum gap between branching shall not exceed 9 inches, and length of top leader shall not exceed 12 inches.
- 2.2.2.6. Shrubs shall have a minimum of three stems and shall be a minimum height of 18 inches.
- 2.2.2.7. Trees and shrubs shall have developed root and branch systems. Do not prune branches before delivery.
- 2.2.2.8. Native plant cuttings shall be grown and collected in the maritime Pacific Northwest. Cuttings shall be of one to two-year-old wood, ½ inch diameter minimum. Cuttings shall be a minimum of 4 feet in length with 4 lateral buds exposed above ground after planting. The top of each cutting shall be a minimum of 1 inch above a leaf bud, the bottom cut 2 inches below a bud. The basal ends of the cuttings shall be cut at a 45-degree angle and marked clearly so that the rooting end is planted in the soil. Cuttings must be kept covered and moist during storage and transport, and no cutting shall be stored more than three days from date of cutting. Cuttings shall only be used if planting occurs between December 1st and April 1st. For planting between April 1st and December 1st, container plants shall be used.
- 2.2.2.9. Plants shall be free of splits and checks, bark abrasions, and disfiguring knots.
- 2.2.2.10. For deciduous plants, buds shall be intact and reasonably closed at time of planting, if dormant.
- 2.2.2.11. Balled and burlapped plants shall hold a natural ball. Manufactured root balls are unacceptable.
- 2.2.2.12. Plants shall conform to sizes indicated on the plant schedule. Plants may be larger than the minimum sizes specified.

- 2.2.3. Noxious Species: All plant stock and other re-vegetation materials shall be free from the seed or other plant components of any noxious or invasive species, as identified by the King County Noxious Weed Control Board.
- 2.2.4. Substitutions: Substitutions will not be permitted without a written request and approval from the owner's representative, the project biologist or ecologist, and applicable agencies.

2.3. Planting Soil

- 2.3.1. Topsoil: If suitable stockpiled native topsoil is not available for mitigation plantings, topsoil shall be obtained from outside sources. Stockpiled or imported topsoil shall be fertile, friable, sandy loam surface soil, free of subsoil, clay lumps, brush, weeds, roots, stumps, stones larger than 1 inch in any direction, litter, or any other extraneous or toxic matter harmful to plant growth.
- 2.3.2. Organic Content: Imported topsoil shall consist of organic materials amended as necessary to produce a bulk organic content of at least 10 percent and not greater than 20 percent, as determined by AASHTO-T-194.
- 2.3.3. Compost: Compost shall meet the definition for composted materials as defined by the Washington State Department of Ecology.
- 2.3.4. Soil Amendments (Buffer Areas Only):
- 2.3.4.1. Fertilizer: Woody plantings shall be fertilized with a slow-release general granular fertilizer (16-16-16), with application rates as specified by manufacturer. Fertilizer shall be applied after planting pit is backfilled, and prior to application of mulch. Fertilizer shall not be applied between November and March. No fertilizer shall be applied within wetland areas.
- 2.3.4.2. Soil Moisture Retention Agent: A soil moisture retention agent, such as "SoilMoist" or equal, shall be incorporated into the backfill of each planting pit, per manufacturer's instructions. No moisture retention agent shall be applied within wetland areas.

2.4. Mulch

- 2.4.1. Bark or woodchip mulch shall derived from Douglas fir, pine, or hemlock species. The mulch shall not contain resin, tannin, or other compounds in quantities that would be detrimental to animal, plant life, or water quality. Sawdust shall not be as mulch.
- 2.4.2. Mulch shall be medium-coarse ground with an approximately 3-inch minus particle size. Fine particles shall be minimized so that not more than 30 percent, by loose volume, will pass through a US No. 4 sieve.
- 2.5. Miscellaneous Materials
- 2.5.1. Stakes, Deadmen and Guy Stakes: Sound, durable, western red cedar, or other approved wood, free of insect or fungus infestation.
- 2.5.2. Chain-lock tree tires: ½-inches wide, plastic.

3. EXECUTION

3.1. Flag Vegetation & Woody Material for Future Use as Habitat Features

- 3.1.1. The project biologist or ecologist shall flag existing vegetation and woody material (rootwads, stumps, down logs, and boulders), if available, to be relocated by the contractor from within the development footprint for use as habitat features in the mitigation areas(s). Whenever possible, habitat features shall be noted directly to permanent locations. If necessary, habitat features shall be placed in stockpile areas as near to permanent locations as possible. The project biologist or ecologist shall designate stockpile areas.
- 3.1.2. Contractor shall exercise care when moving habitat features to avoid breaking branches, scuffing bark, or breaking roots. It is the responsibility of the contractor to break pieces into usable sizes.
- 3.1.3. If habitat features are not available from any portion of the development footprint, then features shall be provided by the contractor.

3.2. Place Erosion Control Measures:

- 3.2.1. Contractor shall install silt fencing downslope of the clearing limits depicted on the mitigation grading plans prior to any construction activity. Contractor shall maintain erosion control facilities until completion of

construction. The project biologist or ecologist shall verify and approve locations of erosion control measures prior to site grading.

- 3.2.2. Site areas exposed during grading and construction must be covered with straw (maximum depth 3 inches), erosion control netting, plastic sheeting, or permanent erosion control within 48 hours of disturbance, or as required for National Pollutant Discharge Elimination System (NPDES) or local jurisdiction compliance.
- 3.2.3. Contractor shall maintain erosion control measures for the duration of the project. These measures shall remain in place until authorization is given by the project biologist or ecologist for removal or location adjustment. It is the responsibility of the contractor to remove all erosion control measures adjacent to sensitive areas when authorized by the project biologist or ecologist.
- 3.2.4. As construction progresses and seasonal conditions dictate, erosion control facilities shall be maintained and/or altered as required by the project biologist or ecologist to ensure continued erosion/sedimentation control.
- 3.2.5. Where possible, natural ground cover vegetation shall be maintained for silt control.
- 3.3. In-Water Work Isolation - Coir Log Installation Specs
- 3.3.1. No vegetation removal around rock removal area is proposed except where invasive species are targeted for removal.
- 3.3.2. Coir logs to be placed within stream channel immediately waterward of rocks to be removed.
- 3.3.3. Coir logs to be staked per detail to temporarily anchor logs into place.
- 3.3.4. Once coir logs are placed to redirect flow towards the center of the stream channel, rock removal may begin from the landward side of the OHWM.
- 3.3.5. Once rocks are removed, bank stabilization measures will be installed, including slope layback, coir matting where taller slopes exist, hydroseeded slopes. Final stabilization measures to be determined in the field.
- 3.3.6. Once slope is stabilized post rock removal, coir logs may be removed from within stream channel.
- 3.4. Soils Stabilization: If there is a delay in construction for any reason, contractor shall be responsible for maintenance of erosion control measures, drainage, and temporary irrigation during construction delay period, unless otherwise stated in writing.
- 3.5. Soil Preparation
- 3.5.1. Planting Area Conditions: Contractor shall verify that plant installation conditions are suitable within the project area(s). Any unsatisfactory conditions shall be corrected prior to start of work. When conditions detrimental to plant growth are encountered, such as rubble fill, poor drainage, compacted soils, significant existing or invasive vegetation, or other obstructions, contractor shall notify the project biologist or ecologist prior to planting. The beginning of work by the contractor constitutes acceptance of conditions as satisfactory.
- 3.5.2. Planting in Undisturbed, Non-Graded Areas: Plants installed in undisturbed areas shall be integrated with existing native vegetation and planted in a random, naturalistic pattern. Prior to installation of plantings, all construction debris, trash, and non-native invasive plant material shall be removed from the project area. In non-graded areas, trees and shrubs shall be pit planted as shown in typical planting details. Planting pits shall be backfilled with a 50/50 mixture of imported, weed-free topsoil and the soil from the planting pit.
- 3.5.3. Soil Decompaction/Scarification: Soils in disturbed areas that are compacted and unsuitable for proper plant growth shall be decompacted and/or scarified to a minimum depth of 6 inches **prior** to plant installation.

3.6. Planting

- 3.6.1. Plant Layout: Proposed locations of trees and shrubs shall be staked and identified within an approved coding system or by placement of the actual plant material. For large groupings of a single species of shrub, landscape contractor may stake the planting boundaries.
- 3.6.2. Obtain layout approved from the project biologist or ecologist prior to excavation of planting pits.
- 3.6.3. Plant Pit Dimensions:
- 3.6.3.1. Pit Depth: Not to exceed the root ball or container depth.
- 3.6.3.2. Pit Width: Measured at the ground surface, 2 times the width of the root ball or container, as indicated in typical planting details. For bare-root plants, diameter equal to the width of the root spread.
- 3.6.4. Setting Plants:
- 3.6.4.1. Balled Plants: Set plants in position and backfill ½ depth of ball. Completely remove cage and twine from plant and pull burial down as far as possible. Complete backfill and settle with water. Root collar shall remain 1 inch above adjacent grade.
- 3.6.4.2. Bare-root Plants: Prune bruised or broken roots. Set plant in position and place wetland planting soil around roots. Use care to avoid bruising or breaking roots when firming soil. Settle with water.
- 3.6.4.3. Shrub/Tree Planting: Shrub and tree stock shall be planted in hand-dug holes according to planting details shown on the mitigation plans. Shrub and tree root balls shall be set so that roots collars are 1 inch above adjacent grade. All backfill shall be gently tamped in place.
- 3.6.4.4. Surface Finish: Form a saucer as indicated on typical planting details, or as directed. Grade soil to form a basin on the lower side of slope plantings to catch and retain water.
- 3.6.4.5. In forested areas, contractor shall loosely tie a 2-foot piece of biodegradable flagging to the top portion of all planted vegetation, but not on a central leader, to facilitate post-construction performance and maintenance review by the project biologist or ecologist and regulatory agencies.
- 3.6.4.6. Actual plant symbol quantities shown on the plants shall prevail over quantities shown on the plant schedule in the event of a discrepancy.

3.6.5. Mulching:

- 3.6.5.1. Non-Graded Buffer Areas: Provide a 36-inch diameter, 3-inch deep mulch ring around the base of each tree, and a 24-inch diameter, 3-inch deep mulch ring around the base of each shrub.
- 3.6.5.2. Water plants thoroughly after mulching.
- 3.6.6. Pruning: Prune immediately after planting only as directed by the project biologist or ecologist.
- 3.6.7. Tree Stakes and Ties: Stake deciduous and evergreen trees 4 feet or over in height with one (1) stake per tree. Stake trees immediately after planting. Place stake at the outer edge of the roots or ball, in line with the prevailing wind, and at a 10 degree angle from the tree trunk. Loosely attach stake to tree using chain-lock ties; tree should be able to sway.

3.6.8. Installing Temporary Irrigation

- 3.6.8.1. General Requirements: Contractor shall provide an above-ground temporary irrigation system capable of full head-to-head coverage of all planted project areas. The temporary irrigation system shall either utilize controller and point of connection (POC) from the site irrigation system or shall include a separate POC and controller with a backflow prevention device per water jurisdiction inspection and approval. The system shall be zoned to provide optimal pressure and uniformity of coverage, as well as separation between areas of full sun and shade and for slopes in excess of 5 percent. The system shall be operational for a minimum of the first two growing seasons after planting (the first two years of the performance monitoring period), or longer if required to ensure proper plant establishment. The system shall be removed upon final approval of the mitigation project at the end of the performance monitoring period.
- 3.6.8.2. System Design and Materials: Electronic valves shall be the same manufacturer as those used for the site irrigation system, or shall be Rain Bird PEB series or equal if system is not contiguous with the site system. Valves shall be sized to accommodate pressure and zone consumption requirements of the system and shall be installed below grade in Carson (or equal) valve boxes. Wiring shall be insulated multi-strand, taped to the main at 6-inch intervals with duct tape wraps. On-grade main and lateral lines shall be Class 200 PVC Bell Pipe with solvent welded fittings, secured in-place with wire staples where necessary on sloped areas. Lines shall be placed 12 inches below grade in 4 inch PVC sleeves where vehicular or maintenance access is needed across lies to the project area(s). Maximum main line size shall be 1 ½ inches and may be looped back to the POC to reduce pressure loss. Lateral lines shall be sized in decreasing downstream order per Rain Bird design standards; the lateral size shall be ¾ inch. Heads shall be rotor or impact type installed 4 feet above finished grade on 2-inch diameter wood tree stakes. Stakes shall be secure in the ground, embedded to a minimum depth of 24 inches. Heads and ¾ PVC risers shall be secured to stakes with constricting hose clamps; no funny pipe shall be used. Heads and nozzles shall provide matched precipitation rates for each zone.
- 3.6.8.3. Programming: Irrigation system shall be programmed to provide approximately ½ inch of water every three days during the dry season (approximately June 15th to October 15th). Irrigation amounts in zones located in the shade or on steep slopes may be reduced if approved by the project biologist or ecologist.
- 3.6.8.4. Water and Power Supply for System: The owner shall provide water and electricity for the system.
- 3.6.8.5. As-Built Drawing: A chart describing the location of all installed or open zones and corresponding controller numbers shall be provided by the contractor and placed inside the controller and given to the owner's representative.
- 3.6.8.6. Warranty: The irrigation system shall include a one-year warranty against defects in materials and workmanship from the date of final project acceptance. The warranty shall include system activation and winterization for the first year and immediate repair of the system if it is observed to be malfunctioning.

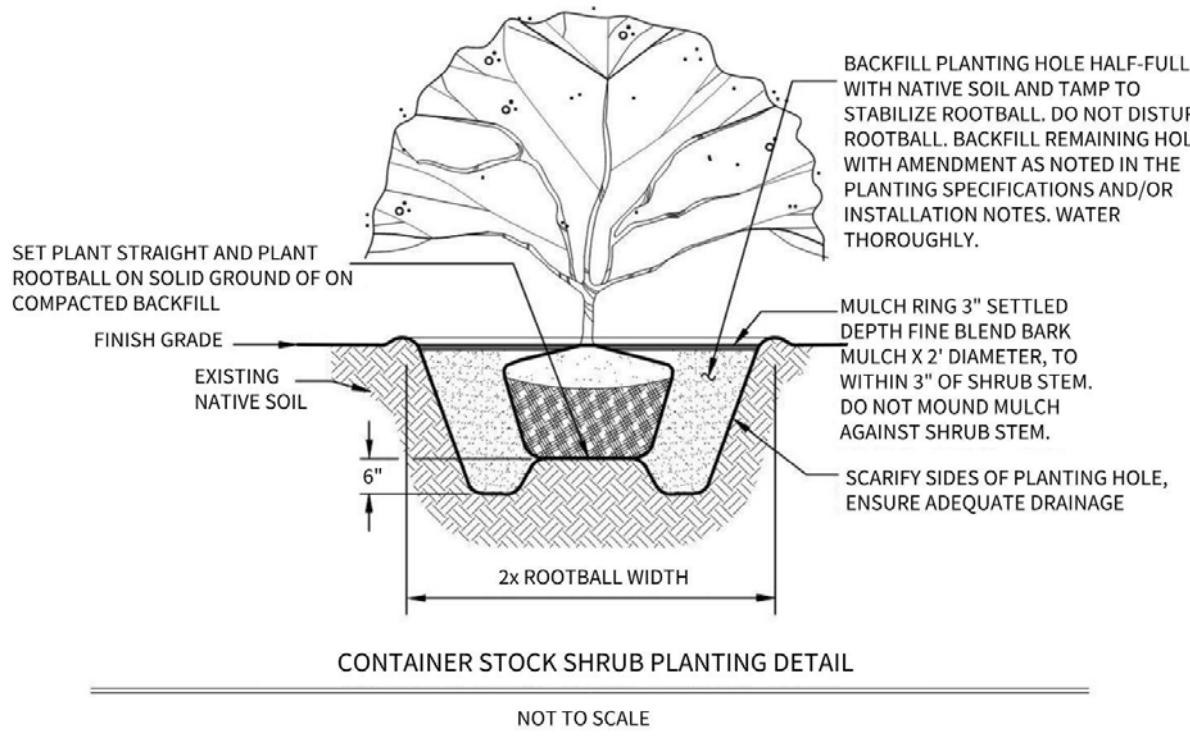
3.6.9. Restore Existing Natural or Landscaped Areas:

- 3.6.9.1. Existing natural or landscaped areas that are damaged during construction shall be restored to their original condition, unless improvements or modifications are specified for those areas.
- 3.6.9.2. Contractor shall exercise care to prevent injury to the trunk, roots, or branches of any trees or shrubs that are to remain. Any living woody plant that is damaged during construction shall be treated within 24 hours of occurrence, and the project biologist or ecologist shall be notified immediately of the incident. Damage treatment shall include evenly cutting broken branches, broken roots, and

- damaged tree bark. Injured plants shall be thoroughly watered and additional measures shall be taken, as appropriate, to aid in plant survival.
- 3.6.10. Final Inspection and Approval: The contractor shall notify the project biologist or ecologist in writing at least ten days prior to the requested date pf a project completion inspection. If items are to be corrected, a punch list shall be prepared by the project biologist or ecologist and submitted to the contractor for completion. After punch list items have been completed, the project biologist or ecologist shall review the project again for final acceptance of plan implementation. If punch list items require plant replacement, and the inspection occurs outside of a suitable planting season, plants shall be replaced during the next planting season.
- 3.6.11. As-Built Plan: Contractor is responsible for verifying plant locations and quantities on the plant schedule with those represented as symbols on the mitigation plans. Contractor shall keep a complete set of prints at the job site during construction for the purpose of recording in-the-field changes or modifications to the approved plans. This information shall be updated on a daily basis as necessary.

4. ONE YEAR CONTRACTOR WARRANTY

- NOTE:** These maintenance specifications apply to the one-year contractor warranty period only. If this mitigation project requires long-term performance monitoring, as determined by the governing jurisdiction, the maintenance specifications and guidelines associated with the performance monitoring standards are included in the mitigation report associated with this plan set, and may also be included on a separate plan sheet if required.
- 4.1. Review of Maintenance Requirements: Contractor shall review landscape maintenance recommendations with a qualified biologist or ecologist who is familiar with the stated goals and objectives of the project plan.
- 4.2. Maintenance Activities: Contractor shall maintain trees and shrubs for a period of one year from the date of final acceptance in order to maintain healthy growth and habitat diversity. Maintenance activities shall include, but are not limited to:
- 4.2.1. Replacing plants due to mortality.
- 4.2.2. Tightening and repairing tree stakes.
- 4.2.3. Resettling plants to proper grades and upright positions.
- 4.2.4. Correcting drainage problems as required.
- 4.3. Irrigation:
- 4.3.1. System Maintenance and Repair: The contractor shall be responsible for activating, winterizing, maintaining, and continually verifying the adequate operation of the temporary irrigation system for the first growing season following installation. System function (including electronic valve and controller function) shall be inspected for operation and full coverage of all planted areas during each maintenance visit. The system shall be repaired immediately if found to be damaged for malfunctioning. System shall be programmed and maintained to provide approximately ½ inch of water every three days.
- 4.4. Stake and Tie Removal: Contractor shall remove tree stakes and ties one year after installation, unless receiving written permission from the project biologist or ecologist to delay removal of stakes and ties.
- 4.5. Erosion and Drainage: Contractor shall correct erosion and drainage problems as required.
- 4.6. Irrigation System Removal: Contractor shall remove irrigation system approximately 2 years after planting, or as approved by the project biologist or ecologist.
- 4.7. Final Maintenance Inspection and Approval: Upon completion of the one-year maintenance period, an inspection by the project biologist or ecologist shall be conducted to confirm that the project area was properly maintained. If items are to be corrected, a punch list shall be prepared and submitted to the contractor for correction. Upon correction of the punch list items, the project shall be reviewed by the project biologist or ecologist for final closeout of plan implementation.



PLANTING SPECIFICATIONS & DETAILS

Song Restoration Project

7702/7550 196th Ave NE, Redmond

King County, Washington



PERFORMANCE MONITORING PLAN & BOND QUANTITY WORKSHEET

7.5 Mitigation Goals, Objectives, and Performance Standards

The primary goal of the mitigation is to compensate for impacts to buffers and restore the temporarily impacted buffers. To accomplish these goals, the proposed project will:

- Stream Channel Restoration323 linear feet
- Wetland Restoration20,507 square feet (0.47-acre)
- Buffer Restoration - Planting7,619 square feet (0.17-acre)
- Buffer Restoration – Hydroseed10,099 square feet (0.23-acre)

Mitigation actions will be evaluated through the following objectives and performance standards. See **Chapter 9** for a full description of the monitoring methods that will be used to evaluate the approved performance standards. Mitigation monitoring will be performed by a qualified biologist.

Objective A: Restore the understory in the designated wetlands and buffers.

Performance Standard A1: Percent survival of all installed species must be at least 90% at the end of Year 1, and at least 80% at the end of Years 2 and 3.

Performance Standard A2: A total of at least 5 species of desirable native plant species will be present in the wetland and buffer restoration areas. Species may be comprised of both planted and naturally colonized vegetation.

Performance Standard A3: In hydroseeded buffer areas, coverage will be at least 75% throughout the performance monitoring period.

Objective B: Restore 323 linear feet of stream banks.

Performance Standard B1: Stream banks will be monitored annually for bank stability to ensure no major erosion events have occurred beyond what would be considered normal for a stream of this size.

Objective C: Remove and control invasive plants to less than 10% cover in mitigation areas.

Performance Standard C1: After construction and throughout the s monitoring period, aerial coverage by non-native invasive plant species shall be maintained at 10% or less throughout the mitigation site. These standards apply to ditch, riparian, and upland buffer areas combined. These species include, but are not limited to: Scot’s broom, Himalayan and evergreen blackberry, purple loosestrife, hedge bindweed, and bittersweet nightshade.

Performance Standard C2: Per Corps requirements, after construction and throughout the monitoring period, non-native invasive knotweed species (such as Polygonum cuspidatum, P. polystachyum, P. sachalinense, and P. bohemicum) will be eradicated throughout the mitigation areas (including buffer areas) for a total cover of 0%.

9. Monitoring Plan

Performance monitoring of the mitigation areas will be conducted according to all applicable code/regulatory requirements and permit conditions. Monitoring will be conducted for a minimum of three years for the County. Monitoring will be conducted according to the schedule presented in **Table 4** below, and will be performed by a qualified biologist or ecologist. The performance monitoring period will be complete when the mitigation site meets all performance standards, at which point one can conclude that the goals and objectives for the mitigation site have been met.

Table 4. Projected Schedule for Performance Monitoring & Maintenance Events

Year	Date	Maintenance Review	Performance Monitoring	Report Due to Agencies
Year 0 As-built and Baseline Assessment	Fall	X	X	X
1	Spring	X	X	
	Fall	X	X	X
2	Spring	X	X	
	Fall	X	X	X
3	Spring	X		
	Fall	X	X	X*
① *Final approvals from the County may be requested to facilitate release of any financial guarantees assuming performance criteria are met.				

9.1 Monitoring Reports

Each monitoring report will adhere to the requirements of KCC 21A.24. The reports will include: 1) Project Overview, 2) Requirements, 3) Summary Data, 4) Maps and Plans, and 5) Conclusions. Monitoring reports will be submitted by the end of October to both King County and the USACE during the years in which monitoring is conducted.

9.2 Monitoring Methods

The following monitoring methods will be used to evaluate the mitigation site for compliance with the approved performance standards.

9.2.1 Vegetation Monitoring

Vegetation monitoring methods may include counts; photo-points; random sampling; sampling plots, quadrats, or transects; stem density; visual inspection; and/or other methods deemed appropriate by the permitting agencies. Vegetation monitoring components shall include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weed cover.

Permanent vegetation sampling plots, quadrats, and/or transects will be established at selected locations to adequately sample and represent all of the plant communities within the mitigation project areas. The number, exact size, and location of transects, sampling plots, and quadrats will be determined at the time of the baseline assessment and shown on a map for use in the baseline assessment report, as well as future annual monitoring reports.

Percent aerial cover of woody vegetation will be evaluated through the use of point-intercept sampling methodology. Using this methodology, a tape will be extended between two permanent markers at each end of an established transect. Trees and shrubs intercepted by the tape will be identified, and the intercept distance recorded. Percent cover by species will then be calculated by adding the intercept distances and expressing them as a total proportion of the tape length.

The established vegetation sampling locations will be monitored and compared to the baseline data during each performance monitoring event to aid in determining the success of plant establishment. Percent survival of shrubs and trees will be evaluated in a 10-foot-wide strip along each established transect. The species and location of all shrubs and trees within this area will be recorded at the time of the baseline assessment and will be evaluated during each monitoring event to determine percent survival.

9.2.2 Photo Documentation

Permanent photo stations will be established at a minimum of three (3) locations within the mitigation site from which panoramic photographs will be taken throughout the monitoring period. Photo-point locations will be shown on a map and submitted with the baseline assessment report and yearly performance monitoring reports. These photographs will document general appearance and relative changes within the plant community. Review of the photos over time will provide a semi-quantitative representation of success of the planting plan.

9.2.3 Wildlife


Direct and indirect observations of wildlife usage will be recorded during scheduled monitoring events. Direct observations entail actual sightings of the animal, while indirect observations include noticing tracks, scat, nests, or other indications of a species using the area.

9.2.4 Water Quality

Water quality will be visually observed during scheduled monitoring events for a qualitative assessment that is only intended to notice obvious discrepancies from expected conditions. No water quality sampling is proposed in conjunction with this parameter. Qualitative water quality assessment parameters include oil sheens (or other surface films); abnormal color or odor of water; stressed or dead vegetation or aquatic fauna, if present; or obvious turbidity.

9.2.5 Site Stability

General observations of slope stability in the mitigation site will be made during each scheduled monitoring event. Any observations of unexpected erosion will be recorded and discussed with appropriate Team members or Agency staff to determine any necessary corrective measures.



Department of Permitting and Environmental Review
35030 SE Douglas Str, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

Critical Areas Mitigation

Bond Quantity Worksheet

C24 09/09/2015
Is-wks-sensareaBQ.xls
Is-wks-sensareaBQ.pdf

Project Name: Song Violation

Date: 10-Jan-25

Prepared by: J. Marriott

Project Number: 0096

Project Description: Habitat Restoration

Location: King County

Applicant: Song

Phone:

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Container, 1 gallon, medium soil	\$11.50	Each	560.00		\$ 6,440.00
PLANTS: Seeding, by hand	\$0.50	SY	1125.00		\$ 562.50
PLANTS: Stakes (willow)	\$2.00	Each	250.00		\$ 500.00
TOTAL					\$ 7,502.50

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit		Cost
Irrigation - temporary	\$3,000.00	Acre	0.65	\$ 1,950.00
TOTAL				\$ 1,950.00

EROSION CONTROL

ITEMS	Unit Cost	Unit		Cost
Mulch, by hand, wood chips, 2" deep	\$3.25	SY	823.00	\$ 2,674.75
TOTAL				\$ 2,674.75

OTHER

(Construction Cost Subtotal)

\$ 12,127.25

ITEMS	Percentage of Construction Cost	Unit		Cost
Mobilization	10%	1		\$ 1,212.73
Contingency	30%	1		\$ 3,638.18
TOTAL				\$ 4,850.90

MAINTENANCE AND MONITORING

NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintenance ranges may be assessed anywhere from 5 to 10 years.

Maintenance, annual (by owner or consultant)					
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	\$ 450.00	EACH	6.00	(10 hrs @ \$45/hr)	\$ 2,700.00
Monitoring, annual (by owner or consultant)					
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	\$ 900.00	EACH	6.00	(10 hrs @ \$90/hr)	\$ 5,400.00
TOTAL					\$ 8,100.00


Total

\$25,078.15

REVISIONS

DATE/DESCRIPTION

2025-1-10: Response to County Comments



wet.land

(206) 309 - 8100

PERFORMANCE MONITORING PLAN & BOND QUANTITY WORKSHEET

Song Restoration Project

7702/7550 196th Ave NE, Redmond

King County, Washington

JOB NUMBER: #0096

DESIGNED BY: JMM

DRAWN BY: KAN

CHECKED BY: JMM

DATE: 09/20/2022

W3.0