CRITICAL AREAS STUDY & BUFFER MITIGATION PLAN FOR

Rasor – 76th Avenue S

Tax Parcel No. 214480-0145

Acre Project #23001
King County Critical Area Designation CADS 22-0287

Prepared by:

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SITE DESCRIPTION

On March 7, 2023 *Acre Environmental Consulting, LLC* visited the approximate 0.23-acre site (no current address) located south of 12914 76th Avenue S, within the urban growth area of King County, Washington. The site is further located as a portion of Section 13, Township 23N, Range 4E, W.M. The parcel number for this property is 214480-0145. This parcel is currently zoned R6. The purpose of this site visit was to locate regulated critical areas on and adjacent to the subject site. Surrounding land use is comprised of single-family residences to the north and south, with forest located east of the site.

Access to this undeveloped site is from the west via 76th Avenue S which is located along the western border of the property. From 76th Avenue S, this property has an east and south aspect. The site was recently cleared to remove large quantities of Himalayan blackberry (*Rubus armeniacus*, Fac) and English ivy (*Hedera helix*, Upl). Vegetation on the site is currently represented by scattered red alder (*Alnus rubra*, Fac), English laurel (*Prunus laurocerasus*, Upl), and red elderberry (*Sambucus racemosa*, FacU). A small Category III wetland and an associated Type N stream are located on the southeastern portion of the site and extend off-site to the south. Wetland A received 5 points for Habitat Functions on the DOE Wetland Rating Form for Western Washington: 2014 Update. In King County, Category III wetlands with low habitat scores (3 to 5 points) adjacent to high impact land use (all sites within the Urban Growth Area), receive 80-foot standard buffers measured from the delineated edge. In King County, Type N waters within the urban growth area typically receive 65-foot protective buffers measured horizontally in a landward direction from the delineated ordinary high water mark (OHWM). When two or more buffers overlap, the more restrictive is applied. The majority of this site is encumbered with critical areas, buffer, and property setbacks.

PROJECT DESCRIPTION

The applicant is proposing to construct a single-family home in the northwestern portion of the property; as far from the on-site wetland and stream as is possible.

Because Wetland A scores low (5 points) for habitat, the applicant is proposing to reduce the 80-foot high impact buffer to that required for moderate intensity impacts (60 feet) by applying the applicable measure described in KCC21A.24.325(C)(6)(a)(b). Proposed measures to reduce development related impacts include directing lights away from wetland, locating the driveway away from the edge of the buffer, maintaining the existing hydrologic regime by directing roof runoff to the wetland and stream, and providing critical area signs and planting vegetation to demarcate the edge of the buffer and discourage intrusion.

Even after reducing the buffer to 60 feet as required for moderate intensity impacts, approximately 86 percent of the site is encumbered with wetland, stream, and associated buffer (this does not include required property setbacks). As a result of the extent to which this lot is encumbered by critical areas as buffers, the strict application of Chapter 21A.24 would deny all reasonable use of the subject property. Because the subject critical areas and buffer are located outside of the shoreline jurisdiction and because this project will require modification of a critical areas development standard (wetland and stream buffer) established by Chapter 21A.24, the applicant is proposing to permit this house using KCC 21A.24.070(B) (Reasonable Use Exception).

Placement of this house along with the associated 15-foot building setback will permanently impact a total of 3,940 square feet of the on-site buffer. The proposed house is commensurate with existing development in the area as the adjacent properties are developed with similarly sized single-family residences.

As mitigation for the proposed permanent buffer impacts, the applicant is offering to enhance the on-site portion of Wetland A (960 square feet) and 2,980 square feet of adjacent buffer. This will result in a total of 3,940 square feet of wetland and buffer enhancement which represents a wetland and buffer enhancement to permanent buffer impact ratio of 1:1 as required by KCC 21A.24.340(B)(1). Wetland and buffer enhancement will consist of removing invasive species (mostly already done) and planting native trees and shrubs. The proposed enhancement is expected to increase the level of functions and values provided by this wetland and buffer over that which currently exists and improve the function of and protection to the subject wetland and stream. Critical areas signs will be installed along the perimeter of the reduced buffer.

This project has been designed to avoid impacts to critical areas on the subject site to the greatest extent possible. As designed, the applicant is proposing a moderate size home located as far from the on-site wetland and stream as is possible. Impacts have been limited to those necessary to accommodate the house and the required building setback. As compensation for the permanent, unavoidable buffer impacts, the applicant is proposing to provide wetland and buffer enhancement on the subject site at a 1:1 ratio of buffer impact to wetland and buffer enhancement, as required by KCC 21A.24.340(B)(1). Following successful installation of the proposed plants, the mitigation areas will be monitored to ensure that they meet the stated performance standards. As a result, this project is in compliance with KCC 21A.24.125 (Avoiding Impacts to Critical Areas).

COMPLIANCE WITH KCC 21A.24.070(B) (REASONABLE USE)

Per KCC 21A.24.070(B), the director may approve alterations to critical areas, critical area buffers and critical area setbacks, except for flood hazard areas, if the application of this chapter would deny all reasonable use of the property as follow:

If the critical area, critical area buffer or critical area setback is outside of the shoreline jurisdiction, the applicant may apply for a reasonable use exception under this subsection without first having applied for an alteration exception under this section if the requested reasonable use exception includes relief from development standards for which an alteration exception cannot be granted under this section. The director shall determine that all of the following criteria are met:

Due to the extent and location of the on-site critical areas, if the required buffer were applied, no portion of this lot would be usable and all use of the site would be denied.

a) *there is no other reasonable use with less adverse impact on the critical area;*

   Placement of one single-family residence on this 0.23-acre property is the minimum use that would result in a reasonable use of the subject site. There is no other use that strikes a better balance between allowing the applicant a use of their property and protecting the on-site critical areas.

b) *development proposal does not pose an unreasonable threat to the public health, safety or welfare on or off the development proposal site and is consistent with the general purposes of this chapter and the public interest;*

   The construction of one single-family home on this site meets all other requirements of this chapter, and does not pose an unreasonable threat to the public health, safety or welfare on or off the development proposal site and is consistent with the general purposes of this chapter and the public interest. Construction of one house on this site is commensurate with the existing, allowed land use in the area. Furthermore, by constructing a house on this site in compliance with all applicable provisions of the King County Code, as well as enhancing a total of 3,940 square feet of the on-site wetland and buffer, the proposed project is expected to improve the functions of the on-site critical areas.

c) *any authorized alteration to the critical area or critical area buffer is the minimum necessary to allow for reasonable use of the property; and*

The applicant is proposing to build a single-family residence in the northwestern portion of the property as far from on-site critical areas as possible. Impacts have been limited to the house and the required 15-foot building setback. Stormwater from the proposed driveway will sheet flow and infiltrate to the adjacent native soils. Stormwater from the house will be collected in gutters and dispersed via splash blocks to the adjacent, native soils. These measures will ensure that the pre-development hydrologic regime is maintained. The placement of one single-family residence on the existing lot is in compliance with the underlying zoning and is the lowest density possible. Due to the constraints unique to this lot including the location of the on-site critical areas, there is no feasible on-site alternative that would allow a reasonable use with less adverse impacts to the on-site wetland buffer.

d) *for dwelling units, no more than five thousand square feet or ten percent of the site, whichever is greater, may be disturbed by structures, building setbacks or other land alteration, including grading, utility installations and landscaping but not including the area used for a driveway or for an on-site sewage disposal system; and*

Placement of the proposed house and associated 15-foot building setback will impact a total of 3,940 square feet of degraded buffer on the site. This is less than the allowed 5,000 square feet.

METHODOLOGIES OF CRITICAL AREAS DETERMINATION

On March 7, 2023 *Acre Environmental Consulting, LLC* conducted a site visit to locate wetlands and streams on and adjacent to the subject site. The methods used for delineating, classifying, and rating the critical areas in the project area are consistent with current Federal, State, and King County requirements. At the time of our March 7, 2023 site investigation, the weather was sunny with a temperature of 46 degrees Fahrenheit.

The site was assessed for the presence of wetlands using the routine methodologies described in the U.S. Army Corps of Engineers Wetland Delineation Manual produced in 1987 and the U.S. Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region produced in May 2010 (hereinafter referred to as "the Corps Regional Supplement"). The Corps Regional Supplement is designed for concurrent use with the 1987 Corps Wetland Delineation Manual and all subsequent versions. The 2010 Regional Supplement provides technical guidance and procedures for identifying and delineating wetlands that may be subject to regulatory jurisdiction under Section 404 of the Clean

Water Act. Where differences in the two documents occur, the Corps Regional Supplement takes precedence over the Corps Manual for applications in the Western Mountains, Valleys, and Coast Region.

According to the federal methodologies described above, identification of wetlands is based on a three-factor approach involving indicators of hydrophytic vegetation, hydric soils, and the presence or evidence of persistent hydrology. Except where noted in the manuals, the three-factor approach discussed above requires positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology, to make a determination that an area is a regulated wetland. Using the aforementioned manuals, the procedure for making a wetland determination include the following:

1.) Examination of the site for hydrophytic vegetation (species present/percent cover);
2.) Examination for the presence of hydric soils in areas where hydrophytic vegetation is present; and
3.) The final step is determining if wetland hydrology exists in the area examined under the first two steps.

Per industry standards, *Acre Environmental Consulting, LLC* examined the entire project site. Per current King County requirements, *Acre Environmental Consulting, LLC* also assessed adjacent properties within 300 feet of the proposed project limits, to the maximum extent possible without entering adjacent properties. While a detailed assessment of Critical Areas on adjacent properties was not possible due to the lack of legal access, *Acre Environmental Consulting, LLC* conducted a review of all available information to assess the presence of off-site Critical Areas within 300 feet of the subject site. This review is required by King County to determine if any regulated Critical Areas exist off-site which would cause associated protective buffers to extend onto the property and affect the development proposal.

In addition to on-site field reviews, *Acre Environmental Consulting, LLC* examined aerial photographs and topographical data (elevation contours) on King County's interactive mapping system (iMAP). Soil survey maps produced by the Natural Resources Conservation Service (NRCS), National Wetlands Inventory (NWI) maps produced by the U.S. Fish and Wildlife Service (USFWS), SalmonScape fish distribution maps produced by the Washington Department of Fish and Wildlife (WDFW), and StreamNet fish distribution maps produced by Pacific States Marine Fisheries Commission were also evaluated by *Acre Environmental Consulting, LLC* as part of this project consultation.

BOUNDARY DETERMINATION FINDINGS

Wetlands were classified according to the U.S. Fish and Wildlife Service (USFWS) Cowardin system Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979) and rated, by categories, according to the Washington State Department of Ecology Wetland Rating Form for Western Washington: 2014 Update, as required by the King County Code, Chapter 21A.24 (Critical Areas). Buffers are also determined by this chapter.

Wetland A

HGM Class: Slope
Cowardin: Palustrine, Scrub-shrub wetland, Broad-leaved Deciduous, Seasonally Flooded / Saturated (PSS1E)
Ecology Rating: Category III
King County Rating: Category III, 80' Buffer

Wetland A is a small Category III wetland that is located on the southeastern portion of the site and extends off-site to the south. This wetland is associated with Stream A which flows south through a series of concrete drainage pipes along the eastern border of the site. This hydrogeomorphic (HGM) class slope wetland received a total score for functions of 16 points (6 points for Water Quality Functions, 5 points for Hydrologic Functions, and 5 points for Habitat Functions) on the DOE Wetland Rating Form for Western Washington: 2014 Update. Wetlands with scores between 16 and 19 points for all functions are classified as Category III wetlands per KCC 21A.24.318. In King County, Category III wetlands with low habitat scores (3 to 5 points) adjacent to high impact land use (all sites within the Urban Growth Area), receive 80-foot standard buffers measured from the delineated edge.

Vegetation in this wetland is currently comprised of creeping buttercup (*Ranunculus repens,* Fac). Based on conversations with the land owner and aerial photographs, it appears that prior to the recent clearing, vegetation in this wetland was dominated by Himalayan blackberry (*Rubus armeniacus*, Fac). Soils in this wetland have a Munsell color of very dark grayish brown (10YR 3/2) with redoximorphic features of dark yellowish brown (10YR 4/4), and and a texture of sandy loam from 0 to 18 inches below the surface. Soils in this wetland were saturated at 4-inches below the surface during our March 7, 2023 site investigation.

Stream A - Type N

Cowardin: Riverine, Intermittent, Streambed, Concrete (R4SB)
King County Rating: Type N stream, 65' Buffer

Stream A flows south along the eastern border of the subject site through an open channel comprised of half sections of 12-inch diameter concrete culvert, and drains off-site to the south. The concrete channel terminates near the southeastern corner of the subject site. From this point the channel continues south as a rock lined channel. This drainage feature is not depicted on any available mapping resource and does not support fish use. In King County, Type N waters within the urban growth area typically receive 65-foot protective buffers measured horizontally in a landward direction from the delineated ordinary high water mark (OHWM).

Non – Wetland

The site was recently cleared to remove large quantities of Himalayan blackberry (*Rubus armeniacus*, Fac) and English ivy (*Hedera helix*, Upl). Typical vegetation in the non-wetland portions of the site is currently represented by scattered red alder (*Alnus rubra*, Fac), English laurel (*Prunus laurocerasus*, Upl), and red elderberry (*Sambucus racemosa*, FacU). Typical soils in the non-wetland portions of the site have a Munsell color of dark brown (10YR 3/3), with a texture of gravelly sandy loam from 0 to 18 inches below the surface. Soils were moist during our March 7, 2023 site investigation.

NATURAL RESOURCE CONSERVATION SERVICE SOILS DESCRIPTION:

The Natural Resources Conservation Service (NRCS) mapped the subject property as being underlain by Alderwood-Everett-Urban land complex, 12 to 35 percent slopes.

BUILDING SETBACKS

Pursuant to King County Code (KCC) section 21A.24.200: "*Unless otherwise provided, an applicant shall set buildings and other structures back a distance of fifteen feet from the edges of all critical area buffers or from the edges of all critical areas, if no buffers are required. When the site disturbance is within a critical area buffer, the building setback line shall be measured from the building footprint to the edge of the approved site disturbance. The following are allowed in the building setback area:*

A. *Landscaping;*
B. *Uncovered Decks;*
C. *Building overhangs if the overhangs do not extend more than eighteen inches into the setback area;*
D. *Impervious ground surfaces, such as driveways and patios, but the improvements are required to meet and special drainage provisions specified in public rules adopted for the various critical areas;*
E. *Utility service connections as long as the excavation for installation avoids impacts to the buffer; and*
F. *Minor encroachments if adequate protection of the buffer will be maintained."*

EXISTING FUNCTIONS AND VALUES

The methodologies for this functions and values analysis are based on professional opinion developed through past field analyses and interpretations. This assessment pertains specifically to the subject wetland and associated buffer, but is typical for assessments of similar systems throughout western Washington. The three main functions provided by wetlands include water quality, stormwater / hydrologic control, and wildlife habitat. Buffers serve to protect and support the functions of wetlands and streams as well as provide their own wildlife habitat, water quality, and erosion control functions.

Wetland A and its associated buffer provide a low level of functions and values. This hydrogeomorphic class slope wetland has a limited ability to retain stormwater. Due to the sloped nature of this system, rather than being stored in this wetland, water is released relatively quickly to downstream systems. As a result, this wetland provides limited stormwater storage functions.

Wetlands in western Washington often contain important wildlife habitat resources such as food, water, thermal cover, and hiding cover in close proximity. The subject wetland and associated buffers provide protected habitat, which becomes increasingly important as areas become further populated with humans and habitat areas become fragmented. This wetland provides a

low level of habitat for wildlife species as evidenced by Habitat Function scores on the Wetland Rating Form for Western Washington: 2014 Update of 5. During our field investigation, Acre Environmental Consulting observed the following species of wildlife on the site: American robin (*Turdus migratorius*).

The vegetation within the vegetated portion of Wetland A and its associated buffer serves to intercept rain fall before it strikes the soil, thereby reducing erosion and improving water quality. The presence of adsorbent soils and the biological action of the wetland vegetation, serve to remove sediment and pollutants from the water. These materials are bound in the soil and plant material providing increased water quality to downstream systems.

The subject stream provides functions to the surrounding environment such as hydrological transport, transport of solids (suspended and dissolved), and important fish and wildlife habitat features, among other functions. The portions of the site adjacent to the stream (vegetated wetland and associated buffers, etc.) are increasingly important to manage appropriately as these areas aid in water quality and hydrologic control, resulting in cleaner water entering downstream systems.

WETLAND & BUFFER ENHANCEMENT

As mitigation for the 3,940 square feet of buffer impacts resultant from construction of the proposed house, the applicant is offering to enhance the on-site portion of Wetland A (960 square feet) and 2,980 square feet of adjacent buffer. The buffer enhancement will occur in two distinct areas, Enhancement Area A (1,554 square feet) and Enhancement Area B (1,426 square feet), located north and south of Wetland A. This will result in a total of 3,940 square feet of wetland and buffer enhancement which represents a wetland and buffer enhancement to permanent buffer impact ratio of 1:1 as required by KCC 21A.24.340(B)(1). Wetland and buffer enhancement will consist of removing invasive species (mostly already done) and planting native trees and shrubs. Plant quantities and spacing were determined using the King County Critical Areas Mitigation Guidelines. All proposed species are native to the Puget Sound region and have been selected for their benefits to wildlife and their proven success on past mitigation projects. Due to the low likelihood of survival, no herbs have been proposed in the wetland enhancement. The enhancement areas are proposed to be planted with the following native trees and shrubs.

Buffer Enhancement Area A (1,554 square feet)

Common Name	Latin Name	Size	Spacing	Quantity
Shore pine	*Pinus contorta*	2 gallon	9'	9
Western red cedar	*Thuja plicata*	2 gallon	9'	9
Osoberry	*Oemleria cerasiformis*	1 gallon	6'	9
Baldhip rose	*Rosa gymnocarpa*	1 gallon	6'	9
Snowberry	*Symphoricarpos albus*	1 gallon	6'	9
Oregon grape	*Gaultheria shallon*	1 gallon	6'	9
Sword fern	*Polystichum munitum*	1 gallon	6'	9

Buffer Enhancement Area B (1,426 square feet)

Common Name	Latin Name	Size	Spacing	Quantity
Shore pine	*Pinus contorta*	2 gallon	9'	9
Western red cedar	*Thuja plicata*	2 gallon	9'	9
Osoberry	*Oemleria cerasiformis*	1 gallon	6'	8
Baldhip rose	*Rosa gymnocarpa*	1 gallon	6'	8
Snowberry	*Symphoricarpos albus*	1 gallon	6'	8
Oregon grape	*Gaultheria shallon*	1 gallon	6'	8
Sword fern	*Polystichum munitum*	1 gallon	6'	8

Wetland Enhancement (960 square feet)

Common Name	Latin Name	Size	Spacing	Quantity
Western red cedar	*Thuja plicata*	2 gallon	9'	11
Nootka rose	*Rosa nutkana*	1 gallon	6'	6
Sitka willow	*Salix sitchensis*	1 gallon	6'	20

GRASS SEEDING

Any disturbed soil in environmentally critical areas or buffers shall be seeded to the recommended grass seed mixtures below, or similar approved mixtures.

Common Name	Latin Name	lbs/1,000 s.f.
Tall fescue	*Festuca arundinacea*	0.4
Colonial bentgrass	*Agrostis tenuis*	0.4
Annual ryegrass	*Lolium multiflorum*	0.5
Red clover	*Trifolium repens*	0.2

PROJECT NOTES

Pre-Construction Meeting
There will be a pre-construction meeting on this site between the applicant, the consulting biologist, landscaper(s) and a King County representative. The objective will be to verify the location of the mitigation areas and to discuss project sequencing.

Inspections
A qualified biologist shall be contracted to periodically inspect the mitigation measures described in this plan. Minor adjustments to the original designs may be necessary prior to and during construction due to unusual or hidden site conditions. A King County representative and/or the consulting biologist will make these decisions during construction.

Construction Timing and Sequencing
All mitigation planting shall take place in early spring or late fall.

PLANTING NOTES

Wetland and buffer mitigation projects are typically more complex to install than can be described in plans. Careful monitoring by a qualified biologist for all portions of this project is strongly recommended. Timing and sequencing is important to the success of this type of project.

Plant in the early spring or late fall. Order plants from a reputable nursery. Care and handling of plant materials is extremely important to the overall success of the project. All plant materials recommended in this plan should be available from local and regional sources, depending on seasonal demand. Some limited species substitution may be allowed, only with the agreement of the consulting wetland professional or King County DDES Environmental Scientist.

The plants shall be arranged with the appropriate numbers, sizes, species, and distribution to achieve the required vegetation coverage. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area.

Colored surveyors ribbon, or other approved marking device shall be placed next to each planted tree and shrub to assist in locating the plants while removing the competing non-native vegetation and to assist in monitoring the plantings.

Wood chips or other suitable material shall be used for mulching in the planting areas. Any existing vegetation is to be removed from a two-foot diameter area at each planting site. Mulch is to be placed in this two-foot diameter area at a depth of three to four inches. A four-inch diameter ring around the base of each plant shall be kept free of mulch.

Water should be provided during the dry season (July 1 through October 15) for the first two years after installation to insure plant survival and establishment. Water should be applied at a rate of 1 inch of water twice per week for year one and 1 inch per week during year two.

Inspections. A biological professional shall be present on site to inspect the plants prior to planting. Minor adjustments to the original design may be required prior to and during construction.

CONTINGENCY PLAN

Should any monitoring report reveal the mitigation has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, the applicant must submit a Contingency Plan. This plan may range in complexity from a list of plants substituted, to cross-sections of proposed engineered structures. Once approved, it may be installed, and will replace the approved mitigation plan. If the failure is substantial, DDES will likely extend the monitoring period for that mitigation.

MAINTENANCE

The mitigation areas will require periodic maintenance to replace vegetation mortality as necessary. Maintenance shall be required in accordance with King County Critical Areas Mitigation Guidelines and approved plans. Maintenance may include, but not be limited to, removal of competing grasses, irrigation, fertilization (if necessary), replacement of plant mortality, and the replacement of mulch for each maintenance period. During Year One, every failed planting must be replaced. Other maintenance must be done twice every year for the length of the monitoring period. All work is to be performed by hand wherever possible, and with the lightest possible equipment where such use is imperative.

Duration and Extent: In order to achieve performance standards, the Permittee shall have the mitigation area maintained for the duration of the monitoring period (three years).

Standards for Replacement Plants: Replacement plants shall meet the same standards for size and type as those specified for the original installation unless otherwise directed by the Landscape Designer, Wetland Biologist, and/or King County DDES Environmental Scientist.

Herbicides / Pesticides: No herbicides or pesticides whatsoever shall be used in the mitigation/restoration area, sensitive areas, or their buffers.

Weeding: Trees and shrubs must be weeded to the dripline, and mulch maintained at 3" depth. Weed herbaceous plantings as necessary (flowers, ferns, etc.).

Removal: All litter, dumping, and non-native vegetation (e.g., Himalayan blackberry, reed canary grass, evergreen blackberry, Scotch broom, English ivy, morning glory, Japanese knotweed, etc.) must be removed and properly disposed of off-site.

Structures: Damaged or missing fences, posts, signs, habitat or hydrology structures must be repaired or replaced.

General: The Permittee shall include in general maintenance activities the replacement of any vandalized or damaged signs, habitat features, fences, or other structural components of this mitigation site.

REQUIRED FINANCIAL GUARANTEE

In an effort to determine the estimated cost of the installed mitigation project and future monitoring / maintenance costs associated with the project over a three-year period, the King County Critical Areas Bond Quantity Worksheet was completed. Please view the project-specific Bond Quantity Worksheet completed by *Acre Environmental Consulting, LLC* which is included with this mitigation plan.

PROJECT MONITORING

Requirements for monitoring project:

1. Initial compliance report within 30 days of installation.
2. Yearly site inspection (once per year in the fall) for three years.
3. Annual reports including final report (one report submitted by October 31st of each monitored year).

Purpose for Monitoring: The purpose for monitoring this mitigation project shall be to evaluate its success. Success will be determined if monitoring shows that at the end of three years, the success described in the Project Success & Compliance section of this plan are being met. The property owner shall grant access to the mitigation area for inspection and maintenance to the contracted landscape or wetland specialist and the King County biologist during the period of the bond or until the project is evaluated as successful.

Monitoring: Monitoring shall be conducted annually for three years in accordance with the approved mitigation plan. Up to 20 percent of any stratum can be comprised of desirable native volunteers when measuring cover. No more than 10 percent cover of non-native or other invasive species is permissible in any monitored year. Bond holders are encouraged to maintain mitigation sites within these standards throughout the monitoring period, to avoid corrective measures.

Vegetation Monitoring: Sampling points will be established for vegetation monitoring, and photo points established from which photos will be taken throughout the monitoring period. Vegetation sampling will consist of a visual assessment. Monitoring of vegetation shall occur in the fall of each monitored year (September to October).

Photo points: No less than four permanent photo points per project or per acre, whichever is greater will be established within the mitigation areas. Photographs will be taken from these points to visually record condition of the restoration area. Photos shall be taken during the fall monitoring visit.

Report Contents: Monitoring reports shall be submitted by October 31 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

a. Site plan and location map;
b. Historic description of project, including date of installation, current year of monitoring, restatement of mitigation / restoration goals, and performance standards;
c. Plant survival, vigor, and areal coverage for every plant community (transect data), and explanation of monitoring methodology in the context of assessing performance standards;
d. Site hydrology, including extent of inundation, saturation, depth to groundwater, function of any hydrologic structures, inputs, outlets, etc.;
e. Slope condition, site stability, any structures or special features;
f. Buffer conditions, e.g., surrounding land use, use by humans, and/or wild and domestic creatures;
g. Observed wildlife, including amphibian, avian, and others;
h. Soils, including texture, Munsell color, rooting, and oxidized rhizospheres;
i. Color photographs taken from permanent photo-points as shown on Monitoring Plan.

Mitigation Correction: Any deficiency discovered during any monitoring or inspection visit must be corrected within 60 days.

PROJECT SUCCESS AND COMPLIANCE

Criteria for Success: Upon completion of the proposed mitigation project, an inspection by a wetland professional will be made to determine plan compliance. A compliance report (as-built) will be supplied to King County within 30 days after the completion of planting. A qualified biologist will do condition monitoring of the plantings in the fall, annually and will make recommendations for maintenance to the mitigation areas following each visit. A written report describing the monitoring results will be submitted to King County after each site inspection for each monitored year. Final inspection will occur three years after completion of this project, or when the stated performance standards are met.

Goal: The goal of this mitigation project is to off-set buffer impacts from the proposed house by providing wetland and buffer enhancement which will provide wildlife habitat and increase protection to the wetland.

PERFORMANCE STANDARDS

Performance standards have been established to assess the success of the mitigation project in achieving the stated goals. Performance standards are as follows:

Performance Standard 1: There shall be 100 percent survival of all the plantings after Year 1 or the installation contractor shall replace the material. There shall be 80 percent survival of all the plantings after Year 3. The species mix should resemble that proposed in the planting plans, but strict adherence to obtaining all of the species shall not be a criterion for success.

Performance Standard 2: There shall be greater than 60 percent cover of woody species (shrub and tree cover) in the buffer after the third year post-installation. Naturally occurring, native plants shall be included in the calculation of vegetation coverage.

Performance Standard 3: There shall be no more than 10 percent cover of weedy/invasive species in the mitigation areas at any time throughout the monitoring period.

If the project meets all of the criteria for success at the end of the three-year monitoring period, no further action will be required and the financial guarantee will be returned to the applicant in full. If the definition of success is not met for any reason at the end of the monitoring period, the maintenance and monitoring period will be extended for one year at a time until the site meets the stated performance standards. If the definitions of success and the accompanying performance standards are met in less than three years, the monitoring may be terminated and the bond released at that point. This mitigation plan and the accompanying maintenance and

monitoring will not be considered fully complete until written confirmation is received from King County.

POST-PROJECT FUNCTIONS AND VALUES

Due to the existing low level of functions and values provided by the critical areas and buffer on the subject site and the proposed wetland and buffer enhancement, no significant adverse environmental impacts are expected to occur as a result of this project, assuming the compensatory mitigation is implemented as stated in this plan. Although impacts within the on-site buffer are necessary to accommodate the proposed development, no net loss of ecological functions is expected to occur. The buffer on this highly urbanized site that is proposed to be impacted has been historically disturbed and was recently cleared to remove invasive Himalayan blackberry. As a result, this area provides a relatively low level of functions and values, and little protection to the subject critical areas. The proposed wetland and buffer enhancement will increase vegetative species diversity and vegetative structure. This will increase wildlife habitat as well as water quality and stormwater storage functions, and is expected to generally increase the overall level of functions and values provided by the subject site.

TERMS & CONDITIONS

The environmental consulting work conducted, including this Critical Areas Study (collectively the "Services") is supplied to Rachael and Sean Rasor (the "Client") as a means of determining whether any wetlands, streams, and/or fish and wildlife habitats regulated by the King County Critical Areas Regulations exist on, or adjacent to the site. The Services are provided in accordance with the following General Terms and Conditions (the "Terms").

In accepting the Services provided by *Acre Environmental Consulting*, LLC ("Acre"), the Client voluntarily enters into and agrees to the binding effect of the following Terms. This report is intended to provide information deemed relevant in the Client's attempt to comply with the regulations currently in effect. The work for this report has conformed to the standard of care employed by professional ecologists in the Pacific Northwest. All other representations or warranties, whether express or implied, are hereby disclaimed concerning the work or this report. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions. If such conditions exist or arise, the information contained in this report may be rendered inaccurate or incomplete based upon those conditions. Acre acts solely as an independent contractor in providing the Services to the Client, and nothing in the provision of such Services shall be construed as creating an agency, partnership, joint venture or other similar legal relationship between Acre and the Client.

The laws applicable to Critical Areas are subject to varying interpretations. While Acre observed professional industry standards when completing this review, the information included in this report does not guarantee approval by any federal, state, and/or local permitting agencies. Therefore, all work on this property should not commence until permits have been obtained from all applicable agencies. If there are any questions regarding this report, please contact me at 206.450.7746.

Acre Environmental Consulting, LLC.

Louis Emenhiser
Principal Wetland Ecologist
Professional Wetland Scientist #1680

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

Project/Site: 76th Avenue S City/County: King County Sampling Date: 03.07.2023

Applicant/Owner: Rachael & Sean Rasor State: WA Sampling Point: DP1

Investigator(s): Louis Emenhiser Section, Township, Range: S13, T23N, R4E, W.M.

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex Slope (%): 18 %

Subregion (LRR): LRR-A Lat: 47.486640 Long: -122.237864 Datum:

Soil Map Unit Name: Alderwood-Everett-Urban land complex, 12 to 35 percent slopes. NWI classification:

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

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	No ✓
Hydric Soil Present?	Yes	No ✓
Wetland Hydrology Present?	Yes	No ✓
Is the Sampled Area within a Wetland?	**Yes**	**No ✓**

Remarks:

Typical, non wetland, in the center of the site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 meters)	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnis rubra	30	Y	Fac
2.			
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 meters)			
1. Prunus laurocerasus	20	Y	Upl
2. Sambucus racemosa	15	Y	FacU
3.			
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 1 meter)			
1. Ranunculus repens	5	Y	Fac
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 90

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	15	x 4 =	60
UPL species	20	x 5 =	100
Column Totals:	70 (A)		265 (B)

Prevalence Index = B/A = 3.78

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is Ã3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No ✓

Remarks:

SOIL

Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/3	100					grsal	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) (**except MLRA 1**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Raised Ant Mounds (D6) (**LRR A**)
- Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

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

Project/Site: 76th Avenue S City/County: King County Sampling Date: 03.07.2023

Applicant/Owner: Rachael & Sean Rasor State: WA Sampling Point: DP2

Investigator(s): Louis Emenhiser Section, Township, Range: S13, T23N, R4E, W.M.

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 16 %

Subregion (LRR): LRR-A Lat: 47.486625 Long: -122.237983 Datum: _____

Soil Map Unit Name: Alderwood-Everett-Urban land complex, 12 to 35 percent slopes. NWI classification: _____

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

Are Vegetation _ __, Soil _ __, or Hydrology _ __ significantly disturbed? Are "Normal Circumstances" present? Yes _ ✓ _ No __ _

Are Vegetation _____, Soil _ __, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No _ __	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _ ✓ __ No _ __	
Wetland Hydrology Present?	Yes _ ✓ __ No _____	

Remarks:

Wetland A.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 meters)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10 meters)			
1.			
2.			
3.			
4.			
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 1 meter)			
1. Ranunculus repens	5	Y	Fac
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 95

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

Prevalence Index is Ã3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Wetland Non-Vascular Plants[1]

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	95	10YR4/4	5	c	m	sal	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) (**except MLRA 1**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Raised Ant Mounds (D6) (**LRR A**)
- Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ____ Depth (inches): 6

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 4

Wetland Hydrology Present? Yes ✓ **No** _____

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

Remarks:

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): 76th Ave S - Wet A Date of site visit: 3.07.23

Rated by L. Emenhiser Trained by Ecology? X Yes ___ No Date of training 9.30.14

HGM Class used for rating Slope Wetland has multiple HGM classes? ___ Y X N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map King County Map, Google Earth

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics ___)

1. Category of wetland based on FUNCTIONS

___ Category I – Total score = 23 - 27

___ Category II – Total score = 20 - 22

X Category III – Total score = 16 - 19

___ Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H M (L)	H M (L)	H M (L)	
Landscape Potential	H (M) L	H (M) L	H M (L)	
Value	(H) M L	H (M) L	(H) M L	TOTAL
Score Based on Ratings	6	5	5	16

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	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	X

Wetland name or number A

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 *(can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	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 *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	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 *(can be added to another figure)*	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	1
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	1
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	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	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	3

Wetland name or number A

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

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.*

Wetland name or number A

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)* Slope is 1% or less — points = 3 Slope is > 1%-2% — points = 2 Slope is > 2%-5% — points = 1 Slope is greater than 5% — points = 0	0
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area — points = 6 Dense, uncut, herbaceous plants > ½ of area — points = 3 Dense, woody, plants > ½ of area — points = 2 Dense, uncut, herbaceous plants > ½ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	2
Total for S 1 — Add the points in the boxes above	2

Rating of Site Potential If score is: ___12 = H ___6-11 = M X 0-5 = L — *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 — Add the points in the boxes above	1

Rating of Landscape Potential If score is: X 1-2 = M ___0 = L — *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list.* Yes = 1 No = 0	1
S 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 basin in which unit is found.* Yes = 2 No = 0	0
Total for S 3 — Add the points in the boxes above	2

Rating of Value If score is: X 2-4 = H ___1 = M ___0 = L — *Record the rating on the first page*

Based on King County topography, the average slope in this wetland is 16%.

Wetland name or number A

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, rigid plants cover > 90% of the area of the wetland — points = 1 All other conditions — points = 0	0

Rating of Site Potential If score is: ___1 = M X 0 = L — *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	1

Rating of Landscape Potential If score is: X 1 = M ___0 = L — *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site 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	1
S 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 S 6 — Add the points in the boxes above	1

Rating of Value If score is: ___2-4 = H ___1 = M ___0 = L — *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

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.*

___	Aquatic bed	4 structures or more: points = 4
___	Emergent	3 structures: points = 2
X	Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
___	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

0

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*).

___	Permanently flooded or inundated	4 or more types present: points = 3
___	Seasonally flooded or inundated	3 types present: points = 2
___	Occasionally flooded or inundated	2 types present: points = 1
X	Saturated only	1 type present: points = 0
___	Permanently flowing stream or river in, or adjacent to, the wetland	
X	Seasonally flowing stream in, or adjacent to, the wetland	
___	**Lake Fringe wetland**	**2 points**
___	**Freshwater tidal wetland**	**2 points**

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

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
5 - 19 species	points = 1
< 5 species	points = 0

1

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

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

0

Wetland name or number A

H 1.5. Special habitat features:

Check the habitat features that are present in the wetland. *The number of checks is the number of points.*

X	Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).
X	Standing snags (dbh > 4 in) within the wetland
X	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)
___	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 (*cut shrubs or trees that have not yet weathered where wood is exposed*)
___	At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*)
___	Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)

Total for H 1 — Add the points in the boxes above: 3

Rating of Site Potential If score is: ___ 15-18 = H ___ 7-14 = M X 0-6 = L — *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*).

Calculate: % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 5 = 0.5 %

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.

Calculate: % undisturbed habitat 2 + [(% moderate and low intensity land uses)/2] 25 = 5.5 %

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

0

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

-2

Total for H 2 — Add the points in the boxes above: -2

Rating of Landscape Potential If score is: ___ 4-5 = H ___ 1-3 = M X < 1 = L — *Record the rating on the first page*

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 only the highest score that applies to the wetland being rated.*

Site meets ANY of the following criteria:	points = 2
— It has 3 or more priority habitats within 100 m (see next page)	
— It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)	
— It is mapped as a location for an individual WDFW priority species	
— It is a Wetland of High Conservation Value as determined by the Department of Natural Resources	
— 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: X 2 = H ___ 1 = M ___ 0 = L — *Record the rating on the first page*

Wetland name or number A

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 multi-layered 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.

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes – Go to **SC 1.1** **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? **Yes = Category I** No - Go to **SC 1.2**	Cat. I
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — 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 *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — 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**	Cat. I Cat. II
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? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? **Yes = Category I** **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 **Yes – Contact WNHP/WDNR and go to SC 2.4** 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? **Yes = Category I** **No = Not a WHCV**	Cat. I
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below. **If you answer YES you will still need to rate the wetland based on its functions.*** 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? Yes – Go to **SC 3.3** 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? Yes – Go to **SC 3.3** **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? **Yes = Is a Category I bog** 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? **Yes = Is a Category I bog** **No = Is not a bog**	Cat. I

Wetland name or number A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **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. — **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). Yes = **Category I** No = **Not a forested wetland for this section**	Cat. I
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — 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 — 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 *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon**	Cat. I
SC 5.1. Does the wetland meet all of the following three conditions? — 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). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^1/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	Cat. II
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat function.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating**	Cat I
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)? Yes = **Category I** No – Go to **SC 6.2**	Cat. II
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3**	Cat. III
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? Yes = **Category III** No = **Category IV**	Cat. IV
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

Wetland name or number A

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Map measurements used to determine answers for H2.0.

1km area	34,328,768 SF	
Moderate & low intensity land use (LU)	2,430,558 SF	7%
Accessible moderate & low intensity LU	46,867 SF	0.1%
Relatively undisturbed LU	795,105 SF	2%
Accessible relatively undisturbed LU	0 SF	
High intensity LU	31,103,105 SF	91%

RATING ANSWERS FOR WETLAND A

S1.3 Dense, uncut, woody plants > 1/2 of the area of the unit.

S4.1 Dense, uncut, rigid plants cover < 90% of the area of the wetland.

S2.1 & S5.1 Greater than 10 percent of the area within 150' of the uphill side of Wetland A is in land use that generates pollutants and excess runoff (~44%).

H1.1 & H1.4 The wetland contained scrub-shrub vegetation with low interspersion (prior to recent clearing this wetland was dominated by Laurel and blackberry).

H1.2 The wetland contains saturated only and seasonally flowing stream hydroperiods.

N

SCALE 1" = 60'

0 60 120

Acre Job: 23001 Drawn By: L. Emenhiser Figure 1 of 4 Date: 03.30.2023 Rev #:	PREPARED FOR: Rachael Denis & Sean Rasor 13020 76th Avenue S Seattle, WA 98178	WETLAND RATING MAP RASOR - 76TH AVENUE S KING COUNTY, WA TAX PARCEL NO. 214480-0145.	PREPARED BY: Acre Environmental Consulting, LLC PO Box 55248 Shoreline, WA 98155 Phone: (206) 450-7746 Email: louis@acreenvironmental.com	ACRE ENVIRONMENTAL CONSULTING, LLC

LEGEND

- SUBJECT WETLANDS
- HIGH INTENSITY LAND USE
- MODERATE, AND LOW INTENSITY LAND USE
- RELATIVELY UNDISTURBED LAND
- ONE KILOMETER POLYGON LINE

Note: Land use definitions are derived from H2.0 Table 3 of the Wetland Rating System for Western WA: 2014 Update

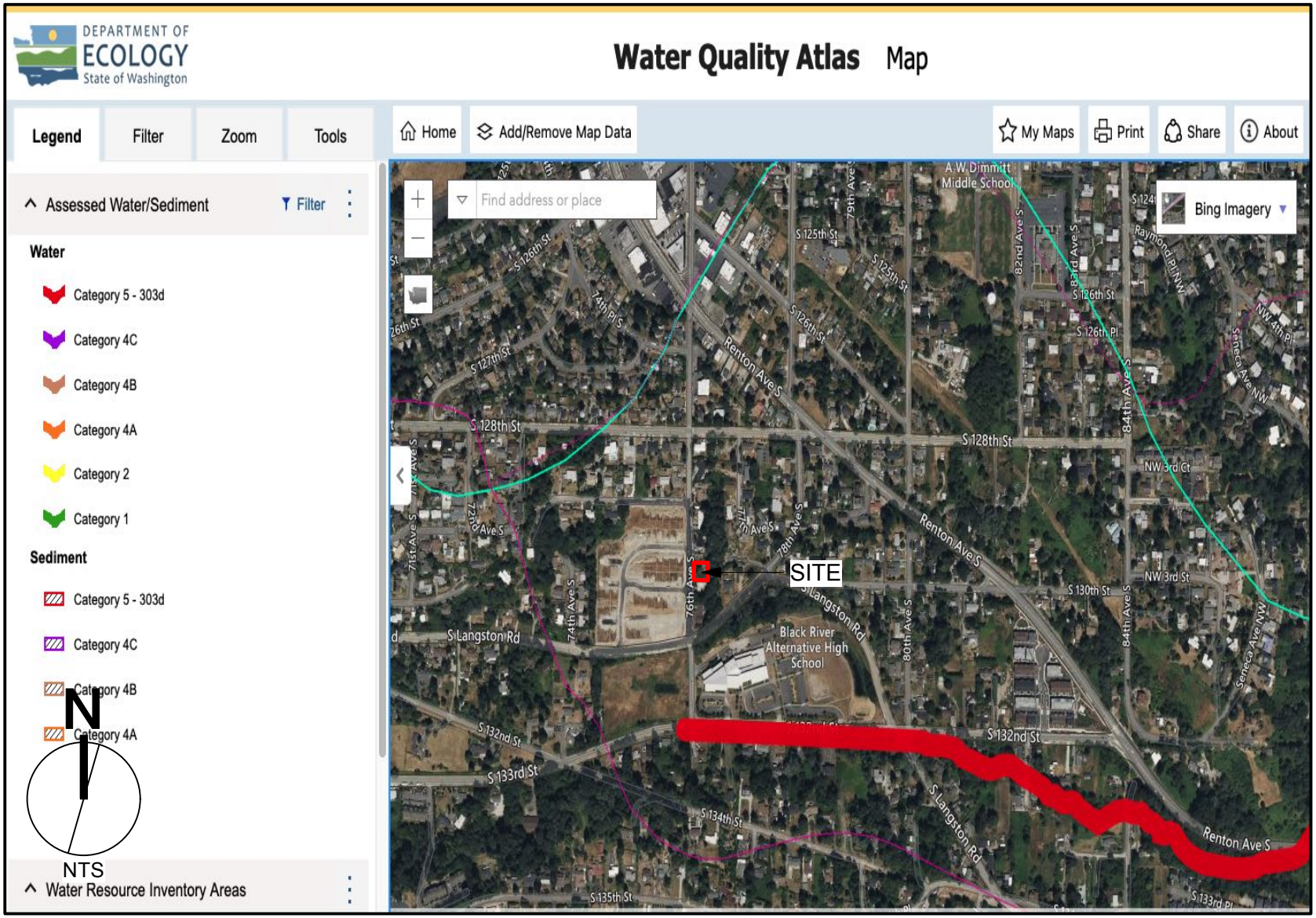
This map was used to derive answers for questions H2.1, H2.2, and H2.3.

N

APPROX. SCALE 1" = 1,000'

0 1,000 2,000

Acre Job: 23001 Drawn By: L. Emenhiser Figure 2 of 4 Date: 03.30.2023 Rev #:	PREPARED FOR: Rachael Denis & Sean Rasor 13020 76th Avenue S Seattle, WA 98178	1KM POLYGON MAP (UNDISTURBED & ACCESIBLE HABITAT) RASOR - 76TH AVENUE S KING COUNTY, WA TAX PARCEL NO. 214480-0145.	PREPARED BY: Acre Environmental Consulting, LLC PO Box 55248 Shoreline, WA 98155 Phone: (206) 450-7746 Email: louis@acreenvironmental.com



S3.1 The subject wetland drains directly (within 1 mile) of an unnamed stream listed on the 303(d) list.

S3.2 The subject wetland is located in a basin or sub-basin with an aquatic resource listed on the 303(d) list.

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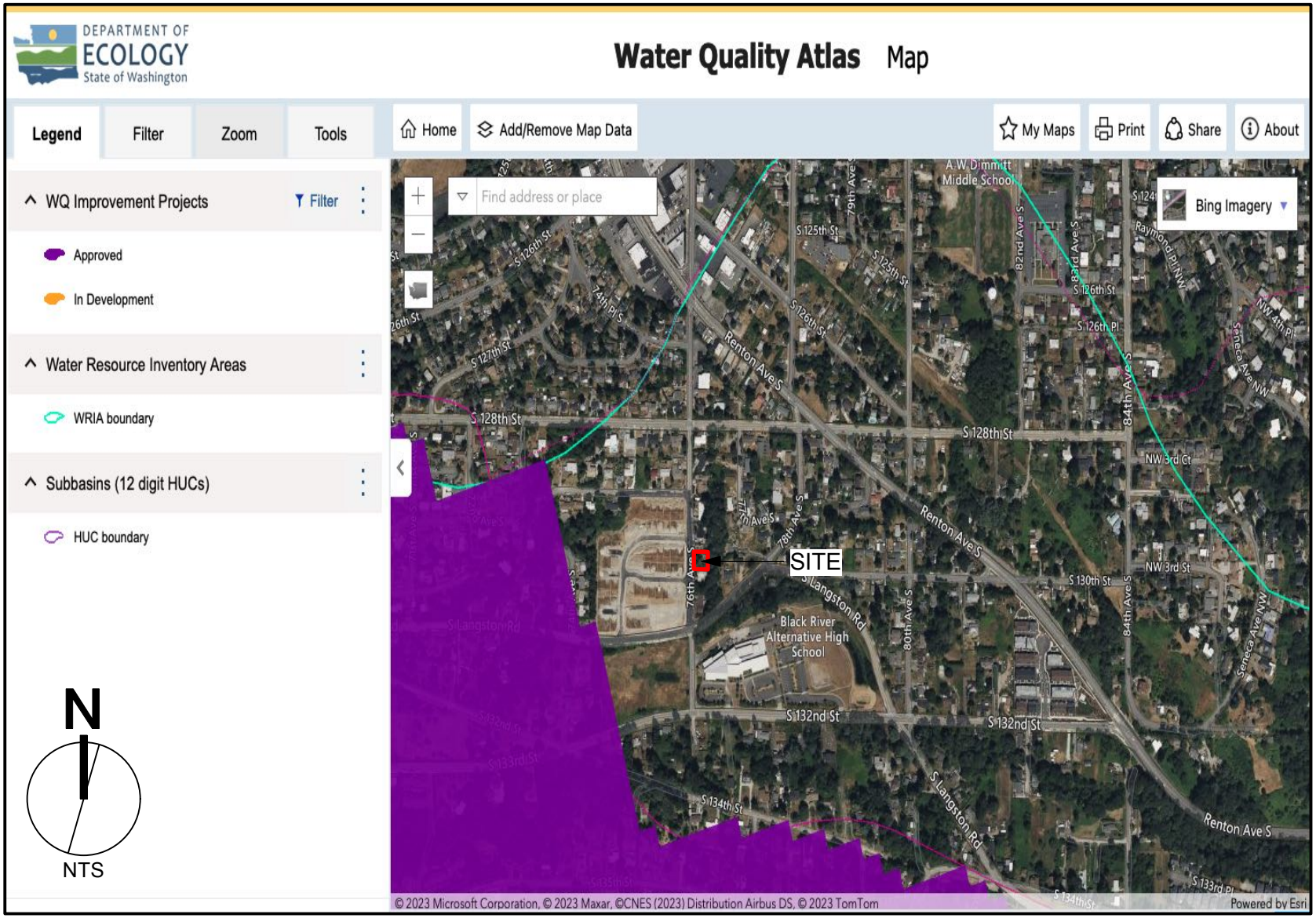
PO Box 55248
Shoreline, WA 98155
Phone: (206) 450-7746
Email: louis@acreenvironmental.com

DOE 303(d) Waters in Basin (Screen Capture)
RASOR - 76TH AVENUE S
KING COUNTY, WA
TAX PARCEL NO. 214480-0145.

PREPARED FOR:
Rachael Denis & Sean Rasor
13020 76th Avenue S
Seattle, WA 98178

Acre Job:	23001
Drawn By:	L. Emenhiser
Figure 3 of 4	
Date:	03.30.2023
Rev #:	



S3.3 Based on the Department of Ecology's Washington State Water Quality Atlas, no TMDL's are approved or in development for the basin in which the wetland rating units are found.

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TMDL'S FOR WRIA 9 (Screen Capture)
RASOR - 76TH AVENUE S
KING COUNTY, WA
TAX PARCEL NO. 214480-0145.

PREPARED FOR:
Rachael Denis & Sean Rasor
13020 76th Avenue S
Seattle, WA 98178

Acre Job: 23001
Drawn By: L. Emenhiser
Figure 4 of 4
Date: 03.30.2023
Rev #:

Department of Permitting
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
ls-wks-sensareaBQ.xls
ls-wks-sensareaBQ.pdf

Project Name: Rasor 76th Ave. S **Date:04.07.23** **Prepared by: A**

Project Number: CADS 22-0287 **Project Description: Reasonable Use for SFR**

Location: **Applicant: Rachael & Sean Rasor** **Phone: 206-450-7746**

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each			$ -
PLANTS: Container, 1 gallon, medium soil	$11.50	Each	111.00		$ 1,276.50
PLANTS: Container, 2 gallon, medium soil	$20.00	Each	47.00		$ 940.00
PLANTS: Container, 5 gallon, medium soil	$36.00	Each			$ -
PLANTS: Seeding, by hand	$0.50	SY			$ -
PLANTS: Slips (willow, red-osier)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Flats/plugs	$2.00	Each			$ -
				TOTAL	**$ 2,216.50**

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY			$ -
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY			$ -
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY			$ -
Hydroseeding	$0.51	SY			$ -
Labor, general (landscaping other than plant installation)	$40.00	HR	8.00		$ 320.00
Labor, general (construction)	$40.00	HR			$ -
Labor: Consultant, supervising	$55.00	HR	1.00		$ 55.00
Labor: Consultant, on-site re-design	$95.00	HR			$ -
Rental of decompacting machinery & operator	$70.00	HR			$ -
Sand, coarse builder's, delivered and spread	$42.00	CY			$ -
Staking material (set per tree)	$7.00	Each			$ -
Surveying, line & grade	$250.00	HR			$ -
Surveying, topographical	$250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF			$ -
Irrigation - temporary	$3,000.00	Acre	0.09		$ 270.00
Irrigation - buried	$4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY			$ -
				TOTAL	**$ 645.00**

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each			$ -
Logs, w/o root wads, 16"-24" diam., 30' long	$245.00	Each			$ -
Logs w/ root wads, 16"-24" diam., 30' long	$460.00	Each			$ -
Rocks, one-man	$60.00	Each			$ -
Rocks, two-man	$120.00	Each			$ -
Root wads	$163.00	Each			$ -
Spawning gravel, type A	$22.00	CY			$ -
Weir - log	$1,500.00	Each			$ -
Weir - adjustable	$2,000.00	Each			$ -
Woody debris, large	$163.00	Each			$ -
Snags - anchored	$400.00	Each			$ -
Snags - on site	$50.00	Each			$ -
Snags - imported	$800.00	Each			$ -
* All costs include delivery and installation				*TOTAL*	**$ -**

EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	$ 4.89	CY			$ -
Crushed surfacing, 1 1/4" minus	$30.00	CY			$ -
Ditching	$7.03	CY			$ -
Excavation, bulk	$4.00	CY			$ -
Fence, silt	$1.60	LF	145.00		$ 232.00
Jute Mesh	$1.26	SY			$ -
Mulch, by hand, straw, 2" deep	$1.27	SY			$ -
Mulch, by hand, wood chips, 2" deep	$3.25	SY	220.00		$ 715.00
Mulch, by machine, straw, 1" deep	$0.32	SY			$ -
Piping, temporary, CPP, 6"	$9.30	LF			$ -

Piping, temporary, CPP, 8"	$14.00	LF				$ -
Piping, temporary, CPP, 12"	$18.00	LF				$ -
Plastic covering, 6mm thick, sandbagged	$2.00	SY				$ -
Rip Rap, machine placed, slopes	$33.98	CY				$ -
Rock Constr. Entrance 100'x15'x1'	$3,000.00	Each				$ -
Rock Constr. Entrance 50'x15'x1'	$1,500.00	Each				$ -
Sediment pond riser assembly	$1,695.11	Each				$ -
Sediment trap, 5' high berm	$15.57	LF				$ -
Sediment trap, 5' high berm w/spillway incl. riprap	$59.60	LF				$ -
Sodding, 1" deep, level ground	$5.24	SY				$ -
Sodding, 1" deep, sloped ground	$6.48	SY				$ -
Straw bales, place and remove	$600.00	TON				$ -
Hauling and disposal	$20.00	CY				$ -
Topsoil, delivered and spread	$35.73	CY				$ -
					TOTAL	**$ 947.00**

GENERAL ITEMS

ITEMS	Unit Cost	Unit			Cost
Fencing, chain link, 6' high	$18.89	LF			$ -
Fencing, chain link, corner posts	$111.17	Each			$ -
Fencing, chain link, gate	$277.63	Each			$ -
Fencing, split rail, 3' high (2-rail)	$10.54	LF			$ -
Fencing, temporary (NGPE)	$1.20	LF			$ -
Signs, sensitive area boundary (inc. backing, post, install)	$28.50	Each	2.00		$ 57.00
				TOTAL	**$ 57.00**

OTHER

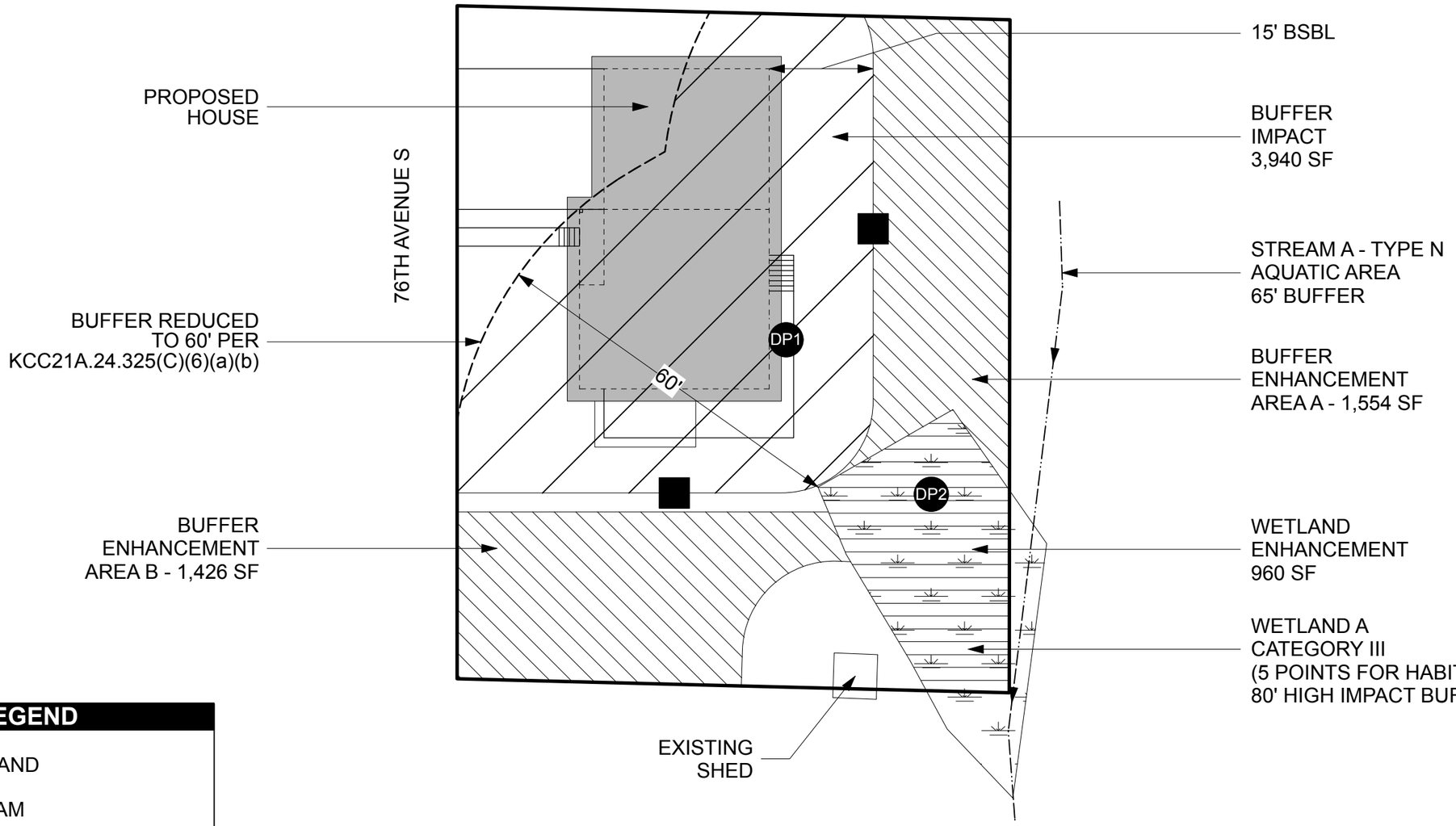
				(Construction Cost Subtotal)	**$ 3,865.50**
ITEMS	Percentage of Construction	Unit			Cost
Mobilization	10%	1			$ 386.55
Contingency	30%	1			$ 1,159.65
				TOTAL	**$ 1,546.20**

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 maintance ranges may be assessed anywhere from 5 to 10 years.

Maintenance, annual (by owner or consultant)					
Less than 1,000 sq.ft. and buffer mitigation only	$ 1.08	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	$ 1.35	SF		(3 X SF total for 3 annual events; Includes monitoring)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	$ 180.00	EACH	3.00	(4hr @$45/hr)	$ 540.00
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	$ 270.00	EACH		(6hr @$45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	$ 360.00	EACH		(8 hrs @ 45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	$ 450.00	EACH		(10 hrs @ $45/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	$ 1,600.00	DAY		(WEC crew)	$ -
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	$ 2,000.00	DAY		(1.25 X WEC crew)	$ -
Monitoring, annual (by owner or consultant)					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	$ 720.00	EACH	3.00	(8 hrs @ 90/hr)	$ 2,160.00
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	$ 900.00	EACH		(10 hrs @ $90/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	$ 1,440.00	DAY		(16 hrs @ $90/hr)	$ -
Larger than5 acres - buffer and / or wetland or aquatic area impacts	$ 2,160.00	DAY		(24 hrs @ $90/hr)	$ -
				TOTAL	**$ 2,700.00**

Total	**$8,111.70**



LEGEND

- WETLAND
- STREAM
- BUFFER
- BUFFER IMPACT
- WETLAND ENHANCEMENT
- BUFFER ENHANCEMENT
- DP1 DATA POINT (2 TOTAL)
- CRITICAL AREA SIGN

N

SCALE 1" = 20'

0 20 40

MAP SHEET: CA1.00

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Phone: (206) 450-7746
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CRITICAL AREAS STUDY MAP
RASOR - 76TH AVENUE S
KING COUNTY, WA
TAX PARCEL NO. 214480-0145.

PREPARED FOR:
Rachael Denis & Sean Rasor
13020 76th Avenue S
Seattle, WA 98178

Acre Job: 23001
Drawn By: L. Emenhiser
Date:04.07.2023
Rev: