



J. S. Jones and Associates, Inc.

**Critical Area Study
and
Watercourse and Wetland Buffer Reduction
of the**

Valentin Property
East of 4346 E. Mercer Way
Mercer Island, WA 98046

Tax Parcel Numbers: 004610-0150 and 004610-0151
Southeast Quarter of the Northeast Quarter of Section 18,
Township 24N, Range 5E

Prepared for:
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1. Vicinity Map
2. Soils Map
3. Mercer Island Stream Inventory Map
4. Wetland Map
5. National Wetland Inventory Map
6. DNR FPARS Map
7. Priority Habitats and Species Map
8. Wetland Routine Data Sheets
9. Wetland A Rating Form
10. Site Survey Map prepared by WA State Licensed Land Surveyor

2 Project Description

The applicant proposes to construct a single-family residence on parcel 004610-0150. Parcel 0150 is within the shoreline of Lake Washington. The existing single-family residence and detached garage will not be modified. The applicants are the owner of the subject properties.

This Critical Area Study has been prepared in accordance with 19.07.050 of the Mercer Island City Code (MICC) for wetlands and watercourses. Shorelines and geological hazard areas are not addressed in this report. The temporary erosion and sediment control plan (TESCP) is not part of this critical area study.

3 Parcel Identification Nos. & Abbreviated Legal Descriptions

The tax parcel numbers are 004610-0150 and 004610-0151. The subject study area is located in the northeast quarter Section 18, Township 24 North, Range 5 East, of the Willamette Meridian. The parcel locations are shown on Figure 1. The private paved access road, off of East Mercer Way, is unnamed. The subject properties are legally described as follows:

1. 004610-0150
 - o ADAMS LAKE WASHINGTON TRS POR OF N 20 FT OF 3 & S 55 FT OF 2 ELY OF TR OF LAND DESC IN CONT RECD 9/10/49 IN VOL 2873 OF DEEDS PG 423 & 2ND C SH LDS ADJ
2. 004610-0151
 - o ADAMS LAKE WASHINGTON TRS POR WLY OF LN BEG AT NW COR OF 2 TH E 1239.90 FT TH S 80 DEG 14 MIN 00 SEC E 465.90 FT TH S 16 DEG 58 MIN 00 SEC W 15.11 FT TH S 80 DEG 14 MIN 00 SEC E 42.54 FT TH ON CURVE TO RT RAD 36.15 FT DIST OF 31.78 FT TH ON CURVE TO LFT RAD 38 FT DIST OF 53.86 FT WH IS SLY LN OF TURN AROUND TO TPOB TH S 36 DEG 48 MIN 30 SEC E 65.05 FT TH S 14 DEG 51 MIN 30 SEC E 36.77 FT TH S 08 DEG 30 MIN 00 SEC W 46.75 FT TH S 39 DEG 38 MIN 00 SEC W & ELY OF LN BEG AT PT ON SLY MGN OF TURN AROUND S 10 DEG 53 MIN 34 SEC W 38 FT FR CEN OF SD TURN AROUND TH S 36 DEG 52 MIN 13 SEC E 72.74 FT TH S 14 DEG 55 MIN 13 SEC E 38.66 FT TH S 01 DEG 14 MIN 23 SEC W 50.01 FT TO ELY LN FIRST DESC & SLY OF SLY LN OF TURN AROUND
 - o

4 Methodology

The wetland assessment and delineation were performed using the 1997 Washington State Wetlands Identification and Delineation Manual (DOE, 1997); and U.S. Army Corps of Engineers, Technical Report Y-87-1 (on-line edition), Corps of Engineers Wetlands Delineation Manual by Environmental Laboratory January 1987 - Final Report (COE, 1987); and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), Environmental Laboratory U.S. Army Corps of Engineers May 2010 (COE, 2010). The wetland determination was based on the presence of the three criteria for jurisdictional wetlands: hydric soils, wetland hydrology, and hydrophytic vegetation. All three criteria must be present in order to classify an area as wetland. Wetlands were rated with the Washington State Wetland Rating System for Western Washington: 2014 Update. (Publication #14-06-029). Olympia, WA: Washington Department of Ecology (Hruby, T., 2014).

The assessment included a review of the National Wetland Inventory, the Department of Natural Resources Forest (DNR) FPARS stream mapping, the City of Mercer Island Critical Area Maps, and the USDA National Resource Conservation Service's online soil survey, <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

The field delineations were performed on November 24, 2016 and February 17, 2017. The weather was raining on both days. February 15, 2017 was the wettest Feb 15th on record. The delineator was Jeffery S. Jones, SWS Professional Wetland Scientist No. 1025. The wetland boundary was flagged with consecutive numbered orange survey flagging. The wetland flag numbers are A-1 to A-6 (see Critical Area Map). There are four sample locations identified as SL-1, SL-2, SL-3, and SL-4.

5 General Site Description

The two parcels adjoin one another. Parcel 004610-0151 is a vacant property with landscaping. Parcel 004610-0150 is a vacant property that is lawn, landscaping and beach. See attached photos and parcel map.

There is a partially piped stream running from near the west property line to Lake Washington. The pipeline is a 12-inch diameter concrete pipe. The location of the pipe and open sections are provided on the site plan.

Adjacent properties to the north and west have single-family residences. The property to the south is community property. The properties are served by sewer, water, gas, cable and electricity.

6 Vegetation

6.1 Vegetation Methodology

Hydrophytic vegetation has adaptations that allow these species to survive in saturated or inundated environments. These environments are classified according to the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, 1979). The probability of species being found in wetland environments has been determined by the 2016 National Wetland Plant List, v. 3.3 (http://wetland-plants.usace.army.mil/nwpl_static/index.html) (COE, 2016). An indicator status was applied to each species according to its probability of occurring in wetlands (see Plant Indicator Status Table below).

Table 1: Plant Indicator Status

Indicator Category	Symbol	Occurrence in Wetlands
Obligate Wetland	OBL	> 99%
Facultative Wetland	FACW	67-99%
Facultative	FAC	34-67%
Facultative Upland	FACU	1-33%
Upland	UPL	< 1%

Vegetation data was recorded in four sample locations. At each sample location, the dominant species were assessed by indicator status to determine if the plant community was predominantly hydrophytic. Rules for determining dominant species are from the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACOE, 2008). Dominants were determined using the 50/20 rule. Using this rule, percent cover for each stratum was added by order of descending cover until 50% cover was reached. These species were considered dominants. The next most common species was also included as a dominant if it had over 20% cover.

6.2 Vegetation Results

- J Sample location-1 (SL-1) is situated 6 feet northeast of the flag pole, above the bulkhead. At sample location 1 (SL-1), the plant community is dominated by Nootka rose (*Rosa nutkana*, FAC), yellow iris (*Iris pseudacorus*, OBL) and unidentified lawn grasses (*Gramineae* spp., FAC). The plant community is hydrophytic because 50% or more of the dominant species are OBL, FACW, or FAC.
- J SL-2 is situated 24 feet northwest of the flag pole, above the bulkhead. The plant community is dominated by red-osier dogwood (*Cornus nuttalli*, FACW), Nootka rose (*Rosa nutkana*, FAC), small-fruited bulrush (*Scirpus microcarpus*, OBL), unidentified lawn grasses (*Gramineae* spp., FAC) and morning glory (*Ipomoea* spp., FACW-FACU). The plant community is hydrophytic because 50% or more of the dominant species are OBL, FACW, or FAC.
- J SL-3 is situated 30 feet southeast of the flag pole, above the bulkhead. The plant community is dominated by unidentified lawn grasses (*Gramineae* spp., FAC). The plant community is hydrophytic because 50% or more of the dominant species are OBL, FACW, or FAC.
- J SL-4 is situated 15 feet east of a large Douglas fir tree between the existing house and bulkhead, approximately 100 feet west of the shoreline. The plant community is dominated by Douglas fir (*Pseudotsuga menziesii*, FACU), and unidentified lawn grasses (*Gramineae* spp., FAC). The plant community is hydrophytic because 50% or more of the dominant species are OBL, FACW, or FAC.

7 Hydrology

7.1 Hydrology Methodology

The *Corps of Engineers Wetlands Delineation Manual* (USACOE, 1987) and the *Washington State Wetlands Identification and Delineation Manual* (WADOE, 1997) require inundation, flooding, or saturation to the surface for at least 5% of the growing season to satisfy the hydrology requirements for jurisdictional wetlands. Areas that are saturated between 5% and 12.5% of the growing season may or may not be wetlands. The growing season can either be defined by the number of frost-free days (temperatures above 28°F), or the period during which the soil temperature at a depth of 19.7 inches is above biological zero (41°F). The presence of primary and secondary wetland hydrologic indicators was determined at each sample location by evaluating a variety of direct and indirect indicators. In addition to direct visual observation of inundation or saturation, secondary hydrologic indicators were used to infer wetland hydrology. Secondary indicators include oxidized channels (rhizospheres) associated with living roots and rhizomes, water marks on vegetation or fixed objects, drift lines, water-borne sediment deposits, water stained leaves, surface scoured areas, wetland drainage patterns, morphological plant adaptations, and hydric soil characteristics.

7.2 Hydrology Results

- J SL-1 meets the hydrology criteria for wetlands. The upper soils profile was saturated to the soil surface.
- J SL-2 meets the hydrology criteria for wetlands. The upper soils profile was saturated to the soil surface.
- J SL-3 meets the hydrology criteria for wetlands. The upper soils profile was saturated at 10 inches below the soil surface.

- J SL-4 does not meet the hydrology criteria for wetlands. The upper soils profile, 0-18", was not saturated.

8 Soils

8.1 Soils Methodology

The procedures for soil sampling are provided in the Corps of Engineers Wetlands Delineation Manual (USACOE, 1987) and the Washington State Wetlands Identification and Delineation Manual (WADOE, 1997).

Hydric soils are soils that are "saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (U.S. Army COE, 1987)". They are either organic soils (peats and mucks), or are mineral soils that are saturated long enough to produce soil properties associated with a reducing environment. These soils have hydric characteristics such as a reduced matrix (a matrix that changes color when exposed to air), redox depletions (gleying), or redox concentrations (mottles).

8.2 Soil Series

The USDA Soil Conservation Service (SCS) mapped the on-site soils as Kitsap silt loam, 2 to 8 percent slopes (Kb) and Kitsap silt loam, 15 to 30 percent slopes (Kd) (see attached Soils Map). Kitsap silt loam is not a hydric soil series.

8.3 Soils Results

The soils on the lake side of the residence have been altered by grading and landscaping activities that occurred prior to critical area regulations. Investigation of the soils found a texture and profile most like the Kitsap soil series and sandy loams that are fill material adjacent the bulkhead.

- J SL-1 is a sandy loam fill material placed above the rock bulkhead. From 0 to 16+ inches, the soil is a very dark brown (10YR 3/2) sandy loam. The soil is non-hydric because it is not a one chroma or a two-chroma with mottles.
- J SL-2 is a sandy loam fill material placed above the rock bulkhead. From 0 to 16+ inches, the soil is a very dark brown (10YR 2/2–10YR 3/2) sandy loam. From 12 to 18+ inches, the soil is non-hydric because it is not a one chroma or a two-chroma with mottles.
- J SL-3 is a sandy loam fill material placed above the rock bulkhead. From 0 to 4 inches, the soil is a very dark brown (10YR 2/2) sandy loam. From 4 to 16+ inches, the soil is a gray (10YR 6/1) sandy loam with prominent (10YR 5/8) mottles. The soil is hydric because has a one chroma matrix and prominent mottling (WADOE, 1997)
- J SL-4 is a Kitsap gravel silt loam. From 0 to 6 inches, the soil is black (10YR 2/1) gravelly sandy loam. From 6 to 16+ inches, the soil is a dark grayish brown (10YR 2/2) gravelly sandy loam. The soil is non-hydric because it lacks a two-chroma with mottling.

9 Wetland Determination, Rating and Buffer

The eastern portion of the lawn on parcel 004610-0150 is wetland, identified as Wetland A. Soils were observed to be saturated with a shallow perched water table. Prominent mottling and gleyed soils was observed at SL-3. The plant community is dominated by grasses, red-osier dogwood, and non-native shrubs. SL-1 and SL-2 lack hydric soils characteristics. The wetland boundary is

defined by the extent of saturated soils, topography and a low rock bulkhead. Below the bulkhead is a sand beach.

The wetland is rated as a Category IV, with a standard 35-foot buffer requirement, according to Section 19.07.080.C of the MICC.



Figure 1: Wetland

10 Stream Determination, Rating, and Buffer

The Mercer Island stream inventory identifies the potential presence of a stream on the subject parcel (see attached Mercer Island Stream Inventory Map). The stream is an open trench, from the 12” concrete pipe outfall to the lake. This was not the natural location of a stream, but was previously channelized, meaning the final section was trenched.

There is a rock drop at the lake. The water level of the lake rarely extends to the rock drop. Fish have never been observed in the trench, including during October of 2016 and February of 2017, which had peak precipitation events. Even if fish could enter this open trench, the trench is not a safe refuge, provides no habitat, and does not provide access to habitat upstream.

From the lowest pipe outlet, the stream is piped 80 feet; then there is a section that is 15 lineal feet long; immediately upstream there is a 3-foot vertical concrete drop structure; upstream from the vertical drop the stream is mostly piped with an open section between the garage and house entry walkway, see photos.

The lower section may have been previously piped. The very highest rating would be a Type 2, because it is “not used by fish”. However, the City’s peer review rates the unpiped portion of the trench, as a Type 1 along the lower watercourse that is closest to Lake Washington. For buffer reduction purposes, a Type 1 rating for the lower watercourse will be assumed in this Critical Areas Study. The two open sections of the stream between the piped sections are Type 2, according to the city’s peer review. Type 1 watercourses require a 75-foot, Type 2 watercourses require a 50-foot and the piped sections require a 25-foot standard buffer width according to Section 19.07.070.B.1.b of the MICC. A Type 1 watercourse buffer can be reduced to 37 feet with vegetative enhancement. A Type 2 watercourse buffer can be reduced to not less than 25 feet with vegetative enhancement. A buffer for a restored or piped watercourse can be reduced from the standard 25 feet to an amount determined by the code official.

The 12-inch concrete pipeline constitutes a piped watercourse, although there are several short concrete rocked open sections and two short open sections. The pipe is not fish passable. The high velocity of flows in the pipe during peak runoff events, drop structures, and small pipe diameter are significant impediments to fish passage. The Mercer Island City Code, Section 19.07.070.B.4.a, does not allow piped conveying watercourses to be removed that may result in an increased threat of erosion. The standard buffer for a restored or piped watercourse is 25 feet, according to Section 19.07.070.B.1.b of the MICC.

Lake Washington is a shoreline of the state. The required setback from the ordinary high water mark is 25 feet, per MICC 9.07.110.E.1.Table C. Row A.

11 Critical Area Buffers

The critical areas serving the wetland and watercourse are mostly surrounded by lawn or landscaped areas. The north portion of the critical area buffer consists of trees forming a natural barrier to the adjacent property. Tree species include white paper birch, plum, western red cedar as well as pacific rhododendron, roses and holly. There is an English laurel hedge along this area. See picture below. The understory consists of English ivy and ornamental plantings. Closest to the lake there is a significant weeping willow. Existing buffer intrusions include a permanent coal-fired brick/stone/steel BBQ structure within the watercourse buffer and a 200 square feet large brick patio on top of the piped watercourse (See pictures below).



Figure 2: Natural Vegetation Barrier



Figure 3: Permanent coal-fired brick/stone/steel BBQ Structure



Figure 4: Brick Patio ~200 sqf large

12 Proposed Project, Wetland and Stream Buffers

The purpose of the project is to construct a single-family residence while at the same time increase protection of the critical areas. A proposed site plan has been designed with wetland and stream buffers reduced to:

-) Category IV wetland: 25 feet
-) Type 1 watercourse: 37 feet
-) Type 2 watercourse: 25 feet
-) Piped watercourse (limited 18 ft section of total 80 ft): 0 feet

The existing buffer along the watercourse and wetland consist mainly of large open , non-native grass areas and provide for almost nonexistent buffer or habitat functions. This is an opportunity to be enhanced. Any potential impacts of the project where buffer enhancement is not possible (such as drive way access) will be mitigated by using a combination of approved mitigation options (criterion for approval in 19.07.070.B.2.a and 19.07.080.C.2.

While the City of Mercer Island has agreed to a zero buffer along the 18 foot north section of the building envelope and piped watercourse they have requested that the applicant increase the distance to the building envelope from three to five feet. This is to allow for future potential daylighting of the stream which is encouraged by the City (although it is not a code requirement). I have analyzed the terrain and property in this specific area and have positively concluded that daylighting is possible considering best available science. I have taken into consideration the following factors:

1. The piped watercourse will be in a 20 foot wide area between the building envelope and the northern property line (The City's planning director had originally proposed placing the stream in a 10 foot area which would have allowed for only a maximum of five feet on each side).
2. The five foot setback/distance from the piped watercourse to the building envelope is limited to 18 feet (see picture below).
3. The slope is 1" per foot, and so the area in question is relatively flat (see picture below).
4. The depth of the pipe is less than three inches, and so is almost at the surface level already today (see picture below).

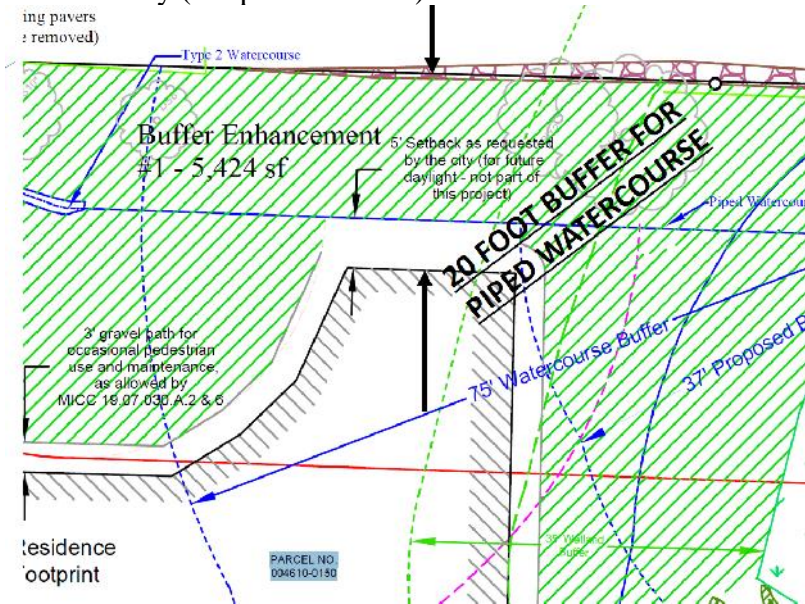


Figure 5: 20 foot wide buffer and five foot setback for potential future daylighting



Figure 6: Grade of piped watercourse 1" per foot



Figure 7: Depth of piped watercourse <3”

13 Buffer Reduction Criteria and Mitigation Measures

13.1 Buffer Reduction Criteria

A. Watercourse Buffer Reduction

MICC 19.07.070.B.2.a language (*in italics*) states the following for *the standard buffer width to be reduced to not less than the above listed minimum width*, within MICC 19.07.070.B.1, *in accordance with an approved critical area study when he/she determines that*

i) a smaller area is adequate to protect the watercourse,

Analysis:

The definition of buffer is “A designated area adjoining a critical area intended to protect the critical area from degradation.” The definition of “degrade” is “to wear down by erosion” (Merriam-Webster). The existing buffer consists almost entirely of lawn. The buffer will be enhanced with additional native vegetation. The enhanced vegetation will protect the watercourse from degradation, or erosion, by (a) slowing storm water, which allows infiltration into the soil mantle prior to reaching the existing bank of the watercourse. Additional storm water created by impervious surfaces will be directed into a storm water management system, which further prevents any degradation, or erosion, from occurring.

ii) the impacts will be mitigated by using combinations of the below mitigation options, and

Analysis:

MICC 19.07.070.B.2.b lists approved mitigation options to meet the criteria of approval. The proposal will meet the requirement with “habitat enhancement within the watercourse such as...creating enhanced wetlands,...”, and “habitat enhancement within the watercourse such as log structure placement...” These mitigation measures are options approved by MICC 19.07.070.B.2.b.ii & iv.

iii) the proposal will result in no net loss of watercourse and buffer functions.

Analysis:

MICC 19.16.010.N defines “no net loss” as “an ecological concept whereby conservation losses in one geographic or otherwise defined area are equaled by conservation gains in function in another area.”

The current functions of the watercourse buffers are limited to human, small migratory birds, small to medium size mammals, amphibians, and insects. No habitat features are present other than the stream.

The table below analyses the existing functions, proposed functions, and no net loss analysis of each function for the watercourse and wetland.

Table 2: Net Loss Analysis

FUNCTIONS OF CRITICAL AREA AND ASSOCIATE BUFFER	EXISTING CONDITIONS	PROPOSED CONDITIONS	NO NET LOSS ANALYSIS
Terrestrial Animalia Functions	Used for human activity, small migratory birds, small to medium size mammals, amphibians, and insects.	Native vegetation will reduce human activity, and increase use by migratory birds, small to medium size mammals, amphibians, and insects.	Planting native groundcover and tall shrubs will decrease the barriers of human activity, while increasing the use by native terrestrial animals. This results in a net increase in the native function.
Water Quality Functions	The current buffer provides little to no water quality functions and encourages the use of pesticides.	Native vegetation will be established in the critical area buffers through planting of native trees, shrubs, and groundcovers.	Establishing dense, rigid native vegetation will improve the ability to slow surface water flowing towards the stream and wetland. The slowing will help filter and capture nutrients and sediments that would enter the critical area. This reduction in nutrients reduces eutrophication and increases in water visibility. Therefore, there would be a net increase in the water quality functions.
Hydrology Functions	The current hydrologic function of the critical area buffers is limited by sparsely vegetated areas, non-native grass, and buffer intrusions.	Native vegetation will be established in the critical area buffers through planting of native trees, shrubs, and groundcovers.	The addition of trees, shrubs, and groundcover plants will help attenuate flood flow during heavy rain events.
Habitat Functions	The habitat function of the critical area buffers is limited by low understory vegetative density, low structural diversity, and prevalence on non-native plant species.	All non-native plant species will be removed. Native vegetative density will be established in the critical area buffers through planting of native trees, shrubs, and groundcovers. In addition, the stream outlet will be lowered to remove blockage.	Understory planting of trees, shrubs, and groundcover plants will increase vegetative density and structural diversity, improving cover, forage opportunities for wildlife, and nutrients into the watercourse. The lowering of stream outlet will provide a net gain in habitat.
Overall Functions	No to moderate functioning critical area buffers in the	Planting of native trees, shrubs, and groundcovers in	The proposed project is expected to improve ecological functions over

	project area currently exist. Existing buffers are characterized by a relatively open or sparsely vegetated understory.	existing non-vegetated stream buffer areas. Lowering of the stream outlet (see above).	existing conditions. This includes terrestrial habitat, hydrology, and water quality functions of the critical area buffers. Overall no net loss of functions is expected.
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iv) *However, in no case shall a reduced buffer contain a steep slope.*

Analysis:

A steep slope is defined by MICC 19.16.010.L as any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run. Per the topographic map submitted with the application, no portion of the existing or proposed buffer would have a slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run.

B. Wetland Buffer Reduction

MICC 19.07.080.C.2 language (*in italics*) states the following for *the standard wetland buffer width to be reduced to not less than the minimum buffer width in accordance with an approved critical area study when he/she determines that*

i) a smaller area is adequate to protect the wetland functions,

Analysis:

Please see Table: Net Loss Analysis for an analysis of the wetland functions.

ii) the impacts will be mitigated consistent with MICC 19.07.070(B)(2), and

Analysis:

MICC 19.07.070.B.2.b lists approved mitigation options to meet the criteria of approval. The proposal will meet the requirement with “habitat enhancement within the watercourse such as...creating enhanced wetlands,...”, and “habitat enhancement within the watercourse such as log structure placement...” These mitigation measures are options approved by MICC 19.07.070.B.2.b.ii & iv.

iii) the proposal will result in no net loss of wetland and buffer functions.

Analysis:

Previously mentioned, MICC 19.16.010.N defines “no net loss” as “an ecological concept whereby conservation losses in one geographic or otherwise defined area are equaled by conservation gains in function in another area.”

As provided in Table: Net Loss Analysis, there will be no net loss to the existing functions. The proposal will result in wetland and buffer functions improved by vegetative enhancement.

13.2 Mitigation Measures

Buffer function will be enhanced within the reduced 25 feet wetland buffer, the 25 feet Type 2 watercourse buffer and the 37 feet Type 1 watercourse buffer to offer equal or better protection than existing conditions. Because the buffer bisects the only ingress/egress, access to the property will not be possible to locate outside of the reduced buffers. The original proposal placed a large portion of the driveway and parking in the buffer. Although this is allowed per the code it is not best available science. Best available science suggests to have the driveway cross the critical area perpendicular. As such, I have recommended the applicant reposition the driveway to a) cross the

critical area perpendicular and to b) redesign the site such that the driveway and parking area is completely outside the reduced buffer. Our assessment is that the impact on the watercourse function will be a net benefit as a) this revised area is relatively small and adjacent to the closed piped section of the watercourse and b) the applicant is proposing to remove an equal area of paved patio that currently is positioned on top of and between the two open Type 2 sections of the watercourse. To mitigate further for the impact of increased traffic in the area, the following mitigation actions will be implemented:

1. The permanent coal-fired brick/stone/steel BBQ structure that is currently within the watercourse buffer will be removed.
2. The 200 square foot large brick patio that is currently on top of the piped watercourse will be removed and replaced with native vegetation as part of the 5,844 square foot enhanced buffer.
3. The fish blockage at the stream outlet will be smoothed to allow for easier fish access.

14 Wetland and Stream Buffer Functions

The wetland and stream buffers are landscaping, lawn, shrubs, structures, walkways and pavement. The stream appears to be an excavated trench to control the location of surface water flow. Wildlife use in the buffer is limited by human activities and a lack of a native plant community. Wildlife species include common passiformes (small migratory birds), small to medium size mammals, amphibians, and insects. No habitat features are present other than the stream.

Wetland and stream buffer functions will be improved by vegetative enhancement (see Appendix - Buffer Enhancement and Mitigation map for details and planting schedule). Existing trees and shrubs along the property lines of the buffer will be retained. Non-native plants, in the proposed enhancement, will be removed. Native trees, shrubs and groundcovers will be planted and maintained (see Section 15 below for details).

15 Buffer Enhancement and Mitigation Implementation & Maintenance Plan

15.1 Executive Summary

The applicant proposes to build a new single-family residence on the subject property. A regulated wetland and watercourse is present on the subject property. The applicant proposes to reduce the wetland and watercourse standard buffers per chapter 13 above. As a condition of the reduction, a 5,844 square feet of the remaining buffer and 2,000 square feet of wetland will be enhanced with native vegetation. Native plant species will increase plant diversity, improve wildlife habitat and prevent the establishment of invasive species. Furthermore, to address any negative impacts, mitigation will be implemented to address an onsite permanent coal-fired brick/stone/steel BBQ structure, removal of brick patio and lowering of the watercourse outlet to remove blockage.

15.2 Goals and Objectives

The goal of enhancement is to increase the functions and values of the existing watercourse buffer through enhancement. Currently the watercourse buffer is ornamental landscaping, mostly open lawn and hardscapes. Enhancements will provide greater protection for the watercourse and habitat diversity. The objectives necessary to meet the above stated goal are as follows:

-) Install native vegetation within the reduced watercourse buffer
-) Enhance the wetland with native vegetation
-) Remove ornamental landscaping, structures and hardscapes
-) Maintain and monitor the enhancement areas for a period of five years or until the site meets the specified performance standards
-) Record the sensitive area in a "Notice on Title"
-) If the enhancement area fails to meet performance standards provide a contingency plan to rectify the situation.

15.3 Project Location

Property is located directly East of current residence, 4346 East Mercer Way, Mercer Island, WA.

15.4 Responsible Parties

Applicant

Johan Valentin and Helena Kjellander Valentin
 4346 East Mercer Way, Mercer Island, WA 98040
 (214) 228-0536

Environmental Consultant

J. S. Jones and Associates, Inc.
 Attn: Jeffery S. Jones, PWS
 P.O. Box 1908, Issaquah WA 98027
 (253) 905-5736

15.5 Standards

All work and materials shall conform to City of Mercer Island standards and specifications, and to the specifications and details shown on these plans.

15.6 City of Mercer Island Contact

Certain actions within this enhancement/restoration plan require inspection or approval by City of Mercer Island staff. Requests for inspection/approval shall be coordinated through City of Mercer Island Development Services - Building & Land, (206) 275-7605

15.7 Contractor Information

When it is available, contact information shall be provided to the City of Mercer Island that includes names, addresses and phone numbers of persons/firms that will be responsible for the enhancement/restoration area, installing required plants, and performing required maintenance and monitoring.

15.8 Contractor's Qualifications

Contractor/Landscape Installer must be experienced in enhancement and restoration work. The Permittee shall provide that there is one person on the site at all times during work and installation who is thoroughly familiar with the type of materials being installed and the best methods for their installation, and who shall direct all work being performed under these specifications. This person shall be experienced in installing plant materials for native enhancement or restoration projects, unless otherwise allowed by the Wetland Biologist and City of Mercer Island staff.

15.9 Site Conditions

The Contractor shall immediately notify the Landscape Designer and Wetland Biologist of drainage or soil conditions likely to be detrimental to the growth or survival of plants. Locations shall be as depicted on the approved plan set. The Wetland Biologist may adjust the locations of plantings shown on plans based on field conditions. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat. Changes should be documented and as-built drawings submitted to the City of Mercer Island upon request for formal construction approval.

15.10 Plants

Origin: Plant materials shall be Northwest native plants, nursery grown in the Puget Sound region of Washington.

Plant Names: Plant names shall comply with those generally accepted in the native plant nursery trade. All plant materials shall be true to species and variety.

Plant Substitutions: Plant substitutions are not permitted without the permission of the City of Mercer Island staff. Same species substitutions of larger size do not require permission. However, small plants often experience less transplant shock and adapt more quickly to site conditions, resulting in a higher success rate. As such, smaller plants will be approved as substitutions based on certain site-specific conditions (trees not less than 1-gallon size however).

Quality and Condition: Plants shall be normal in pattern of growth, healthy, well-branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried-out, burned, broken, or defective plants will be rejected.

Intermediate Inspections: All plants shall be inspected prior to installation. Condition of roots of a random sample of plants will be inspected, as well as all above ground growth on all plants. Roots of any bare root plants, if permitted for use, will be inspected. Plant material may be approved at the source, but all material must be re-inspected and approved on the site prior to installation.

Handling: Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Landscape Designer and City of Mercer Island staff. Bare root plants must have enough fibrous root to insure plant survival. Roots must be covered at all times with mud and wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

Damaged Plants: Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.

Roots: All plants shall be balled and burlapped or containerized, unless explicitly authorized by the Wetland Biologist. Root bound plants or B&B plants with damaged, cracked or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and twisted) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half an inch in two to four places. Bare root plantings of woody material is allowed only with permission from the Wetland Biologist, and City of Mercer Island staff.

Sizes: Plant sizes shall be the size indicated in the plant schedule. Larger stock may be acceptable provided that it has not been cut back to size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and under some circumstances preferable, based on site-specific conditions. Measurements, caliper, ratching and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Association of Nurserymen (latest edition).

Form: Shrubs shall have multiple stems and be well-branched.

Planting: Planting shall be done in accordance with illustrated details in the enhancement/restoration plan set and accepted industry standards. Plant locations shall also be inspected and approved prior to planting.

Timing of Planting: Unless otherwise approved by City of Mercer Island staff, all planting shall occur between September 1 and March 31, unless irrigation is provided.

Planting in Pits: Planting pits shall be circular or square with vertical sides, and shall be 6" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits, as illustrated in planting detail. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting soils.

Soil Amendments: Unless otherwise specified and approved by City of Mercer Island, native soil will be incorporated into the planting pits.

Mulch: The entire mitigation area shall receive no less than 1"-4" of medium bark mulch after planting. Mulch shall be kept well away (at least 2") from the trunks and stems of woody plants.

Fertilizer: Slow release fertilizer may be used if pre-approved by City of Mercer Island staff. Fertilizers shall be applied only at the base of plantings underneath the required covering of mulch (that does not make contact with stems of the plants). No fertilizers will be placed in planting holes.

Water: Plants shall be watered upon completion of backfilling. Plants shall be watered a second time within 24-48 hours after installation. The earthen rim/dam should be leveled prior to the second growing season.

Weeding: Existing and exotic vegetation in the enhancement and buffer areas will be hand weeded from around all newly installed plants on routine basis throughout the monitoring period. No chemical control of vegetation on any portion of the site is allowed without the written permission of City of Mercer Island staff.

15.11 Maintenance

Maintenance shall be required in accordance with City of Mercer Island guidelines and approved plans.

15.12 Duration and Extent

In order to achieve performance standards, the Permittee shall have the enhancement/restoration area maintained for the duration of the monitoring period, **5** years. All maintenance shall include:

-) watering (see 15.18 for details)
-) weeding around base of installed plants
-) pruning
-) replacement (see 15.14 for details)
-) restaking
-) removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-7150-005) as well as Himalayan blackberry
-) any other measures needed to insure plant survival (see 15.19 for details)
-) general maintenance activities which include the replacement of any vandalized or damaged signs, habitat features, fences or other structural component of the enhancement site.

15.13 Survival

The Permittee shall be responsible for the health of 100% of all newly installed plants for one growing season after installation has been accepted by City of Mercer Island staff (see Performance Standards). A growing season for these purposes is defined as occurring from spring to spring (March 15 to October 15, following year). The Permittee shall replace any plants that are failing, weak, defective in a manner of growth, or dead during this growing season.

15.14 Installation Timing for Replacement Plants

Replacement plants shall be installed between September 1 and March 31, unless otherwise determined by City of Mercer Island staff.

15.15 Standards for Replacement Plants

Replacement plants shall meet the same standards for size and type as those specified for original installation unless otherwise directed by the City of Mercer Island staff. Replacement plants shall be inspected as described above for the original installation.

15.16 Replanting

Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by City of Mercer Island staff.

15.17 Herbicides/Pesticides

Chemical controls shall not be used in the enhancement/restoration area, sensitive areas or their buffers. However, limited use of herbicides may be approved depending on site specific conditions, only if approved by City of Mercer Island staff.

15.18 Irrigation/Watering

Water may be necessary during the dry season (June 1-October 15) for the first two years after installation to ensure plant survival and establishment. Water should be provided by a temporary above ground or permanent below ground irrigation system. It is the responsibility of the applicant to have the temporary irrigation designed, installed and maintained so that the necessary water

amounts are provided. Water should be applied at a rate of 1" of water two times a week for Year 1 and 1" of water one time a week during Year 2.

15.19 Performance Standards - Plant Cover and Survival

Plant survival and cover standards are established to measure enhancement success as follows:

Year 1 Year 3 Year 5

-) Shrub and Herbaceous Cover* 30% 50% 75%
-) Shrub and Herbaceous Survival 100% >90% >80%

- * Includes beneficial native plants in that category that are naturally recruiting volunteers
- Less than 10% invasive vegetation during any monitoring event.
- The establishment of **5** species of native shrubs and **3** species of native groundcovers at the end the 5 years of monitoring.

15.20 Monitoring

Monitoring shall be conducted annually for **five** years in accordance with the approved enhancement/restoration monitoring plan. Monitoring reports shall be submitted to the City of Mercer Island.

Vegetation Monitoring

Sample plots will be established for vegetation monitoring, and photo-points established from which photos will be taken throughout the monitoring period. Permanent plot location(s) must be identified on enhancement/restoration site plans in the first monitoring report (they may be drawn on approved enhancement/restoration plans by hand). Plots shall detail herb, shrub, and tree aerial cover at radii of 1m, 5m, and 10m respectively, using the Braun-Blanquet releve method or other acceptable field method. Monitoring of vegetation transects shall occur annually between August 1 and October 30 (prior to leaf drop), unless otherwise specified.

Photopoints

Two permanent photo points will be established within the enhancement/restoration area. Photographs will be taken from these points to visually record the condition of the enhancement/restoration area. Photos shall be taken annually between August 1 and October 30 (prior to leaf drop), unless otherwise specified.

Reports

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

-) Site plan and location map
-) Historic description of project, including date of installation, current year of monitoring, restatement of enhancement/restoration goals, and performance standards
-) Plant survival, vigor, and aerial coverage from every plant community (transect data), and explanation of monitoring methodology in the context of assessing performance standards
-) Buffer conditions, e.g. surrounding land use, use by humans, wild and domestic creatures
-) Observed wildlife, including amphibians, avians and others
-) Assessment of nuisance/exotic biota and recommendations for removal
-) Receipts for off-site disposal of any dumping, weeds, or invasive plants

-)] Receipts for any structural repair or replacement
-)] 4"x6" color photograph taken from permanent photo-points as shown on Monitoring/Restoration plan.
-)] Summary of maintenance and contingency measures proposed for next season and completed for past season

Deficiencies

Any deficiency discovered during any monitoring or inspection visit must be corrected within 60 days of approval by City of Mercer Island.

Contingency Plan

Should any monitoring report reveal the enhancement has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, a Contingency Plan will be submitted. The Contingency 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 enhancement/restoration plan. If the failure is substantial, the City of Mercer Island may extend the monitoring period for that enhancement.

15.21 Bond

Prior to beginning any work, the Permittee must provide a enhancement/restoration bond or assignment of funds per City of Mercer Island procedures. A bond quantity worksheet has been completed based on all elements of the enhancement/restoration plan. The total cost, plus contingency fees, have been determined to be \$7,500, which will be the amount of the enhancement/restoration bond the Permittee is required to provide.

16 Proximity to Wildlife Habitat Conservation Areas and Priority Species

According to MICC, Section 19.07.090, bald eagles are the only protected non-aquatic wildlife species to inhabit Mercer Island. The city defines “wildlife habitat conservation areas” as “those areas used by these species for nesting, breeding, feeding, and survival”. “The provisions of this section do not apply to any habitat areas which come under the jurisdiction of the city’s shoreline master program.” The city’s wetlands, watercourses and shorelines are protected under other sections of the code.

Bald eagles have been delisted federally, but their nests are still provided protection by the state. No bald eagle stick nests were observed within 660 feet of the site, per the city’s on-line Eagle nest buffers. Therefore, state requirements for nest buffers and seasonal construction restrictions do not apply.

17 Conclusion

The proposed buffer enhancement and mitigation measures will improve the functions of the wetland, watercourse and associated buffers. Wildlife habitat and the lake shoreline will benefit from the establishment of a native plant community.

18 Limitations

Stream and wetland determinations and delineations are not final until approved by regulatory agencies and/or local jurisdictions. *J. S. Jones and Associates, Inc.* does not guarantee acceptance or approval by regulatory agencies, or that any intended use will be achieved.

19 References

City of Mercer Island, Mercer Island City Code.

<http://www.codepublishing.com/wa/mercerisland/>

COE. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Environmental Laboratory, Vicksburg, MS.

COE, 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), Environmental Laboratory U.S. Army Corps of Engineers May 2010.

COE, 2016. 2016 National Wetland Plant List, v. 3.3.

http://wetland-plants.usace.army.mil/nwpl_static/index.html

Cowardin, Lewis M. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. Jamestown, North Dakota.

DOE 1997. Washington State Wetlands Identification and Delineation Manual. Publication # 96-94.

Federal Register. 1980. 40 CFR Part 230: Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material. Vol. 45, No. 249, 85352-85353. U.S. Government Printing Office, Washington D.C.

Federal Register. 1982. Title 33: Navigation and Navigable Waters; Chapter II, Regulatory Programs of the Corps of Engineers. Vol. 47, No. 138, p 31810. U.S. Government Printing Office, Washington D.C.

Hruby, T., 2014. Washington State Wetland Rating System for Western Washington: 2014 Update. (Publication #14-06-029). Olympia, WA: Washington Department of Ecology.

MacBeth. 2000. Munsell Soil Color Charts-Revised Washable Edition. 617 Little Britain Road, New Windsor, NY 12553. 10p + 9 charts.

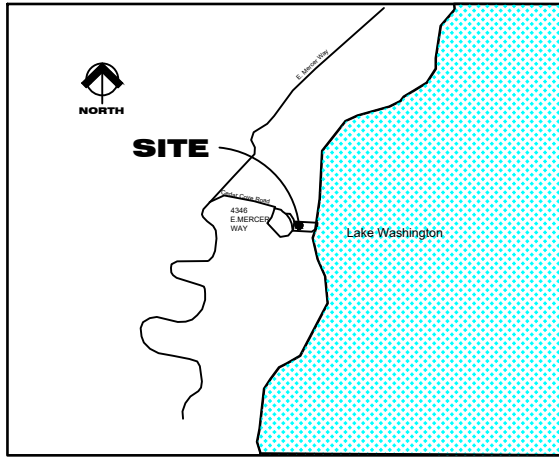
Attachments

Valentin Mitigation Plan - Existing Condition

EAST OF 4346 EAST MERCER WAY, MERCER ISLAND, WASHINGTON 98040

SE 1/4 OF NE 1/4 OF SEC. 18, TWP. 24 N, RGE. 05 E, W.M.

TAX PARCEL ID NUMBERS: 004610-0150 & 004610-0151



VICINITY MAP
NOT TO SCALE

CONTACT INFORMATION

APPLICANT:
JOHAN & HELENA VALENTIN
4227 85TH AVENUE SE
MERCER ISLAND, WASHINGTON 98040
425-213-0358/johan.valentin@gmail.com

ENVIRONMENTAL CONSULTANT:
J. S. JONES AND ASSOCIATES, INC.
ATTN: JEFFERY S. JONES, PWS
P.O. BOX 1908, ISSAQUAH, WA 98027
253-905-5736/jeff.sjones@comcast.net

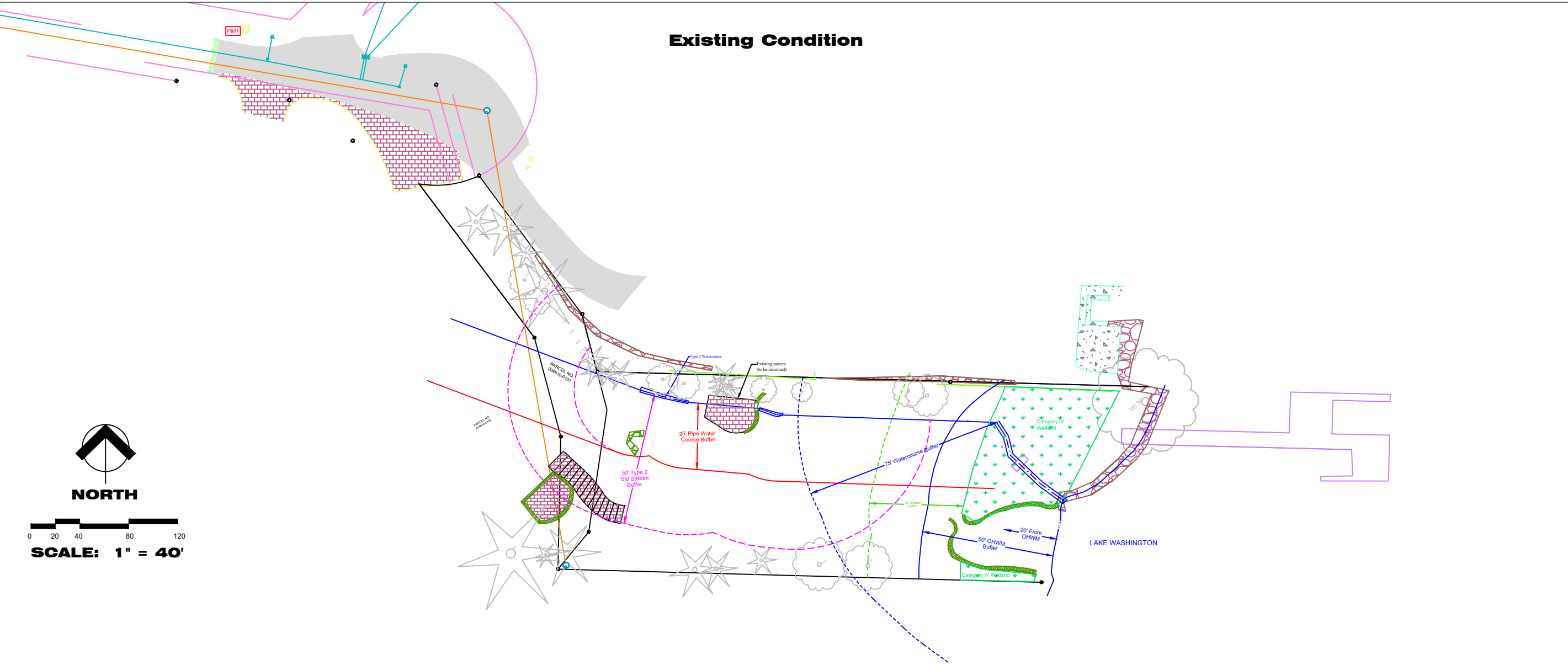
FULL LEGAL DESCRIPTIONS

004610-0150
ADAMS LAKE WASHINGTON TRS POR OF N 20 FT OF 3 & S 55 FT OF 2 ELY OF TR OF LAND DESC IN CONT RECD 9/10/49 IN VOL 2873 OF DEEDS PG 423 & 2ND C SH LDS ADJ

004610-0151
ADAMS LAKE WASHINGTON TRS POR WLY OF LN BEG AT NW COR OF 2 TH E 1239.90 FT TH S 80 DEG 14 MIN 00 SEC E 465.90 FT TH S 16 DEG 58 MIN 00 SEC W 15.11 FT TH S 80 DEG 14 MIN 00 SEC E 42.54 FT TH ON CURVE TO RT RAD 36.15 FT DIST OF 31.78 FT TH ON CURVE TO LFT RAD 38 FT DIST OF 53.86 FT WH IS SLY LN OF TURN AROUND TO TPOB TH S 36 DEG 48 MIN 30 SEC E 65.05 FT TH S 14 DEG 51 MIN 30 SEC E 36.77 FT TH S 08 DEG 30 MIN 00 SEC W 46.75 FT TH S 39 DEG 38 MIN 00 SEC W & ELY OF LN BEG AT PT ON SLY MGN OF TURN AROUND S 10 DEG 53 MIN 34 SEC W 38 FT FR CEN OF SD TURN AROUND TH S 36 DEG 52 MIN 13 SEC E 72.74 FT TH S 14 DEG 55 MIN 13 SEC E 38.66 FT TH S 01 DEG 14 MIN 23 SEC W 50.01 FT TO ELY LN FIRST DESC & SLY LN OF TURN AROUND

004610-0159
ADAMS LAKE WASHINGTON TRS POR 2-3 BEG AT NW COR OF 2 TH E 1239.90 FT TH S 80 DEG 14 MIN 00 SEC E 465.90 FT TH S 16 DEG 58 MIN 00 SEC W 15.11 FT TO TPOB TH S 16 DEG 48 MIN 00 SEC W 68.39 FT TH S 37 DEG 24 MIN 00 SEC W 67.65 FT TH S 43 DEG 29 MIN 00 SEC E 156.48 FT TH N 80 DEG 15 MIN 30 SEC E 67.75 FT TH N 39 DEG 38 MIN 00 SEC E 66.30 FT TH N 08 DEG 30 MIN 00 SEC E 46.75 FT TH N 14 DEG 51 MIN 30 SEC W 36.77 FT TH N 36 DEG 48 MIN 30 SEC W 65.05 FT TH WLY RAD 38 FT THRU 81 DEG 12 MIN 40 SEC OF ARC 53.86 FT TH ON CURVE TO LFT RAD 36.15 FT DIST OF 31.78 FT TH N 80 DEG 14 MIN 00 SEC W 42.54 FT TO TPOB LESS POR ELY OF LN BEG AT PT ON SLY MGN OF TURN AROUND S 10 DEG 53 MIN 34 SEC W 38 FT FR CENTER SD TURN AROUND TH S 36 DEG 52 MIN 13 SEC E 72.74 FT TH S 14 DEG 55 MIN 13 SEC E 38.66 FT TH S 01 DEG 14 MIN 23 SEC W 50.01 FT TO ELY LN ABOVE DESC TR TGW UND 1/21 INT IN POR OF TRACT 3 OF ADAMS LAKE WASHINGTON TRACTS LY NLY OF A LN DAF -- BEG AT MON ON NORTH LN OF TRACT 2 SD PLAT AAP 1240.00 FT ML ELY OF NW COR TH S 01-00-16 E 446.31 FT TH S 89-04-24 E 360.80 FT TH N 08-21-11 E 15.13 FT TH S 89-04-24 E 91.66 FT TH ON CRV TO LFT WITH A RAD OF 75.00 AN ARC DIST OF 75.39 FT TO PT OF TANGENCY TH N 33-20-06 E 0.23 FT TO PT 'A' & TPOB OF SD LN TH S 89-04-24 E 262.67 FT ML TO WATER LN OF LAKE WASHINGTON & ELY OF LN BEG A SD PT 'A' & TERM OF SD DESC LN -- BEG AT SD PT 'A' TH N 33-20-06 E 108.39 FT TH N 88-26-16 W 27.99 FT TH N 80-15-30 E 11.32 FT TH N 39-38-00 E 66.30 FT TH N 08-30-00 E TO NORTH LN OF SD TRACT 3-LESS POR ON NORTH 20.00 FT (AS DESC UNDER VOL 2873 PAGE 423-09/10/1949) . AND LESS BEG AT SD PT 'A' TH S 89-04-24 E TO OUTER LIMITS OF SH LDS TH NLY TAP 60.00 FT SOUTH OF NORTH LN SD TRACT 3 PROD EAST TH N 88-26-16 W TAP N 33-20-06 E OF BEG TH S 33-20-06 W TO BEG

Existing Condition



NO.	DATE	BY	REVISION
1	06/07/18	CS	Driveway, trails, building footprint
2	07/20/18		Add Sheet 6 of 6 (Watercourse detail at OHWM)

CONSULTANT:
J. S. Jones and Associates, Inc.
Environmental Consultants
Wetlands, Streams, and Wildlife
P.O. BOX 1908 ISSAQUAH, WASHINGTON 98027

CLIENT: **JOHAN & HELENA VALENTIN**
4346 E. Mercer Island Way, Mercer Island, WA 98040
1-214-228-0536 Johan.valentin@gmail.com

PROJECT: **Existing Condition**
STREAM BUFFER ENHANCEMENT PLAN
TAX PARCEL ID NO.: 004610-0150, 004610-0151, & 004610-0159

DESIGNED BY: Jeff Jones
DRAWN BY: Jeff Jones
CHECKED BY: Jeff Jones
APPROVED BY: Jeff Jones
DATE: 9/23/2018

SCALE: 1"=40'
SHEET 1 of 5

Valentin Mitigation Plan - Impacts and Buffer Mitigation

EAST OF 4346 EAST MERCER WAY, MERCER ISLAND, WASHINGTON 98040
SE 1/4 OF NE 1/4 OF SEC. 18, TWP. 24 N, RGE. 05 E, W.M.

TAX PARCEL ID NUMBERS: 004610-0150 & 004610-0151

Proposed Impacts and Mitigation

Proposed Residence Footprint 2,917 sf
Buffer Alteration 223 sf

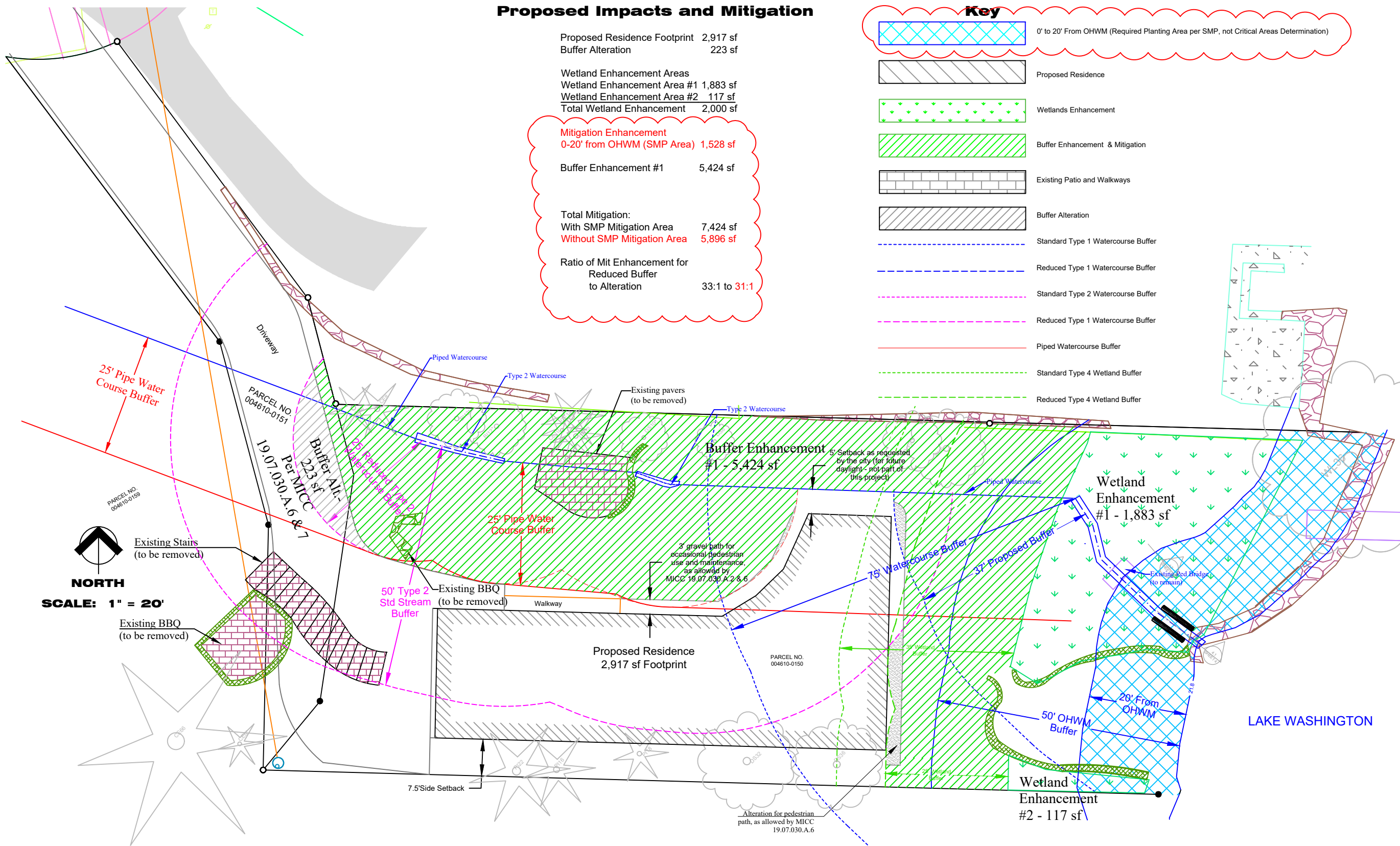
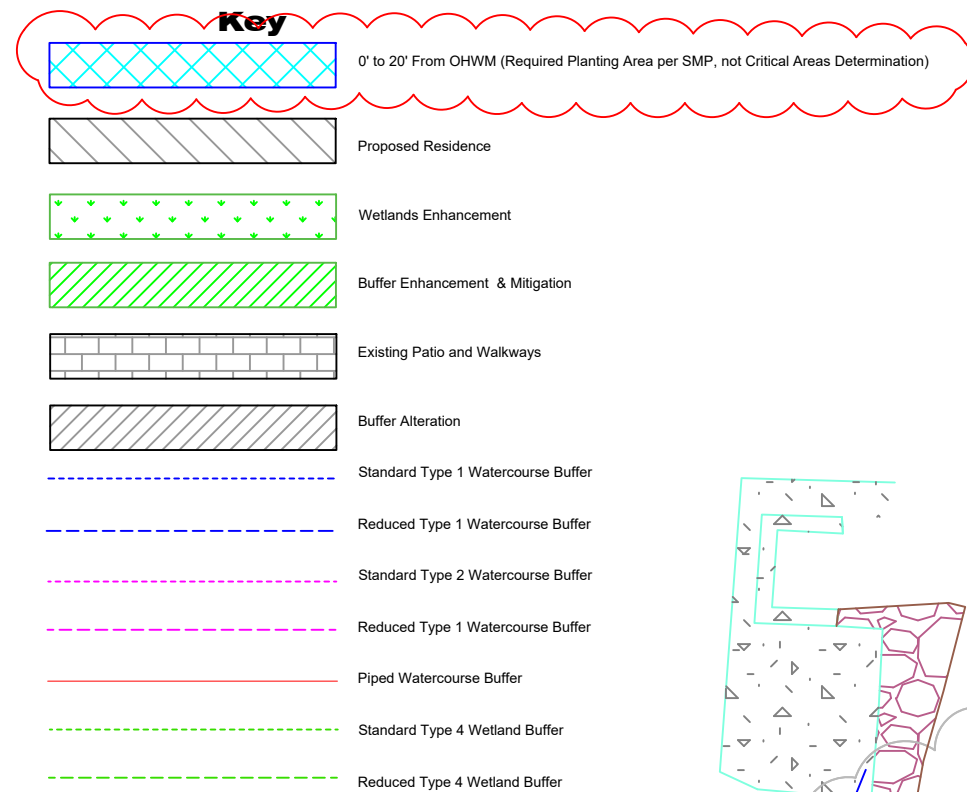
Wetland Enhancement Areas
Wetland Enhancement Area #1 1,883 sf
Wetland Enhancement Area #2 117 sf
Total Wetland Enhancement 2,000 sf

Mitigation Enhancement
0-20' from OHWM (SMP Area) 1,528 sf

Buffer Enhancement #1 5,424 sf

Total Mitigation:
With SMP Mitigation Area 7,424 sf
Without SMP Mitigation Area 5,896 sf

Ratio of Mit Enhancement for
Reduced Buffer
to Alteration 33:1 to 31:1



DESIGNED BY: Jeff Jones	CHECKED BY: Jeff Jones	DATE: 3/27/18
DRAWN BY: Jeff Jones	APPROVED BY:	
<p>JOHAN & HELENA VALENTIN 4346 E. Mercer Island Way, Mercer Island, WA 98040 1-214-228-0536 Johan.valentin@gmail.com</p> <p>VALENTIN PROPERTY STREAM BUFFER ENHANCEMENT PLAN TAX PARCEL ID NO.: 004610-0150, 004610-0151, & 004610-0159</p>		
<p>CONSULTANT: J. S. Jones and Associates, Inc. Environmental Consultants Wetlands, Streams, and Wildlife P.O. BOX 1908 ISSAQUAH, WASHINGTON 98027</p>		
SCALE 1"=20'	SHEET 2 of 5	

VALENTIN PROPERTY - BUFFER REDUCTION MITIGATION PLAN

EAST OF 4346 EAST MERCER WAY, MERCER ISLAND, WASHINGTON 98040

SE 1/4 OF NE 1/4 OF SEC. 18, TWP. 24 N, RGE. 05 E, W.M.

TAX PARCEL ID NUMBERS: 004610-0150 & 004610-0151

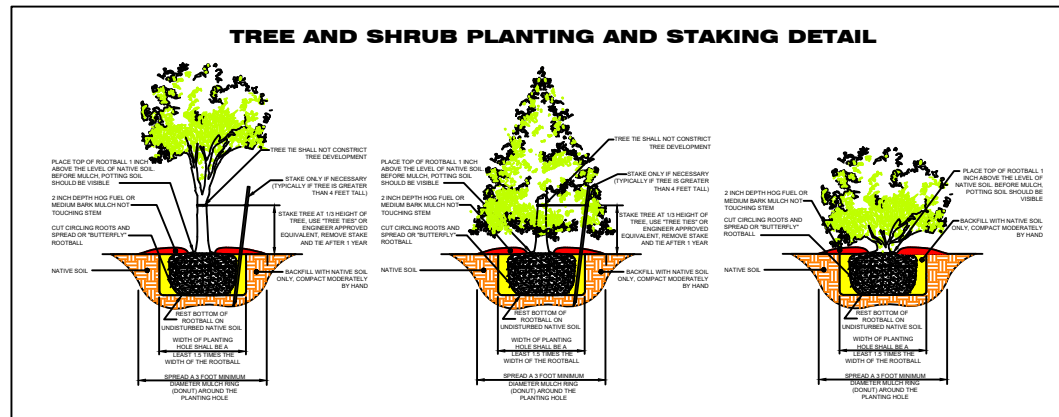


CLEARING AND GRADING STANDARD NOTES

1. A COPY OF THE APPROVED PLANS MUST BE ON-SITE DURING CONSTRUCTION. THE APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER REQUIRED OR RELATED PERMITS PRIOR TO BEGINNING CONSTRUCTION.
2. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS AND TO AVOID UTILITIES WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.
3. A REINFORCED EROSION CONTROL FENCE MUST BE INSTALLED IN ACCORDANCE WITH THE TESP PLAN.
4. TO REDUCE THE POTENTIAL FOR EROSION OF EXPOSED SOILS, BEST MANAGEMENT PRACTICES (BMPs) MUST BE FOLLOWED ACCORDING TO THE TESP PLAN.

CONSTRUCTION SEQUENCE:

1. HOLD THE PRE-CONSTRUCTION MEETING
2. STAKE CLEARING LIMITS
3. INSTALL PERIMETER EROSION CONTROL FENCING
4. GRADE AND INSTALL CONSTRUCTION ENTRANCE(S)
5. REMOVE EXISTING PLANT MATERIALS
6. INSTALL PIPELINE
7. RECONSTRUCT STREAM CHANNEL
8. INSTALL ROCK SPLASH POOL
9. INSTALL PLANT MATERIALS
10. MULCH PLANT MATERIALS
11. INSTALL TEMPORARY IRRIGATION SYSTEM
12. STABILIZE, OR COVER ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS
13. UPON COMPLETION OF THE PROJECT, REMOVE BMP'S AS APPROPRIATE



PLANT SCHEDULE										
SIGNAL	COMMON NAME	SCIENTIFIC NAME	SIZE	QTY Wetland Area #1	QTY Wetland Area #2	QTY Buffer Area #1	QTY Buffer Area #2	QTY TOTAL	QTY TOTAL	TOTAL
	OREGON ASH	FRAXINUS LATIFOLIA	2 GAL	0	0	0	2	0	0	2
	SITKA SPRUCE	PICEA SITCHENSIS	2 GAL	1	0	0	0	0	0	2
	PAPER BIRCH	BETULA PAPERIFERA	2 GAL	3	0	0	0	0	0	6
	PACIFIC DOGWOOD	CORNUS NUTTALLII	2 GAL	3	0	4	0	0	0	6
	BIG-LEAF MAPLE	ACER MACROPHYLLUM	2 GAL	0	0	0	0	0	0	2
	DOUGLAS FIR	PSEUDOTSUGA MENZIESII	2 GAL	0	0	1	0	0	0	2
	MOCK ORANGE	PHLOEDELPHUS LEWISII	1 GAL	2	0	0	1	0	0	11
	OCEANSPRAY	HOLGERSCIUS DISCOLOR	1 GAL	2	2	0	0	0	0	10
	RHOODODENDRON	RHOODODENDRON MACROPHYLLUM	1 GAL	4	0	0	0	0	0	13
	ROCKY ROSE	ROSA NUTKANANA	1 GAL	0	2	0	0	0	0	11
	VINE MAHLE	ACER CIRCINATUM	1 GAL	0	0	0	0	0	0	11
	OVAL-LEAVED BLUEBERRY	VACCINIUM OVALIFOLIUM	1 GAL	12	2	0	0	0	0	10
	HIGHBUSH CRANBERRY	VIBURNUM TRELORUM	1 GAL	0	2	0	0	0	0	10
	KINNAKINICK	ARCTOSTAPHYLOS UVA-URSI	4 INCH	0	0	100	24	12	216	
	BLAUGH BEEDEE	CAREX OSMOLTA	PLUGS	20	10	0	0	0	0	50
	ORANGE-TWIG DOGWOOD	LOMPEDA CALIDA	4 INCH	5	0	0	0	0	0	0

CONSULTANT:
J. S. Jones and Associates, Inc.
 Environmental Consultants
 Wetlands, Streams, and Wildlife
 P.O. BOX 1908 ISSAQUAH, WASHINGTON 98027

CLIENT:
JOHAN & HELENA VALENTIN
 4346 E. Mercer Island Way, Mercer Island, WA 98040
 1-214-228-0536 johan.valentin@gmail.com

PROJECT:
VALENTIN PROPERTY
 STREAM BUFFER ENHANCEMENT PLAN
 TAX PARCEL ID NO.: 004610-0150, 004610-0151, & 004610-0159

DESIGNED BY:
 Jeff Jones

DRAWN BY:
 Jeff Jones

CHECKED BY:
 Jeff Jones

APPROVED BY:

DATE:
 3/21/18

SCALE
 1"=20'

SHEET
 3 of 5

NO.	DATE	BY	REVISION
2	07/20/18		Add Sheet 6 of 6 (Watercourse detail at OHWM)
1	06/07/18	GS	Driveway, trails, building footprint

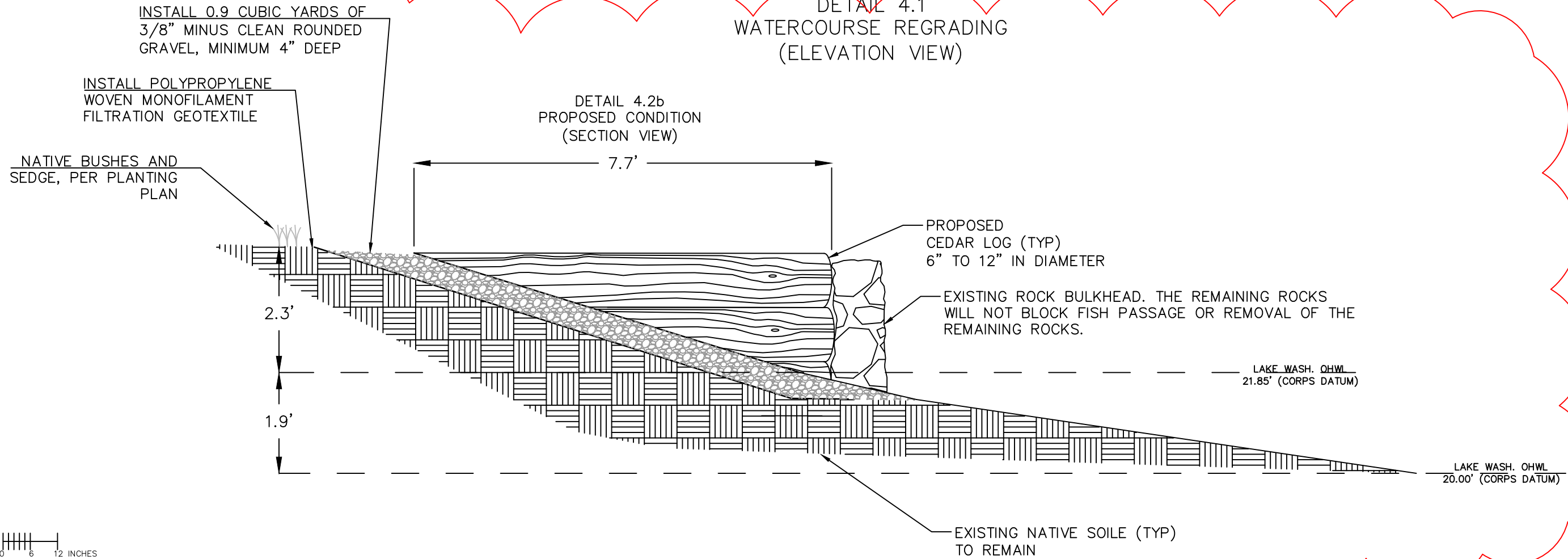
VALENTIN PROPERTY - BUFFER REDUCTION MITIGATION PLAN

EAST OF 4346 EAST MERCER WAY, MERCER ISLAND, WASHINGTON 98040

SE 1/4 OF NE 1/4 OF SEC. 18, TWP. 24 N, RGE. 05 E, W.M.

TAX PARCEL ID NUMBERS: 004610-0150 & 004610-0151

DETAIL 4.1 WATERCOURSE REGRADING (ELEVATION VIEW)



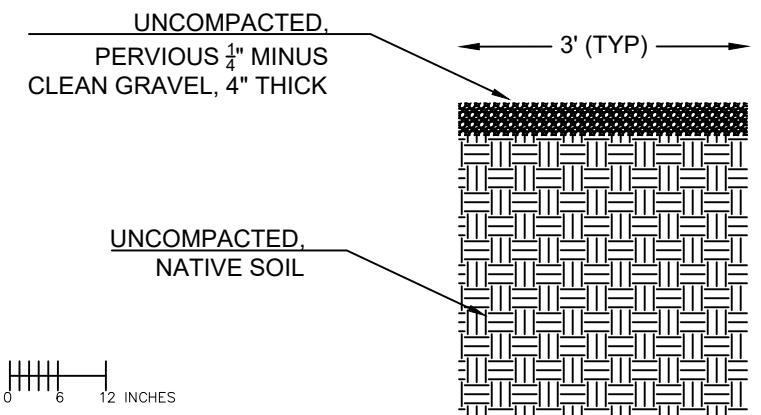
WATERCOURSE REGARDING CONSTRUCTION SEQUENCING

1. For portion of watercourse within 9 feet of the OHWM, temporarily divert watercourse through plastic corrugated pipe;
2. Excavate 2 cubic yards (8 ft long x 4 ft wide x 0 to 2.3 ft deep);
3. Place cedar logs, 6" to 12" in diameter (soft material) along each side of existing watercourse channel, within 8 feet of the OHWM (see Detail 4.1);
4. Backfill behind cedar logs with native soil, as necessary;
5. Grade watercourse channel, per Detail 4.1, within 8 feet of the OHWM;
6. Install polypropylene woven monofilament filtration geotextile on portion of graded watercourse, per Detail 4.1;
7. Place 4" spawning gravel on top of polypropylene woven monofilament filtration geotextile, per Detail 4.1;
8. Remove plastic corrugated pipe, and ensure water flows to regraded watercourse channel.

DETAIL 4.2 PEDESTRIAN TRAIL (ELEVATION VIEW)

PURPOSE:

FOR PEDESTRIAN TRAIL AROUND THE HOUSE (AS ALLOWED BY MICC 19.07.030.A.6 & 3), MAINTENANCE ANTICIPATED ON A 10 YEAR INTERVAL. STANDARD SCAFFOLDING MEASURES APPROXIMATELY 2 FEET WIDE. THIS ALLOW 1' CLEARANCE FOR NEAREST VEGETATION EDGE.



CONSULTANT:
J. S. Jones and Associates, Inc.
Environmental Consultants
Wetlands, Streams, and Wildlife
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1.1 Executive Summary

The applicant proposes to build a new single-family residence on the subject property. A regulated wetland and watercourse is present on the subject property. The applicant proposes to reduce the wetland and watercourse standard buffers. As a condition of the reduction, 5,844 square feet of the remaining buffer will be enhanced with native vegetation. Native plant species will increase plant diversity, improve wildlife habitat and prevent the establishment of invasive species. Furthermore, to address any negative impacts mitigation will be implemented to address an onsite permanent coal-fired brick/stone/steel BBQ structure, removal of brick patio and implementation of large woody debris along the watercourse and placement of logs within the watercourse.

1.2 Goals and Objectives

The goal of enhancement is to increase the functions and values of the existing watercourse buffer through enhancement. Currently the watercourse buffer is ornamental landscaping, mostly open lawn and hardscapes. Enhancements will provide greater protection for the watercourse and habitat diversity. The objectives necessary to meet the above stated goal are as follows:

- Install native vegetation within the reduced watercourse buffer
- Enhance the wetland with native vegetation
- Remove ornamental landscaping, structures and hardscapes
- Maintain and monitor the enhancement areas for a period of five years or until the site meets the specified performance standards
- Record the sensitive area in a "Notice on Title"
- If the enhancement area fails to meet performance standards provide a contingency plan to rectify the situation.

1.3 Project Location

Property is located directly East of current residence, 4346 East Mercer Way, Mercer Island, WA.

1.4 Responsible Parties

Applicant

Johan Valentin and Helena Kjellander Valentin
4346 East Mercer Way, Mercer Island, WA 98040
(214) 228-0536

Environmental Consultant

J.S. Jones and Associates, Inc.
Attn: Jeffery S. Jones, PWS
P.O. Box 1908, Issaquah WA 98027
(253) 905-5736

1.5 Standards

All work and materials shall conform to City of Mercer Island standards and specifications, and to the specifications and details shown on these plans.

1.6 City of Mercer Island Contact

Certain actions within this enhancement/restoration plan require inspection or approval by City of Mercer Island staff. Requests for inspection/approval shall be coordinated through City of Mercer Island Development Services, (206) 275-7605.

1.7 Contractor Information

When it is available, contact information shall be provided to the City of Mercer Island that includes names, addresses and phone numbers of persons/firms that will be responsible for the enhancement/restoration area, installing required plants, and performing required maintenance and monitoring.

1.8 Contractor's Qualifications

Contractor/Landscape Installer must be experienced in enhancement and restoration work. The Permittee shall provide that there is one person on the site at all times during work and installation who is thoroughly familiar with the type of materials being installed and the best methods for their installation, and who shall direct all work being performed under these specifications. This person shall be experienced in installing plant materials for native enhancement or restoration projects, unless otherwise allowed by the Wetland Biologist and City of Mercer Island staff.

1.9 Site Conditions

The Contractor shall immediately notify the Landscape Designer and Wetland Biologist of drainage or soil conditions likely to be detrimental to the growth or survival of plants. Locations shall be as depicted on the approved plan set. The Wetland Biologist may adjust the locations of plantings shown on plans based on field conditions. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat. Changes should be documented and as-built drawings submitted to the City of Mercer Island upon request for formal construction approval.

1.10 Plants

Origin: Plant materials shall be Northwest native plants, nursery grown in the Puget Sound region of Washington.

Plant Names: Plant names shall comply with those generally accepted in the native plant nursery trade. All plant materials shall be true to species and variety.

Plant Substitutions: Plant substitutions are not permitted without the permission of the City of Mercer Island staff. Same species substitutions of larger size do not require permission. However, small plants often experience less transplant shock and adapt more quickly to site conditions, resulting in a higher success rate. As such, smaller plants will be approved as substitutions based on certain site-specific conditions (trees not less than 1-gallon size however).

Quality and Condition: Plants shall be normal in pattern of growth, healthy, well-branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried-out, burned, broken, or defective plants will be rejected.

Intermediate Inspections: All plants shall be inspected prior to installation. Condition of roots of a random sample of plants will be inspected, as well as all above ground growth on all plants. Roots of any bare root plants, if permitted for use, will be inspected. Plant material may be approved at the source, but all material must be re-inspected and approved on the site prior to installation.

Handling: Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Landscape Designer and City of Mercer Island staff. Bare root plants must have enough fibrous root to insure plant survival. Roots must be covered at all times with mud and wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

Damaged Plants: Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.

Roots: All plants shall be balled and burlapped or containerized, unless explicitly authorized by the Wetland Biologist. Root bound plants or B&B plants with damaged, cracked or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and twisted) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half an inch in two to four places. Bare root plantings of woody material is allowed only with permission from the Wetland Biologist, and City of Mercer Island staff.

Sizes: Plant sizes shall be the size indicated in the plant schedule. Larger stock may be acceptable provided that it has not been cut back to size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and under some circumstances preferable, based on site-specific conditions. Measurements, caliper, ratching and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Association of Nurserymen (latest edition).

Form: Shrubs shall have multiple stems and be well-branched.

Planting: Planting shall be done in accordance with illustrated details in the enhancement/restoration plan set and accepted industry standards. Plant locations shall also be inspected and approved prior to planting.

Timing of Planting: Unless otherwise approved by City of Mercer Island staff, all planting shall occur between September 1 and March 31, unless irrigation is provided.

Planting in Pits: Planting pits shall be circular or square with vertical sides, and shall be 6" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits, as illustrated in planting detail. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting soils.

Soil Amendments: Unless otherwise specified and approved by City of Mercer Island, native soil will be incorporated into the planting pits.

Mulch: The entire mitigation area shall receive no less than 1"-4" of medium bark mulch after planting. Mulch shall be kept well away (at least 2") from the trunks and stems of woody plants.

Fertilizer: Slow release fertilizer may be used if pre-approved by City of Mercer Island staff. Fertilizers shall be applied only at the base of plantings underneath the required covering of mulch (that does not make contact with stems of the plants). No fertilizers will be placed in planting holes.

Water: Plants shall be watered upon completion of backfilling. Plants shall be watered a second time within 24-48 hours after installation. The earthen rim/dam should be leveled prior to the second growing season.

Weeding: Existing and exotic vegetation in the enhancement and buffer areas will be hand weeded from around all newly installed plants on routine basis throughout the monitoring period. No chemical control of vegetation on any portion of the site is allowed without the written permission of City of Mercer Island staff.

1.11 Maintenance

Maintenance shall be required in accordance with City of Mercer Island guidelines and approved plans.

1.12 Duration and Extent

In order to achieve performance standards, the Permittee shall have the enhancement/restoration area maintained for the duration of the monitoring period, 5 years. All maintenance shall include:

- watering
- weeding around base of installed plants
- pruning
- replacement
- restaking
- removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-7150-005) as well as Himalayan blackberry
- any other measures needed to insure plant survival
- general maintenance activities which include the replacement of any vandalized or damaged signs, habitat features, fences or other structural component of the enhancement site.

1.13 Survival

The Permittee shall be responsible for the health of 100% of all newly installed plants for one growing season after installation has been accepted by City of Mercer Island staff (see Performance Standards). A growing season for these purposes is defined as occurring from spring to spring (March 15 to October 15, following year). The Permittee shall replace any plants that are failing, weak, defective in a manner of growth, or dead during this growing season.

1.14 Installation Timing for Replacement Plants

Replacement plants shall be installed between September 1 and March 31, unless otherwise determined by City of Mercer Island staff.

1.15 Standards for Replacement Plants

Replacement plants shall meet the same standards for size and type as those specified for original installation unless otherwise directed by the City of Mercer Island staff. Replacement plants shall be inspected as described above for the original installation.

1.16 Replanting

Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by City of Mercer Island staff.

1.17 Herbicides/Pesticides

Chemical controls shall not be used in the enhancement/restoration area, sensitive areas or their buffers. However, limited use of herbicides may be approved depending on site specific conditions, only if approved by City of Mercer Island staff.

1.18 Irrigation/Watering

Water may be necessary during the dry season (June 1-October 15) for the first two years after installation to ensure plant survival and establishment. Water should be provided by a temporary above ground or permanent below ground irrigation system. It is the responsibility of the applicant to have the temporary irrigation designed, installed and maintained so that the necessary water amounts are provided. Water should be applied at a rate of 1" of water two times a week for Year 1 and 1" of water one time a week during Year 2.

1.19 Performance Standards - Plant Cover and Survival

Plant survival and cover standards are established to measure enhancement success as follows:

	Year 1	Year 3	Year 5
Shrub and Herbaceous Cover*	30%	50%	75%
Shrub and Herbaceous Survival	100%	>90%	>80%

* Includes beneficial native plants in that category that are naturally recruiting volunteers

- Less than 10% invasive vegetation during any monitoring event.

The establishment of 5 species of native shrubs and 3 species of native groundcovers at the end of the 5 years of monitoring. **For the SMP planting requirement the following performance standard applies: there shall be 75% coverage 5 years after initial installation.**

1.20 Monitoring

Monitoring shall be conducted annually for five years in accordance with the approved enhancement/restoration monitoring plan. Monitoring reports shall be submitted to the City of Mercer Island.

Vegetation Monitoring

Sample plots will be established for vegetation monitoring, and photo-points established from which photos will be taken throughout the monitoring period. Permanent plot location(s) must be identified on enhancement/restoration site plans in the first monitoring report (they may be drawn on approved enhancement/restoration plans by hand). Plots shall detail herb, shrub, and tree aerial cover at radii of 1m, 5m, and 10m respectively, using the Braun-Blanquet releve method or other acceptable field method. Monitoring of vegetation transects shall occur annually between August 1 and October 30 (prior to leaf drop), unless otherwise specified.

Photopoints

Two permanent photo points will be established within the enhancement/restoration area. Photographs will be taken from these points to visually record the condition of the enhancement/restoration area. Photos shall be taken annually between August 1 and October 30 (prior to leaf drop), unless otherwise specified.

Reports

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

- Site plan and location map
- Historic description of project, including date of installation, current year of monitoring, restatement of enhancement/restoration goals, and performance standards
- Plant survival, vigor, and aerial coverage from every plant community (transect data), and explanation of monitoring methodology in the context of assessing performance standards
- Buffer conditions, e.g. surrounding land use, use by humans, wild and domestic creatures

- Observed wildlife, including amphibians, avians and others
- Assessment of nuisance/exotic biota and recommendations for removal
- Receipts for off-site disposal of any dumping, weeds, or invasive plants
- Receipts for any structural repair or replacement
- 4"x6" color photograph taken from permanent photo-points as shown on Monitoring/Restoration plan.
- Summary of maintenance and contingency measures proposed for next season and completed for past season

Deficiencies

Any deficiency discovered during any monitoring or inspection visit must be corrected within 60 days of approval by City of Mercer Island.

Contingency Plan

Should any monitoring report reveal the enhancement has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, a Contingency Plan will be submitted. The Contingency 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 enhancement/restoration plan. If the failure is substantial, the City of Mercer Island may extend the monitoring period for that enhancement.

1.21 Bond

Prior to beginning any work, the Permittee must provide a enhancement/restoration bond or assignment of funds per City of Mercer Island procedures. A bond quantity worksheet has been completed based on all elements of the enhancement/restoration plan. The total cost, plus contingency fees, have been determined to be \$7,500, which will be the amount of the enhancement/restoration bond the Permittee is required to provide.

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