Altmann Oliver Associates, LLC

PO Box 578

Carnation, WA 98014

Office (425) 333-4535

Fax (425) 333-4509



June 24, 2025

AOA-5152

Sonam Ghag s.g90@hotmail.com

SUBJECT: Critical Are

Critical Areas Study for Ghag Residence – 13633 – 171st Ave SE Parcels 722980-0360, -0365, and -0390, King County, WA ADDC22-0144, CADS24-0263, and RESS25-0015

Dear Sonam,

On August 9, 2024, AOA conducted a wetland delineation on the undeveloped subject parcels 722980-0365 and -0360 utilizing the methodology outlined in the May 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Critical areas on Parcel -0390 were approved as part of the constructed house permit (ADDC22-0144).

Actually. DWEL16-0236

1.0 EXISTING CRITICAL AREAS

One wetland (Wetland A) was identified and delineated through the center of Parcels 722980-0365 and -0360 during the field investigation. The wetland boundary and classification on these parcels was approved as part of CADS24-0263. Wetland A also extends into the western portion of Parcel -0390. Wetland A has been approved as a Category IV wetland that requires a 50-foot buffer and 15-foot building setback.

Vegetation within Wetland A contained a forested plant community that included black cottonwood (*Populus balsamifera*), western crabapple (*Malus fusca*), Douglas spirea (*Spiraea douglasii*), Himalayan blackberry (*Rubus armeniacus*), creeping buttercup (*Ranunculus repens*), slough sedge (*Carex obnupta*), lady fern (*Athyrium filix-femina*), and western sword fern (*Polystichum munitum*). Vegetation within the uplands surrounding Wetland A consisted of a mixed upland forest which included Douglas fir (*Pseudotsuga menziesii*), big leaf maple (*Acer macrophyllum*), vine maple (*Acer circinatum*), beaked hazelnut (*Corylus cornuta*), Himalayan blackberry (*Rubus armeniacus*), osoberry (*Oemleria cerasiformis*), western sword fern (*Polystichum munitum*), and trailing blackberry (*Rubus ursinus*).

Attachment A contains data sheets prepared for representative locations in both the wetland and uplands. These data sheets document the vegetation, soils, and hydrology information that aided in the wetland boundary delineation.

2.0 PROPOSED PROJECT

The project consists of the construction of a new drainfield associated with the recently constructed single-family residence on Parcel 722980-0390. A buffer averaging and enhancement report for the residence (**Attachment B**) was approved as part of ADDC22-0144 Actually under DWEL16-0236

As part of the current project, a septic conveyance line would be installed to a new drainfield in the western portion of Parcel 722980-0360. The new drainfield is primarily located outside of the wetland buffer. Only a very small (26 s.f.) buffer area would be temporarily impacted and restored. To minimize potential impacts to the wetland and buffer it is my understanding that the conveyance line would be bored beneath the wetland and buffer to avoid impacting vegetation.

2.1 Buffer Enhancement

The previously approved buffer enhancement plan for the house includes removing the invasive species and re-planting with native species. An updated enhancement plan has been prepared (**Figures 1 through 5**). The proposed plantings would significantly increase the plant species and structural diversity of the buffer over current conditions and would provide much improved physical and visual screening to the wetland from the constructed residence.

It is my understanding that during the house construction the contractor inadvertently cleared the buffer. Therefore we are now also enhancing those areas that were previously native and not enhanced as part of the last approved plan.

The only buffer impact on Parcel –0390 currently required is for several dispersion trenches (119 s.f.). This minor impact will be fully mitigated through implementation of the buffer enhancement plan. As required, a three-year maintenance and monitoring program has been prepared (**Figure 4**) and will be implemented as part of the project.

2.2 Mitigation Sequencing

Per KCC 21A.24.125, an applicant for a development proposal or alteration, shall apply the following sequential measures, which appear in order of priority, to avoid impacts to critical areas and critical area buffers:

1. Avoiding the impact or hazard by not taking a certain action;

All direct impacts to critical areas will be avoided by boring under the wetland. Buffer impacts have also been avoided to the extent feasible and are limited to a very small (26 s.f.) disturbance area for the drainfield and 119 s.f. of disturbance associated with the required dispersion trenches.

- 2. Minimizing the impact or hazard by:
- a. limiting the degree or magnitude of the action with appropriate technology; or
- b. taking affirmative steps, such as project redesign, relocation or timing;

Critical area impacts have been minimized through the use of boring technology for the conveyance line rather than trenching through the wetland and buffer.

3. Rectifying the impact to critical areas by repairing, rehabilitating or restoring the affected critical area or its buffer;

All temporarily impacted areas will be fully restored and all degraded buffer areas on Parcel -0390 will be replanted with a variety of native plant species.

4. Minimizing or eliminating the hazard by restoring or stabilizing the hazard area through engineered or other methods;

All temporarily impacted areas will be fully restored as part of the project.

5. Reducing or eliminating the impact or hazard over time by preservation or maintenance operations during the life of the development proposal or alteration;

All of the buffer areas will be preserved in perpetuity. A rail fence will .be installed along the buffer edge to limit pedestrian intrusion

6. Compensating for the adverse impact by enhancing critical areas and their buffers or creating substitute critical areas and their buffers; and

An updated enhancement plan has been prepared (**Figures 1 through 5**). The proposed plantings would significantly increase the plant species and structural diversity of the buffer over current conditions and would provide much improved physical and visual screening to the wetland from the constructed residence.

7. Monitoring the impact, hazard or success of required mitigation and taking remedial action.

A three-year maintenance and monitoring program has been prepared (**Figure 4**) and will be implemented as part of the project.

If you have any questions, please give me a call.

Sincerely,

ALTMANN OLIVER ASSOCIATES, LLC

John Altmann Ecologist

Attachments

Carnation, WA 98014

60

90

120

■US Feet

Office (425) 333-4535 Fax (425) 333-4509

AOA-5152

Environmental Planning & Landscape Architecture

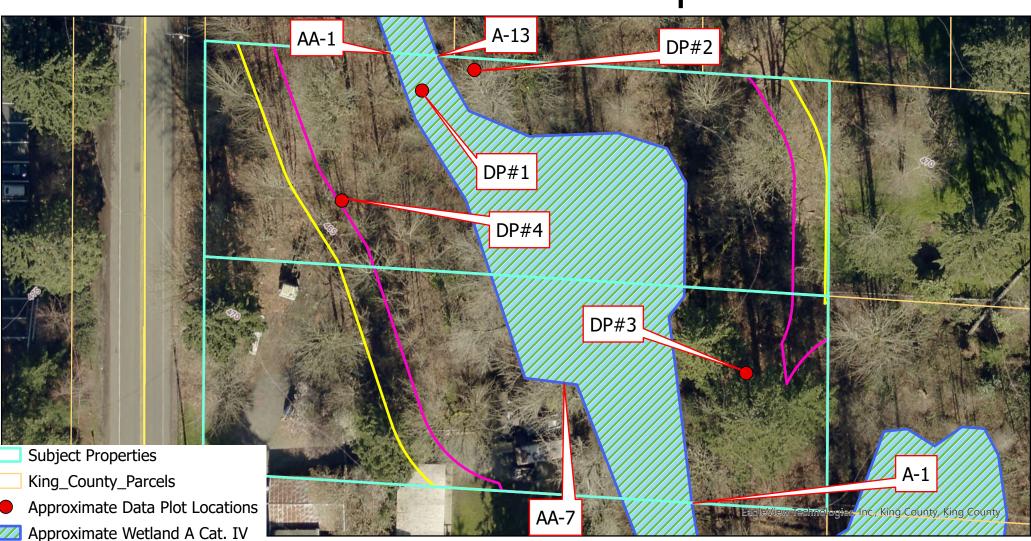
King County Parcels: 7229800365

Approximate 50' Wetland Buffer

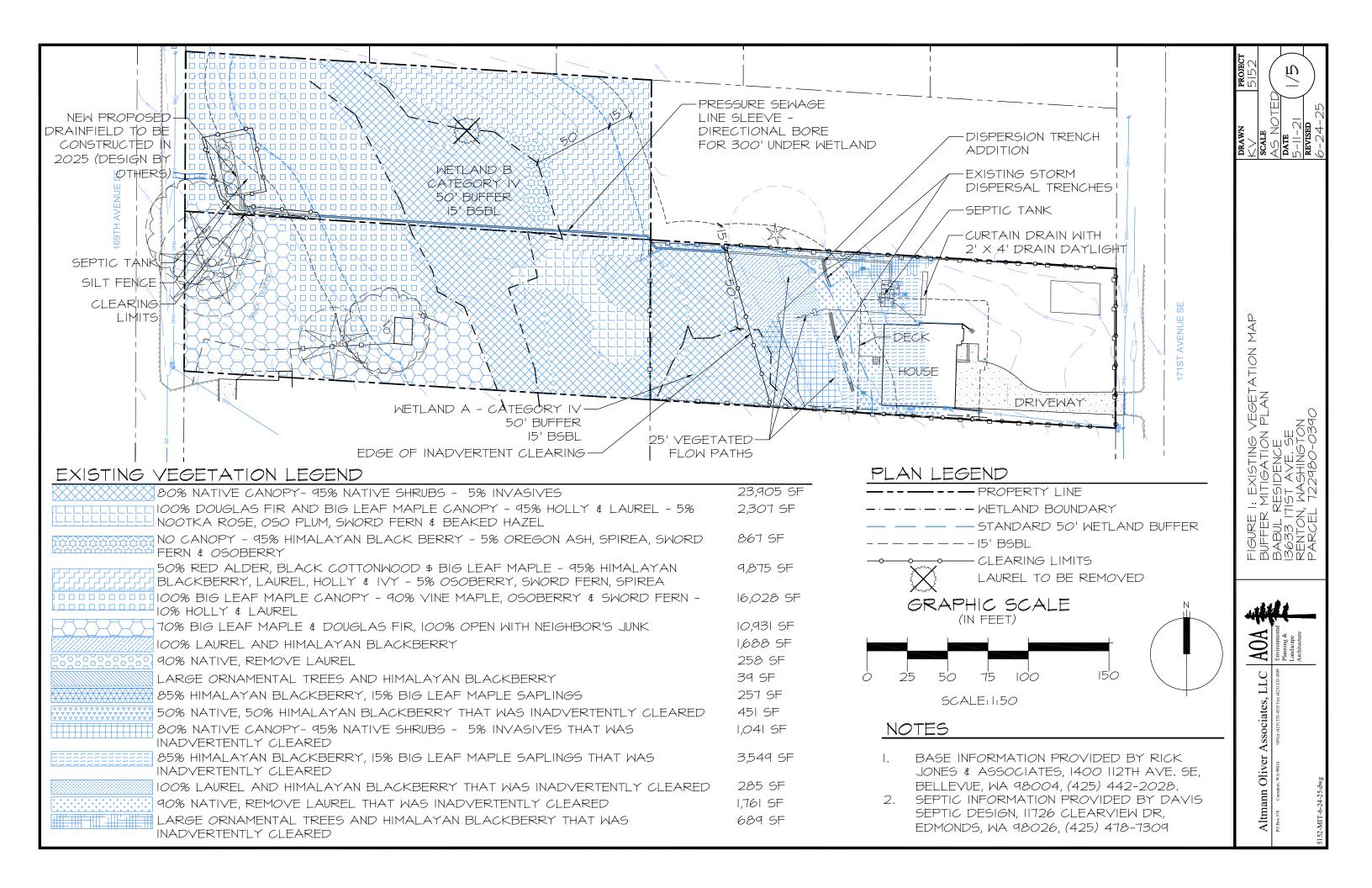
Approximate 15' Building Setback

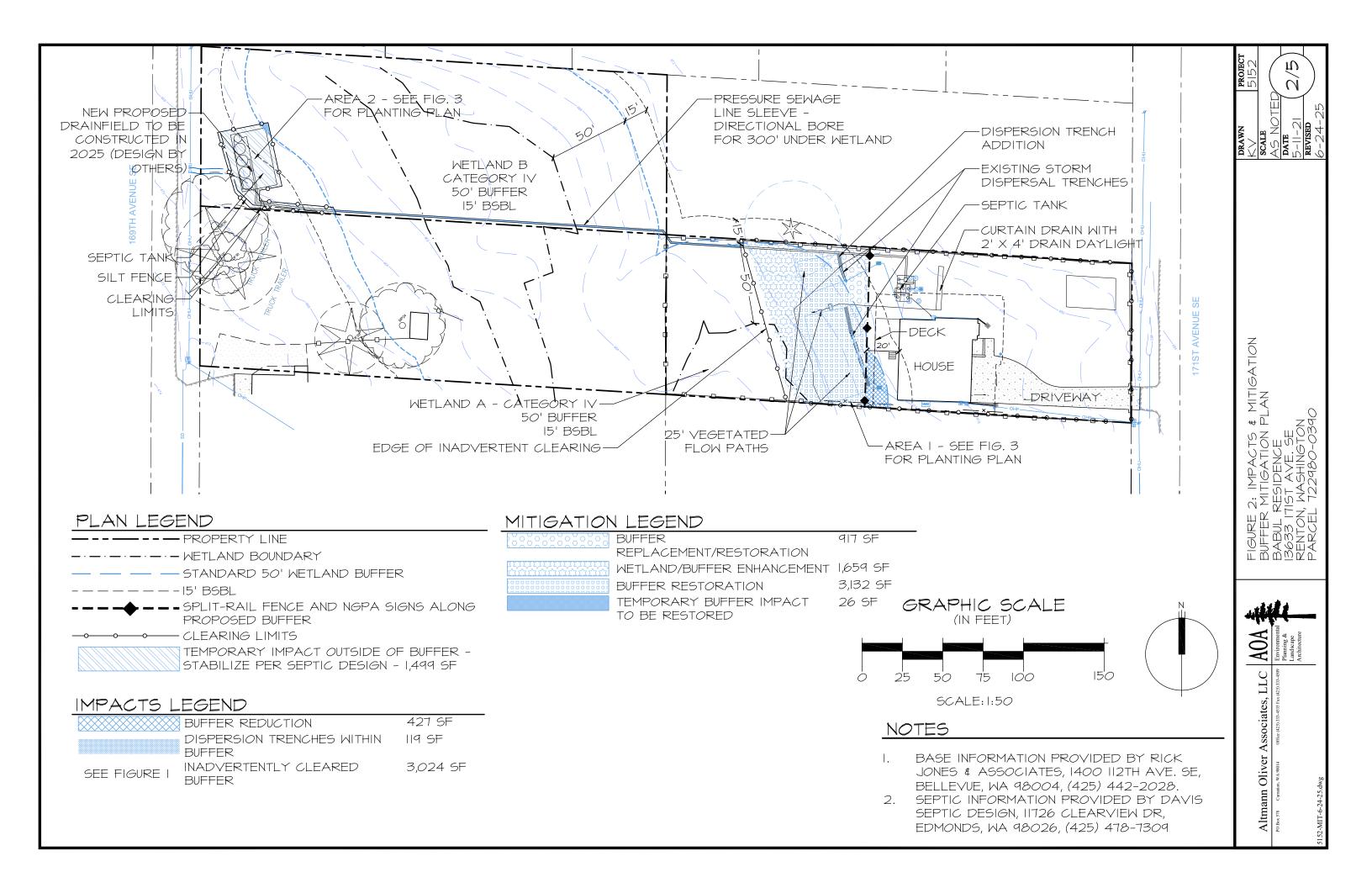
& 7229800360

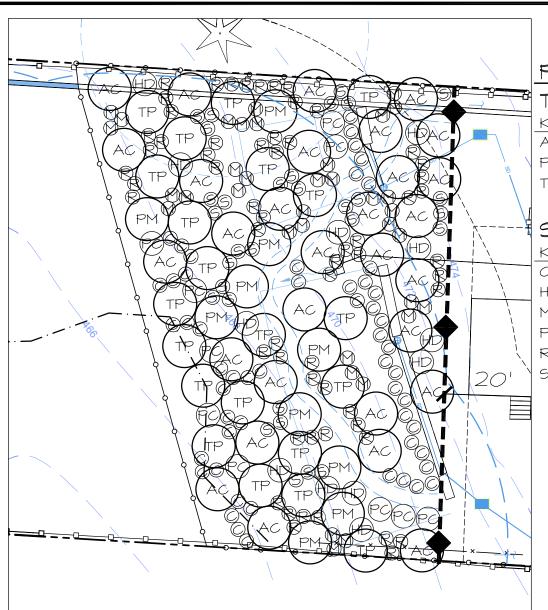
Critical Areas Map











PLANTING PLAN - AREA I

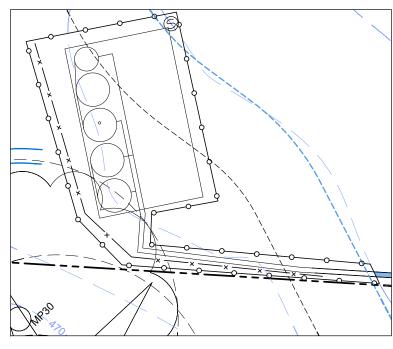
PLANT SCHEDULE

TREES

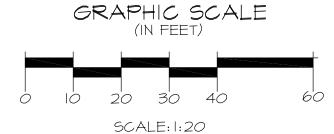
KEY	SCIENTIFIC NAME	COMMON NAME	DENSITY	QTY.	SIZE (MIN.)	NOTES
AC	ACER CIRCINATUM	VINE MAPLE	9' O.C.	31	2 GAL.	MULTI-STEM (3 MIN.)
PM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	9" O.C.	10	2 GAL.	FULL & BUSHY
TP	THUJA PLICATA	WESTERN RED CEDAR	9' O.C.	21	2 GAL.	FULL & BUSHY

SHRUBS

	KEY	SCIENTIFIC NAME	COMMON NAME	DENSITY	QTY.	SIZE (MIN.)	NOTES
	C	CORNUS SERICEA	RED-05IER DOGWOOD	6' O.C.	55	I GAL.	MULTI-CANE (3 MIN.)
	HD	HOLODISCUS DISCOLOR	OCEAN SPRAY	6' O.C.	12	I GAL.	MULTI-CANE (3 MIN.)
	М	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	6' O.C.	36	I GAL.	FULL & BUSHY
	PC	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	6' O.C.	10	I GAL.	MULTI-CANE (3 MIN.)
	R	ROSA NUKANA	NOOTKA ROSE	6' O.C.	60	I GAL.	MULTI-CANE (3 MIN.)
\	5	SYMPHORICARPOS ALBUS	SNOWBERRY	6' O.C.	32	I GAL.	MULTI-CANE (3 MIN.)



PLANTING PLAN - AREA 2 SCALE - 1:20



NOTES

- I. BASE INFORMATION PROVIDED BY RICK JONES & ASSOCIATES, 1400 112TH AVE. SE, BELLEVUE, WA 98004, (425) 442-2028.
- 2. SEPTIC INFORMATION PROVIDED BY DAVIS SEPTIC DESIGN, 11726 CLEARVIEW DR,

AOA

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Planning &
Landscape Altmann Oliver Associates, LLC

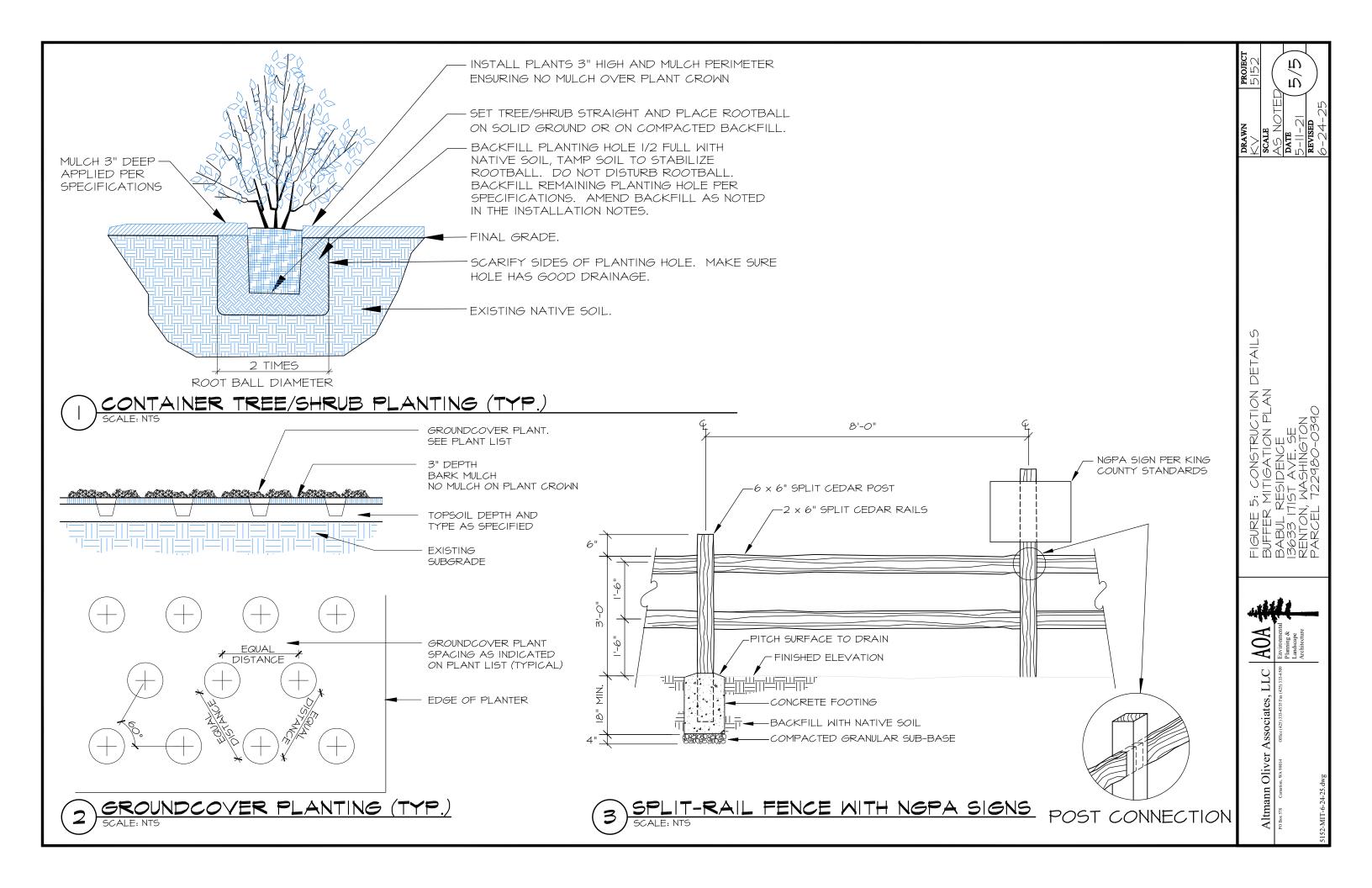
- I. IN GRADED AREAS, PLACE 4" OF IMPORTED CEDAR GROVE COMPOST OVER SUBSOILS AND LIGHTLY TILL INTO THE TOP 6" OF SUBGRADE. IN NON-GRADED AREAS, REMOVE INVASIVES AND LIGHTLY TILL 6" TO LOOSEN SUBGRADE, OUTSIDE OF TREE DRIPLINES.
- 2. PRIOR TO PLANTING, ALL NON-ORGANIC DEBRIS AND NON-NATIVE VEGETATION SHALL BE REMOVED AND GRUBBED FROM ALL ENHANCEMENT AREAS PRIOR TO PLANT INSTALLATION.
- 3. KC NGPA SIGNS SHALL BE INSTALLED PER KC STANDARDS AT 48' SPACING ALONG THE PROPOSED BUFFER BOUNDARY AS DEPICTED ON FIGURE 2.
- 4. ALL PLANTS SHOULD BE INSTALLED BETWEEN DECEMBER IST AND MARCH 15TH UNLESS TEMPORARY IRRIGATION IS PROVIDED AT TIME OF PLANTING.
- 5. PRIOR TO INSTALLATION OF PLANT MATERIAL, THE BEDS WILL BE LAID OUT BASED ON THE PLANTING PLAN AND APPROVED BY AOA PRIOR TO INSTALLATION.
- 6. ALL PLANTS SHALL BE PIT-PLANTED IN PLANTING PITS EXCAVATED 2X THE DIAMETER OF THE PLANT. PITS SHALL BE BACKFILLED WITH A 30/10 MIX OF STEERCO TO NATIVE SOIL. PLANTS SHALL BE INSTALLED 3" HIGH AND SURFACED MULCHED TO A DEPTH OF 3" WITH WOODCHIPS OR COMPOSTED HOG-FUEL PLACED CONTINUOUSLY THROUGHOUT THE PLANTING BED.
- 7. ALL TREES SHALL BE 3' HT, 2-GALLON MIN. ALL SHRUBS SHALL BE I-GALLON MIN.
- 8. ALL PLANTS SHALL BE NURSERY GROWN (IN W. WA OR OR.) FOR AT LEAST I YEAR FROM PURCHASE DATE, FREE FROM DISEASE OR PESTS, WELL-ROOTED, BUT NOT ROOT-BOUND AND TRUE TO SPECIES.
- 9. PLANT LAYOUT SHALL BE APPROVED BY AOA PRIOR TO INSTALLATION AND APPROVED UPON COMPLETION OF PLANTING.
- IO. UPON COMPLETION OF PLANTING, ALL PLANTS SHALL BE THOROUGHLY WATERED OR WATERED VIA A TEMPORARY IRRIGATION SYSTEM.
- II. UPON APPROVAL OF PLANTING INSTALLATION BY AOA, KING COUNTY WILL BE NOTIFIED TO CONDUCT A SITE REVIEW FOR FINAL APPROVAL OF CONSTRUCTION.
- 12. MAINTENANCE SHALL BE IMPLEMENTED ON A REGULAR BASIS ACCORDING TO THE SCHEDULE.
- 13. ALL PLANTS SHALL BE HAND-WATERED OR WATERED VIA A TEMPORARY IRRIGATION SYSTEM. WATERING SHOULD OCCUR TWICE-WEEKLY JUNE 15-OCTOBER 15 THE FIRST YEAR AFTER PLANTING AND ONCE WEEKLY JULY I-SEPTEMBER 30 THE SECOND YEAR AFTER PLANTING. FLOW SHOULD OCCUR AT A RATE OF 1/2" OF WATER DURING EACH WATERING EVENT, ENSURING COMPLETE SATURATION OF THE ROOT ZONE.

MAINTENANCE & MONITORING

- I. PERFORMANCE STANDARDS INCLUDE:
 - I) YEAR I THERE WILL BE 100% SURVIVAL OF ALL PLANTED SPECIES. FOLLOWING YEARS 2-3, THERE WILL BE 80% SURVIVAL RATE OF ALL PLANTED SPECIES OR EQUIVALENT REPLACEMENT OF A COMBINATION OF PLANTED AND RE-COLONIZED NATIVE SPECIES.
 - 2) FOLLOWING THE FIRST YEAR AFTER PLANTING, A COMBINATION OF NATIVE OR NATURALIZED WOODY VEGETATION WILL COVER AT LEAST 10% OF THE MITIGATION AREA. THE AREAL COVERAGE WILL INCREASE TO AT LEAST 20% FOLLOWING THE SECOND YEAR AFTER PLANTING, AND 30% FOLLOWING THE THIRD YEAR AFTER PLANTING.
 - 3) AFTER CONSTRUCTION AND FOLLOWING EVERY MONITORING EVENT FOR A PERIOD OF AT LEAST 3 YEARS, EXOTIC AND INVASIVE PLANT SPECIES WILL BE MAINTAINED AT LEVELS BELOW IO% TOTAL COVERAGE IN ALL PLANTED AREAS. THESE SPECIES INCLUDE BUT ARE NOT LIMITED TO; HIMALAYAN AND EVERGREEN BLACKBERRY, REED CANARYGRASS, MORNING GLORY, JAPANESE KNOTWEED, ENGLISH IVY, LAUREL, POISON HEMLOCK, THISTLE, PERIWINKLE, AND CREEPING NIGHTSHADE.
- 2. ANNUAL MONITORING REPORTS WILL BE PREPARED AND SUBMITTED TO KING COUNTY IN THE FALL OF EACH OF THE 3 YEARS OF THE 3-YEAR MONITORING PERIOD. THE REPORTS WILL DETAIL IF THE SITE IS MEETING THE PERFORMANCE STANDARDS AND PROVIDE PHOTOS FROM ESTABLISHED PHOTO POINTS.
- 3. UPON APPROVAL OF PLANTING INSTALLATION BY AOA, KING COUNTY WILL BE NOTIFIED TO CONDUCT A SITE REVIEW FOR FINAL APPROVAL OF CONSTRUCTION.
- 4. MAINTENANCE SHALL BE IMPLEMENTED IN MARCH, MAY, JULY AND OCTOBER FOR THE DURATION OF THE MONITORING PERIOD ACCORDING TO THE SCHEDULE BELOW.

ANNUAL MAINTENANCE	SCH	HEDUL	.E									
MAINTENANCE ITEM	J	F	М	Α	М	J	7	Α	5	0	N	D
WATERING - YEAR I						4	8	8	8	4		
WATERING - YEAR 2							4	4	4			
WEED CONTROL			ı				- 1	ı	-		I	
GENERAL MAINT.		- 1	-				- 1	ı	-		I	-
		•			•	•		•		•		•

1-8 = NUMBER OF TIMES TASK SHALL BE PERFORMED PER MONTH.



ATTACHMENT A DATA SHEETS

Project Site: <u>Parcel 722980-0360, -0365</u>			City/Coun	ty: <u>/King</u> Sampling D)ate: <u>8</u>	<u>8-9-24</u>	
Applicant/Owner: <u>Ghag</u>				State: <u>WA</u> Sampling P	oint: <u>D</u>)P#1	
Investigator(s): <u>John Altmann, Dain Altmann</u>				Section, Township, Range: S13,T23	3N,R5E		
Landform (hillslope, terrace, etc.): depression		Local	relief (conca	ave, convex, none): <u>concave</u>	Slope (%	ó):	
Subregion (LRR): <u>A</u>	Lat: <u>47.47</u>	<u> 19805</u>		Long: <u>-122.11454</u>	Datum:		
Soil Map Unit Name: AgC				NWI classification:			
Are climatic / hydrologic conditions on the site typical for	this time of y	ear? Ye	es 🛛	No			
Are Vegetation ☐, Soil ☐, or Hydrology	☐, significa	antly disturbed	? Are "I	Normal Circumstances" present?	Yes 🗵	No	
Are Vegetation □, Soil □, or Hydrology	☐, naturally	y problematic?	(If ne	eded, explain any answers in Remarks.)			
SUMMARY OF FINDINGS – Attach site map sh	nowing sam	pling point	locations,	transects, important features, etc.			
Hydrophytic Vegetation Present?	Yes 🏻	No 🗆					
Hydric Soil Present?	Yes 🛛		Is the Samp		Yes ⊠	No No	
Wetland Hydrology Present?	Yes ⊠	No 🗆	within a We	tland?			_
Remarks: Located 10' into wetland at A-13.							
VEOETATION II : :::							
VEGETATION – Use scientific names of plants	Absolute	Dominant	Indicator	T			
Tree Stratum (Plot size: 10')	% Cover	Species?	Status	Dominance Test Worksheet:			
1. <u>Populus balsamifera</u>	<u>40</u>	<u>yes</u>	FAC	Number of Dominant Species	<u>5</u>		(A)
2				That Are OBL, FACW, or FAC:	<u> </u>		(71)
3				Total Number of Dominant	6		(B)
4				Species Across All Strata:	<u>6</u>		(D)
50% = <u>20,</u> 20% = <u>8</u>	<u>40</u>	= Total Cove	r	Percent of Dominant Species	00		(A/D)
Sapling/Shrub Stratum (Plot size: 10')				That Are OBL, FACW, or FAC:	<u>83</u>		(A/B)
1. <u>Populus balsamifera</u>	<u>20</u>	<u>ves</u>	<u>FAC</u>	Prevalence Index worksheet:			
2. Rubus spectabilis	<u>20</u>	<u>yes</u>	FAC	Total % Cover of:	Multiply b	<u> </u>	
3				OBL species	x1 =		
4				FACW species	x2 =		
5				FAC species	x3 =		
50% = <u>20</u> , 20% = <u>8</u>	40	= Total Cove	r	FACU species	x4 =		
Herb Stratum (Plot size: 10')				UPL species	x5 =		
Phalaris arundinacea	40	1/00	EACW		A0 -		(D)
	<u>40</u>	<u>yes</u>	<u>FACW</u>	Column Totals:(A)			(D)
2. <u>Ranunculus repens</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index = B/A	<i>t</i> =		
3. <u>Epilobium ciliatum</u>	<u>20</u>	<u>no</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators:			
4. <u>Schedonorus arundinaceus</u>	<u>20</u>	<u>no</u>	<u>FAC</u>	1 – Rapid Test for Hydrophytic Vege	tation		
5				2 - Dominance Test is >50%			
6				☐ 3 - Prevalence Index is ≤3.01			
7				4 - Morphological Adaptations¹ (Prov	/ide supportin	ıg	
8				data in Remarks or on a separate	sheet)		
9				☐ 5 - Wetland Non-Vascular Plants¹			
10				☐ Problematic Hydrophytic Vegetation¹	¹ (Explain)		
11					,		
50% = 60, 20% = 24	120	= Total Cove	 r	¹ Indicators of hydric soil and wetland hydro			
Woody Vine Stratum (Plot size: 10')				be present, unless disturbed or problemati	C.		
1. Rubus ursinus	<u>10</u>	<u>yes</u>	FACU				
2	_			Hydrophytic			
50% = 5, 20% = 2	<u>10</u>	= Total Cove		Vegetation Yes	\boxtimes	No	
	10	- Total Cove		Present?			
% Bare Ground in Herb Stratum				1			
Remarks:							

nches) Color (moist)	%	Color (m	oist) %	Type ¹ Loc ²	 Texture	Remarks
0-16 10YR3/2	<u>95</u>	10YR5/		RM M	gravel lo	- -
			_ <u> </u>			
						<u>-</u>
			- —			
						-
		- -				-
/pe: C= Concentration, D=D	-			coated Sand Grains.		=Pore Lining, M=Matrix
dric Soil Indicators: (Appli Histosol (A1)	Cable to all I		Sandy Redox (S5)			cators for Problematic Hydric Soils ³ : 2 cm Muck (A10)
Histic Epipedon (A2)			Stripped Matrix (Se			Red Parent Material (TF2)
Black Histic (A3)				eral (F1) (except MLRA		Very Shallow Dark Surface (TF12)
Hydrogen Sulfide (A4)			Loamy Gleyed Mat		, _	Other (Explain in Remarks)
Depleted Below Dark Su	face (A11)		Depleted Matrix (F	• •		, ,
Thick Dark Surface (A12)		Redox Dark Surfac	ce (F6)		
Sandy Mucky Mineral (S	1)		Depleted Dark Sur	face (F7)		icators of hydrophytic vegetation and
Sandy Gleyed Matrix (S4)		Redox Depression	s (F8)		vetland hydrology must be present, inless disturbed or problematic.
strictive Layer (if present)						
					I- D	
epth (inches):emarks:				Hydric Soi	is Present?	Yes ⊠ No
DROLOGY				Hydric Sol	is Present?	Yes ⊠ No
DROLOGY etland Hydrology Indicator			at apply)	Hydric Sol		
DROLOGY etland Hydrology Indicator mary Indicators (minimum o					Secon	ndary Indicators (2 or more required)
DROLOGY etland Hydrology Indicator mary Indicators (minimum o Surface Water (A1)		d; check all tha	Water-Stained Lea	aves (B9)	Secon	ndary Indicators (2 or more required) Water-Stained Leaves (B9)
PROLOGY etland Hydrology Indicator mary Indicators (minimum o Surface Water (A1) High Water Table (A2)			Water-Stained Lea	aves (B9)	Secon	ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
PROLOGY etland Hydrology Indicator mary Indicators (minimum o Surface Water (A1) High Water Table (A2) Saturation (A3)			Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11)	ives (B9) 2, 4A, and 4B)	Secon	ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10)
PROLOGY etland Hydrology Indicator mary Indicators (minimum o Surface Water (A1) High Water Table (A2)			Water-Stained Lea	ives (B9) 2, 4A, and 4B) tes (B13)	Secon	ndary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
DROLOGY etland Hydrology Indicator mary Indicators (minimum o Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)			Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (ives (B9) 2, 4A, and 4B) tes (B13)	Secon	mdary Indicators (2 or more required) Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) Drainage Patterns (B10) Dry-Season Water Table (C2)
DROLOGY etland Hydrology Indicator mary Indicators (minimum o Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)			Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (ives (B9) 2, 4A, and 4B) tes (B13) Odor (C1) heres along Living Roots	Secon	ndary 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)
DROLOGY etland Hydrology Indicator mary Indicators (minimum o Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)			Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (Oxidized Rhizosph Presence of Reduc	ives (B9) 2, 4A, and 4B) tes (B13) Odor (C1) heres along Living Roots	Secon	ndary 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)
PROLOGY Etland Hydrology Indicator mary Indicators (minimum o 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)	one required		Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (Oxidized Rhizosph Presence of Reduct Recent Iron Reduct	aves (B9) 2, 4A, and 4B) tes (B13) Odor (C1) heres along Living Roots ced Iron (C4)	Secon	ndary 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)
DROLOGY Interpretation of the properties of the	one required		Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (Oxidized Rhizosph Presence of Reduct Recent Iron Reduct	eives (B9) 2, 4A, and 4B) tes (B13) Odor (C1) neres along Living Roots ced Iron (C4) stion in Tilled Soils (C6) se Plants (D1) (LRR A)	Secon	ndary 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)
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DROLOGY etland Hydrology Indicator mary Indicators (minimum o 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 Ae Sparsely Vegetated Coreld Observations:	rial Imagery ((B7) (B8)	Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (Oxidized Rhizosph Presence of Reduc Recent Iron Reduc Stunted or Stresse Other (Explain in R	aves (B9) 2, 4A, and 4B) tes (B13) Odor (C1) neres along Living Roots ced Iron (C4) stion in Tilled Soils (C6) as Plants (D1) (LRR A) Remarks)	Secon	mdary 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)
DROLOGY etland Hydrology Indicator mary Indicators (minimum o 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 Ae Sparsely Vegetated Core eld Observations: rface Water Present?	rial Imagery (cave Surface	(B7)	Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (Oxidized Rhizosph Presence of Reduct Recent Iron Reduct Stunted or Stresse Other (Explain in Reduct)	aves (B9) 2, 4A, and 4B) tes (B13) Odor (C1) heres along Living Roots ced Iron (C4) ction in Tilled Soils (C6) hs Plants (D1) (LRR A) Remarks)):	Secon	mdary 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)
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DROLOGY etland Hydrology Indicator mary Indicators (minimum o 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 Ae Sparsely Vegetated Core eld Observations: rface Water Present?	rial Imagery (cave Surface	(B7)	Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (Oxidized Rhizosph Presence of Reduct Recent Iron Reduct Stunted or Stresse Other (Explain in Reduct)	aves (B9) 2, 4A, and 4B) tes (B13) Odor (C1) neres along Living Roots ced Iron (C4) ction in Tilled Soils (C6) as Plants (D1) (LRR A) Remarks) ():):):	Secon	mdary 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)
DROLOGY Etland Hydrology Indicator mary Indicators (minimum o 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 Ae Sparsely Vegetated Cor eld Observations: rface Water Present? ster Table Present? turation Present?	rial Imagery (cave Surface Yes	(B7)	Water-Stained Lea (except MLRA 1, 2 Salt Crust (B11) Aquatic Invertebrat Hydrogen Sulfide (Oxidized Rhizosph Presence of Reduct Recent Iron Reduct Stunted or Stresse Other (Explain in Reduct Depth (inches) Depth (inches)	eives (B9) 2, 4A, and 4B) Ites (B13) Odor (C1) Iteres along Living Roots Cod Iron (C4) Ites (D1) (LRR A) Remarks) Code (Long (Living Roots) Code (Living	Secon	ndary 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)

Project Site: <u>Parcel 722980-0360, -0365</u>			City/Coun	ty: <u>/King</u>	Sampling Date:	<u>8-9-24</u>	
Applicant/Owner: <u>Ghag</u>				State: WA	Sampling Point:	DP#2	
Investigator(s): <u>John Altmann, Dain Altmann</u>				Section, Township, Ran	ge: <u>S13,T23N,R5E</u>		
Landform (hillslope, terrace, etc.): terrace		Loca	l relief (conca	ave, convex, none): <u>concave</u>	Slope	(%):	
Subregion (LRR): <u>A</u>	Lat: 47.47	7 <u>9805</u>		Long: <u>-122.11454</u>	Datum: _		
Soil Map Unit Name: AgC				NWI clas	sification:		
Are climatic / hydrologic conditions on the site typical fo	r this time of y	ear? Ye	es 🛛	No	n Remarks.)		
Are Vegetation ☐, Soil ☐, or Hydrology	☐, significa	antly disturbed	? Are "I	Normal Circumstances" present?	? Yes	No	
Are Vegetation ☐, Soil ☐, or Hydrology	□, naturall	y problematic?	(If ne	eded, explain any answers in Re	emarks.)		
SUMMARY OF FINDINGS - Attach site map si	howing san	pling point	locations,	transects, important featu	res, etc.		
Hydrophytic Vegetation Present?	Yes 🗌	No 🛛					
Hydric Soil Present?	Yes 🗌		Is the Samp		Yes	□ No	
Wetland Hydrology Present?	Yes 🗆	No 🖾	within a We	tiand?			
Remarks: Located 10' into upland off A-13							
Tremains. Located to Into apiana on A-13							
VEGETATION – Use scientific names of plants							
Tree Stratum (Plot size: 10')	Absolute	Dominant	Indicator	Dominance Test Worksheet	•		
	% Cover	Species?	Status 54.011	Dominance rest Worksheet			
1. Acer macrophyllum	<u>90</u>	<u>yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC			(A)
2. <u>Populus balsamifera</u>	<u>10</u>	<u>no</u>	<u>FAC</u>	That Are OBL, I ACW, or I AC	٠.		
3				Total Number of Dominant	<u>4</u>		(B)
4				Species Across All Strata:			
50% = <u>50</u> , 20% = <u>20</u>	<u>100</u>	= Total Cove	er	Percent of Dominant Species	<u>0</u>		(A/B)
Sapling/Shrub Stratum (Plot size: 10')				That Are OBL, FACW, or FAC	,: <u>-</u>		
1. <u>Ilex aquifolium</u>	<u>70</u>	<u>ves</u>	<u>FACU</u>	Prevalence Index workshee			
2. <u>Oemleria cerasiformis</u>	<u>20</u>	<u>no</u>	<u>FACU</u>	Total % Cover of	<u> </u>	<u>y by:</u>	
3. Rubus spectabilis	<u>20</u>	<u>no</u>	<u>FAC</u>	OBL species	x1 =		
4. <u>Prunus laurocerasus</u>	<u>10</u>	<u>no</u>	NL (UPL)	FACW species	x2 =		
5				FAC species	x3 =		
50% = <u>60</u> , 20% = <u>24</u>	<u>120</u>	= Total Cove	er	FACU species	x4 =		
Herb Stratum (Plot size: 10')				UPL species	x5 =		
1. Polystichum munitum	<u>5</u>	<u>yes</u>	<u>FACU</u>	Column Totals:	_ (A)		(B)
2				Prevalence	e Index = B/A =		
3				Hydrophytic Vegetation Ind	icators:		
4				☐ 1 – Rapid Test for Hydro	ophytic Vegetation		
5				2 - Dominance Test is >	-		
6.				3 - Prevalence Index is			
7					_	tin a	
8.				4 - Morphological Adapt data in Remarks or o		ung	
9.				5 - Wetland Non-Vascul	ar Plants ¹		
10.							
11.				☐ Problematic Hydrophytic	vegetation (Explain)		
				¹ Indicators of hydric soil and v	vetland hydrology must		
50% = <u>2.5</u> , 20% = <u>1</u>	<u>5</u>	= Total Cove	er	be present, unless disturbed of			
Woody Vine Stratum (Plot size: 10')							
1. Rubus ursinus	<u>30</u>	<u>yes</u>	<u>FACU</u>	Hydronhytic			
2				Hydrophytic Vegetation	Yes 🗆	No	
50% = <u>15</u> , 20% = <u>6</u>	<u>30</u>	= Total Cove	er	Present?	_		_
% Bare Ground in Herb Stratum							
Remarks:							
1							

Depth	Matrix				dox Features						
nches) Color (n		%	Color (m	oist) %	% Type	1 Loc ²	Texture		Remark	s	
<u>0-16</u> <u>10YF</u>	<u>3/4</u>	<u>100</u>		- —			gravel loa	<u></u>			
				- —		-					
						-					
								· —			
				- —	_						
						-					
								· · ·			
/pe: C= Concentration	. D=Depleti	on. RM=f	Reduced Ma	trix. CS=Cover	ed or Coated Sa	and Grains.	² Location: PL=	Pore Lining, M=Ma	trix		
dric Soil Indicators:	•							cators for Problem		Soils ³ :	
Histosol (A1)				Sandy Redo	-			2 cm Muck (A10)	-		
Histic Epipedon (A	2)			Stripped Ma	atrix (S6)			Red Parent Mate	rial (TF2)		
Black Histic (A3)				Loamy Muc	ky Mineral (F1)	(except MLRA 1) 🗆	Very Shallow Dar	k Surface (T	F12)	
Hydrogen Sulfide	A4)			Loamy Gley	ved Matrix (F2)			Other (Explain in	Remarks)		
Depleted Below D	ark Surface	(A11)		Depleted Ma	atrix (F3)						
Thick Dark Surfac	e (A12)			Redox Dark	Surface (F6)						
Sandy Mucky Min	eral (S1)			Depleted Da	ark Surface (F7)			cators of hydrophytic			
Sandy Gleyed Ma	rix (S4)			Redox Depr	ressions (F8)			etland hydrology mu nless disturbed or pi		it,	
strictive Layer (if pr	sent):										
e:	_										
oth (inches):	_					Hydric Soils	s Present?	Ye	es 🗆	No	
marks: no redoxin	norphic featu	ures									
marks: no redoxin	norphic featu	ures									
PROLOGY		ures									
PROLOGY tland Hydrology Inc	icators:		check all th	at apply)			Second	dary Indicators (2 o	r more requir	ed)	
PROLOGY tland Hydrology Inc	icators:		check all th		ied Leaves (B9)		∨	Nater-Stained Leave	es (B9)	ed)	
PROLOGY Itland Hydrology Inc mary Indicators (minin	icators: num of one			Water-Stain	ed Leaves (B9) RA 1, 2, 4A, and		∨		es (B9)	ed)	
PROLOGY Istland Hydrology Inc mary Indicators (mini Surface Water (A	icators: num of one			Water-Stain	RA 1, 2, 4A, and			Nater-Stained Leave	es (B9)	ed)	
ROLOGY tland Hydrology Inc mary Indicators (minin Surface Water (A High Water Table	icators: num of one			Water-Stain (except ML) Salt Crust (E Aquatic Inve	RA 1, 2, 4A, and B11) ertebrates (B13)	d 4B)	U V	Water-Stained Leave	es (B9) d 4B) 310)	ed)	
PROLOGY Itland Hydrology Inc mary Indicators (minir Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Sediment Deposit	icators: num of one 1) (A2)			Water-Stain- (except MLI Salt Crust (E Aquatic Inve Hydrogen S	RA 1, 2, 4A, and B11) ertebrates (B13) sulfide Odor (C1)	d 4B)	V (I C C S	Water-Stained Leave (MLRA 1, 2, 4A, and Drainage Patterns (E Dry-Season Water T Saturation Visible or	es (B9) d 4B) B10) Table (C2) n Aerial Imag		
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PROLOGY Stland Hydrology Inc mary Indicators (minit Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Sediment Deposit Drift Deposits (B3 Algal Mat or Crus Iron Deposits (B5	icators: num of one I) (A2) s (B2))		0	Water-Stain (except ML) Salt Crust (E Aquatic Inve Hydrogen S Oxidized Rh Presence of Recent Iron	RA 1, 2, 4A, and B11) ertebrates (B13) sulfide Odor (C1) nizospheres alon f Reduced Iron (Reduction in Til	d 4B) Ing Living Roots (C4) Iled Soils (C6)	V (() () () () () () () () () () () () ()	Water-Stained Leave MLRA 1, 2, 4A, and Drainage Patterns (E Dry-Season Water T Saturation Visible or Geomorphic Position Shallow Aquitard (Di FAC-Neutral Test (D	es (B9) 3 4B) 310) able (C2) A Aerial Imag 1 (D2) 3)	ery (C9)	
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Project Site: <u>Parcel 722980-0360, -0365</u>			City/Coun	ty: <u>/King</u>	Sampling Date:	<u>8-9-24</u>	
Applicant/Owner: <u>Ghag</u>				State: WA	Sampling Point:	DP#3	
Investigator(s): <u>John Altmann, Dain Altmann</u>				Section, Township, Ran	ge: <u>S13,T23N,R5E</u>		
Landform (hillslope, terrace, etc.): gentle slope		Loca	l relief (conca	ave, convex, none): <u>concave</u>	Slope	(%):	
Subregion (LRR): A	Lat: 47.47	<u> 19805</u>		Long: <u>-122.11454</u>	Datum:		
Soil Map Unit Name: AgC				NWI clas	sification:		
Are climatic / hydrologic conditions on the site typical for	r this time of y	ear? Ye	es 🛛	No	n Remarks.)		
Are Vegetation ☐, Soil ☐, or Hydrology	☐, significa	antly disturbed	? Are "I	Normal Circumstances" present	? Yes	⊠ No)
Are Vegetation ☐, Soil ☐, or Hydrology	☐, naturall	y problematic?	(If ne	eded, explain any answers in Re	emarks.)		
SUMMARY OF FINDINGS - Attach site map sl	nowing sam	pling point	locations,	transects, important featu	res, etc.		
Hydrophytic Vegetation Present?	Yes 🗌	No 🛛					
Hydric Soil Present?	Yes 🗌		Is the Samp		Yes	□ No	o ⊠
Wetland Hydrology Present?	Yes 🗌	No 🛛	within a We	uanu ?			
Remarks: Upland plot, see map for location.							
Themains. Opiana piot, see map for location.							
VEGETATION – Use scientific names of plants							
Tree Stratum (Plot size: 10')	Absolute	Dominant	Indicator	Dominance Test Worksheet			
	% Cover	Species?	Status 54 OLL	Dominance rest Worksheet			
1. Acer macrophyllum	<u>70</u>	<u>yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC			(A)
2. <u>Pseudotsuga menziesii</u>	<u>60</u>	<u>yes</u>	<u>FACU</u>		'•		
3				Total Number of Dominant	<u>6</u>		(B)
4				Species Across All Strata:			
50% = <u>65</u> , 20% = <u>26</u>	<u>130</u>	= Total Cove	er	Percent of Dominant Species That Are OBL, FACW, or FAC	. <u>16</u>		(A/B)
Sapling/Shrub Stratum (Plot size: 10')							
1. <u>Oemleria cerasiformis</u>	<u>60</u>	<u>ves</u>	<u>FACU</u>	Prevalence Index workshee			
2. <u>Acer circinatum</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	Total % Cover of		<u>y by:</u>	
3. <u>Ilex aquifolium</u>	<u>20</u>	<u>no</u>	<u>FACU</u>	OBL species	x1 =		
4. Rubus spectabilis	<u>10</u>	<u>no</u>	<u>FAC</u>	FACW species	x2 =		
5				FAC species	x3 =		
50% = <u>65</u> , 20% = <u>26</u>	<u>130</u>	= Total Cove	er	FACU species	x4 =		
Herb Stratum (Plot size: 10')				UPL species	x5 =		
1. <u>Lapsana communis</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>	Column Totals:	_ (A)		_(B)
2				Prevalence	e Index = B/A =		
3				Hydrophytic Vegetation Ind	icators:		
4				☐ 1 – Rapid Test for Hydro	ophytic Vegetation		
5				☐ 2 - Dominance Test is >	50%		
6				☐ 3 - Prevalence Index is	<3 0 ¹		
7				4 - Morphological Adapt	_	tina	
8.	·			data in Remarks or o		ig	
9.	·			5 - Wetland Non-Vascul	ar Plants ¹		
10.	' <u></u>			☐ Problematic Hydrophytic	Negetation1 (Evoluin)		
11.				Troblematic Hydrophytic	, vegetation (Explain)		
50% = <u>2.5</u> , 20% = <u>1</u>	<u> </u>	= Total Cove		¹ Indicators of hydric soil and v			
Woody Vine Stratum (Plot size: 10')	<u> </u>	- Total Cove	ži	be present, unless disturbed of	or problematic.		
	60		FACIL				
1. <u>Rubus ursinus</u>	<u>60</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic			
2					Yes 🗆	No	\boxtimes
50% = <u>30</u> , 20% = <u>12</u>	<u>60</u>	= Total Cove	er	Present?			
% Bare Ground in Herb Stratum							
Remarks:		·					_
I and the second							

	ription: (Describe to	the dept	n needed to	document the indicator or co	onfirm the absence	of indicators		t: <u>DP#3</u>			
Depth	Matrix	, the acpti	i necaca to	Redox Features	minim the absence	or maicutors	J.,				
nches)	Color (moist)	%	Color (m		Loc ²	_ Texture		Re	marks		
<u>0-16</u>	10YR5/4	100		<u> </u>		gravel loan	<u></u>	110	illains		
<u>0-10</u>	<u>1011(3/4</u>	100		- — —		graverioan	<u> </u>				
				- — —							
				- — —							
			-	- — —							
			-	- — —							
			-	- — —							
pe: C= C	oncentration, D=Depl	etion, RM=	Reduced Ma	trix, CS=Covered or Coated Sa	and Grains. ² Lo	cation: PL=P	ore Lining, M=N	∕latrix			
•	Indicators: (Applical	-		•			tors for Proble		dric Sc	oils³:	
Histos				Sandy Redox (S5)		_	2 cm Muck (A1	_			
	Epipedon (A2)			Stripped Matrix (S6)			Red Parent Ma	•	2)		
	Histic (A3)			Loamy Mucky Mineral (F1)	(except MLRA 1)		Very Shallow D	-	•	12)	
	gen Sulfide (A4)			Loamy Gleyed Matrix (F2)	,	_	Other (Explain			,	
-	ed Below Dark Surfac	ce (A11)		Depleted Matrix (F3)		_	- ()		,		
-	Dark Surface (A12)	,		Redox Dark Surface (F6)							
	Mucky Mineral (S1)		_	Depleted Dark Surface (F7))	³ Indica	itors of hydroph	ytic veget	ation a	nd	
=	Gleyed Matrix (S4)			Redox Depressions (F8)	•		land hydrology ess disturbed or				
	Layer (if present):			1 (-7)		unie	ess disturbed of	problema	auc.		
oe:	, ,										
pth (inche					Hydric Soils P	resent?		Yes		No	D
marks:	no redoximorphic fe	atures									
DROLOG	e Y	atures									
DROLOG	SY drology Indicators:		- About all the			Sacanda	nu Indiantora (٦١)	
DROLOG otland Hyd mary Indic	iY drology Indicators: cators (minimum of or						ary Indicators (2			d)	
DROLOG etland Hyd mary India Surfac	drology Indicators: cators (minimum of or we Water (A1)		l; check all tha	Water-Stained Leaves (B9)		☐ Wa	ater-Stained Le	aves (B9)		d)	
OROLOG etland Hyd mary India Surfac High N	drology Indicators: cators (minimum of or ce Water (A1) Water Table (A2)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and		□ Wa	ater-Stained Le	aves (B9) and 4B)		d)	
PROLOG etland Hyr mary Indio Surfac High V	drology Indicators: cators (minimum of or ce Water (A1) Nater Table (A2) ation (A3)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11)	d 4B)	☐ Wa	ater-Stained Lea ILRA 1, 2, 4A, a ainage Patterns	aves (B9) and 4B) s (B10)	•	d)	
PROLOG etland Hyd mary Indio Surfac High V Satura Water	drology Indicators: cators (minimum of or ce Water (A1) Water Table (A2) ation (A3) Marks (B1)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, an Salt Crust (B11) Aquatic Invertebrates (B13)	d 4B)	Wa (M Dra	ater-Stained Lea ILRA 1, 2, 4A, a ainage Patterns y-Season Wate	aves (B9) and 4B) s (B10) er Table (C	C2)	•	
DROLOG etland Hyd mary India Surfac High V Satura Water Sedim	drology Indicators: cators (minimum of or ce Water (A1) Water Table (A2) ation (A3) Marks (B1) nent Deposits (B2)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	d 4B)	☐ Wa (M ☐ Dra ☐ Dra ☐ Sa	ater-Stained Lealing ILRA 1, 2, 4A, a rainage Patterns y-Season Wate aturation Visible	aves (B9) and 4B) s (B10) rr Table (C on Aerial	C2)	•	
DROLOG etland Hy mary Indio Surfac High V Satura Water Sedim Drift D	drology Indicators: cators (minimum of or ce Water (A1) Water Table (A2) ation (A3) Marks (B1) tent Deposits (B2)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, an Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor	d 4B)) ng Living Roots (C3)	☐ Wa (M ☐ Dra ☐ Dra ☐ Sa ☐ Ge	ater-Stained Lea ILRA 1, 2, 4A, a ainage Patterns y-Season Wate attration Visible ecomorphic Posit	aves (B9) and 4B) s (B10) er Table (C on Aerial tion (D2)	C2)	•	
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DROLOG etland Hyd mary Indic Surfac High V Satura Water Sedim Drift D Algal I Iron D Surfac Inunda Spars	drology Indicators: cators (minimum of or ce Water (A1) Water Table (A2) ation (A3) Marks (B1) ment Deposits (B2) deposits (B3) Mat or Crust (B4) deposits (B5) de Soil Cracks (B6) ation Visible on Aerial dely Vegetated Concavivations: er Present? Ye	Imagery (live Surface	B7)	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alore Presence of Reduced Iron (Recent Iron Reduction in Till Stunted or Stresses Plants (Other (Explain in Remarks)	d 4B) ng Living Roots (C3) (C4) Illed Soils (C6) (D1) (LRR A)	Wa (M) Dra Dra Sa Sa Sh FA	ater-Stained Lea ILRA 1, 2, 4A, a ainage Patterns y-Season Wate aturation Visible eomorphic Posit hallow Aquitard aC-Neutral Test aised Ant Mound	aves (B9) and 4B) s (B10) or Table (C on Aerial tion (D2) (D3) (D5) ds (D6) (L	C2) Imagei	•	
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DROLOG etland Hyd imary Indic Surface High V Satura Water Sedim Drift D Algal I Iron D Surface Inunda Spars eld Obser urface Water ater Table turation P cludes cap	drology Indicators: cators (minimum of or ce Water (A1) Water Table (A2) ation (A3) Marks (B1) ment Deposits (B2) deposits (B3) Mat or Crust (B4) deposits (B5) de Soil Cracks (B6) ation Visible on Aerial dely Vegetated Concavivations: er Present? Present? Ye resent? Ye resent?	Imagery (leve Surface	B7)	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alor Presence of Reduced Iron (Recent Iron Reduction in Till Stunted or Stresses Plants of Other (Explain in Remarks) Depth (inches):	d 4B) ng Living Roots (C3) (C4) Illed Soils (C6) (D1) (LRR A) We	Wa (M) Dra Dra Sa Sh FA	atter-Stained Lea ILRA 1, 2, 4A, a ainage Patterns y-Season Wate aturation Visible ecomorphic Posit hallow Aquitard AC-Neutral Test aised Ant Mound ost-Heave Hum	aves (B9) and 4B) s (B10) or Table (C on Aerial tion (D2) (D3) (D5) ds (D6) (L mocks (D	RR A)	ry (C9)	0
DROLOG etland Hyr mary Indic Surfac High V Satura Water Sedim Drift D Algal I Iron D Surfac Inunda Spars eld Obser rface Wat ater Table turation P cludes cap	drology Indicators: cators (minimum of or ce Water (A1) Water Table (A2) ation (A3) Marks (B1) ment Deposits (B2) deposits (B3) Mat or Crust (B4) deposits (B5) de Soil Cracks (B6) ation Visible on Aerial dely Vegetated Concavivations: er Present? Present? Ye resent? Ye resent?	Imagery (leve Surface	B7)	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alore Presence of Reduced Iron (Recent Iron Reduction in Till Stunted or Stresses Plants (Other (Explain in Remarks) Depth (inches): Depth (inches):	d 4B) ng Living Roots (C3) (C4) Illed Soils (C6) (D1) (LRR A) We	Wa (M) Dra Dra Sa Sh FA	atter-Stained Lea ILRA 1, 2, 4A, a ainage Patterns y-Season Wate aturation Visible ecomorphic Posit hallow Aquitard AC-Neutral Test aised Ant Mound ost-Heave Hum	aves (B9) and 4B) s (B10) or Table (C on Aerial tion (D2) (D3) (D5) ds (D6) (L mocks (D	RR A)	ry (C9)	0

Project Site: <u>Parcel 722980-0360, -0365</u>			City/Count	ty: <u>/King</u>	Sampling Date:	<u>8-9-24</u>	
Applicant/Owner: <u>Ghag</u>				State: WA	Sampling Point:	<u>DP#4</u>	
Investigator(s): <u>John Altmann, Dain Altmann</u>				Section, Township, Rang	ge: <u>S13,T23N,R5E</u>		
Landform (hillslope, terrace, etc.): gentle slope		Local	relief (conca	ave, convex, none): <u>concave</u>	Slope	(%):	
Subregion (LRR): A	Lat: 47.47	<u> 19805</u>		Long: <u>-122.11454</u>	Datum:		
Soil Map Unit Name: AgC				NWI clas	sification:		
Are climatic / hydrologic conditions on the site typical for	r this time of y	ear? Ye	es 🛛	No 🔲 (If no, explain i	n Remarks.)		
Are Vegetation ☐, Soil ☐, or Hydrology	☐, significa	antly disturbed	? Are "N	Normal Circumstances" present?	Yes	☑ No	
Are Vegetation ☐, Soil ☐, or Hydrology	□, naturall	y problematic?	(If nee	eded, explain any answers in Re	marks.)		
SUMMARY OF FINDINGS – Attach site map sl	nowing sam	pling point	locations,	transects, important featu	res, etc.		
Hydrophytic Vegetation Present?	Yes 🗌	No 🛛					
Hydric Soil Present?	Yes 🗌		Is the Samp		Yes	□ No	
Wetland Hydrology Present?	Yes 🗌	No 🛛	within a We	nanu r			
Remarks: Upland plot, see map for location.							
Themains. Opiana plot, see map for location.							
VEGETATION – Use scientific names of plants							
Tree Stratum (Plot size: 10')	Absolute	Dominant	Indicator	Dominance Test Worksheet	 :		
1. Acer macrophyllum	<u>% Cover</u> 90	Species?	Status FACU				
2	<u>30</u>	<u>yes</u>	<u>1 ACC</u>	Number of Dominant Species That Are OBL, FACW, or FAC			(A)
3							
				Total Number of Dominant Species Across All Strata:	<u>6</u>		(B)
4							
50% = 45, 20% = 18	<u>90</u>	= Total Cove	Г	Percent of Dominant Species That Are OBL, FACW, or FAC	. <u>16</u>		(A/B)
Sapling/Shrub Stratum (Plot size: 10')	00		NII (LIDIL)				
1. Prunus lusitanica	<u>20</u>	<u>yes</u>	NL (UPL)	Prevalence Index worksheet		v bv:	
2. Acer circinatum	<u>20</u>	<u>yes</u>	FAC	Total % Cover of		<u>у Бу:</u>	
3. <u>Oemleria cerasiformis</u>	<u>10</u>	<u>ves</u>	<u>FACU</u>	OBL species	x1 =		
4			_	FACW species	x2 =		
5				FAC species	x3 =		
50% = <u>25,</u> 20% = <u>10</u>	<u>50</u>	= Total Cove	r	FACU species	x4 =		
Herb Stratum (Plot size: 10')				UPL species	x5 =		
1. <u>Polystichum munitum</u>	<u>10</u>	<u>yes</u>	<u>FACU</u>	Column Totals:	_ (A)	-	(B)
2				Prevalence	e Index = B/A =		
3				Hydrophytic Vegetation Indi	cators:		
4				☐ 1 – Rapid Test for Hydro	phytic Vegetation		
5				☐ 2 - Dominance Test is >	50%		
6				☐ 3 - Prevalence Index is	<u>≤</u> 3.0¹		
7				4 - Morphological Adapt	- ations¹ (Provide suppor	tina	
8				data in Remarks or o		9	
9				5 - Wetland Non-Vascul	ar Plants ¹		
10.				☐ Problematic Hydrophytic	Vegetation1 (Explain)		
11.					r vegetation (Explain)		
50% = 5, 20% = 2	10	= Total Cove		¹ Indicators of hydric soil and w			
Woody Vine Stratum (Plot size: 10')	10	- 10tal 00VC	•	be present, unless disturbed of	r problematic.		
1. Rubus ursinus	00	1/00	EACH				
	<u>90</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic			
2					res □	No	\boxtimes
50% = <u>45</u> , 20% = <u>18</u>	<u>90</u>	= Total Cove	Γ	Present?			
% Bare Ground in Herb Stratum							
Remarks:							
1							

	cription: (Describe to	the dept	h needed to	document the indicator or co	onfirm the absence	of indicator	rs.)				
Depth	Matrix	· ····· ···· ····		Redox Features			·.,				
nches)	Color (moist)	%	Color (m		Loc ²	_ Texture		R	emarks		
<u>0-16</u>	10YR5/4	100	111) 10100	<u> </u>		gravel loar			Ciliano	'	
<u>0 10</u>	<u>101110/1</u>	100				gravoriour	<u> </u>				
				· <u>—</u> —	- —						
				· <u>—</u> —	- —						
	· <u></u>			· <u>—</u> —							
	· <u></u>			· <u>—</u> —							
	· 			· <u>—</u> —							
	<u></u>			· <u>—</u> —							
 pe: C= C	oncentration, D=Deple	etion, RM=	Reduced Ma	trix, CS=Covered or Coated Sa	and Grains. ² Lc	cation: PL=P	ore Lining, M=	=Matrix			
•	Indicators: (Applicat	-					tors for Probl		ydric S	oils³:	
	ol (A1)			Sandy Redox (S5)			2 cm Muck (A		•		
	Epipedon (A2)			Stripped Matrix (S6)			Red Parent M		F2)		
	Histic (A3)			Loamy Mucky Mineral (F1)	(except MLRA 1)		Very Shallow		-	12)	
	gen Sulfide (A4)		_	Loamy Gleyed Matrix (F2)	,		Other (Explain			,	
	ted Below Dark Surfac	ce (A11)		Depleted Matrix (F3)		_	- (1		,		
-	Dark Surface (A12)	,		Redox Dark Surface (F6)							
	Mucky Mineral (S1)		_	Depleted Dark Surface (F7)	1	³ Indica	ators of hydrop	hytic vege	etation a	ınd	
-	Gleyed Matrix (S4)			Redox Depressions (F8)			tland hydrology ess disturbed o			ί,	
<u>-</u>	Layer (if present):			1 (-7		unit	ess disturbed t	or problem	iauc.		
e:	, (p , .										
oth (inche					Hydric Soils P	resent?		Yes		No	
	no redoximorphic fea	atures									
DROLOG	GY .	alures									
PROLOG	SY drology Indicators:					Connection		(O az mana)		-d\	
PROLOG etland Hy mary Indic	SY drology Indicators: cators (minimum of on						ary Indicators (•		ed)	
DROLOG etland Hy mary India Surfac	GY drology Indicators: cators (minimum of on ce Water (A1)		t; check all tha	Water-Stained Leaves (B9)		☐ Wa	ater-Stained L	eaves (B9		ed)	
PROLOG etland Hy mary India Surfac High N	drology Indicators: cators (minimum of on ce Water (A1) Water Table (A2)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and		□ Wa	ater-Stained L	eaves (B9		ed)	
PROLOG Itland Hy mary Indio Surfac High V	drology Indicators: cators (minimum of on ce Water (A1) Water Table (A2) ation (A3)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11)	d 4B)	☐ W: (M) ☐ Dr	ater-Stained L ILRA 1, 2, 4A, rainage Patterr	eaves (B9 and 4B) ns (B10)))	ed)	
PROLOG tland Hy mary India Surfac High V Satura Water	drology Indicators: cators (minimum of on ce Water (A1) Water Table (A2) ation (A3) r Marks (B1)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13)	d 4B)	W:	ater-Stained Later-Stained Later-Stained Later Pattern Ty-Season Water	eaves (B9 and 4B) ns (B10) ter Table (C2)	•	
PROLOG Itland Hy mary India Surfac High N Satura Water Sedim	drology Indicators: cators (minimum of on ce Water (A1) Water Table (A2) ation (A3) r Marks (B1) nent Deposits (B2)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	d 4B)	☐ Wi (M) ☐ Dr ☐ Dr ☐ Sa	ater-Stained L ILRA 1, 2, 4A, rainage Patterr ry-Season Wat aturation Visibl	eaves (B9 and 4B) ns (B10) ter Table (e on Aeria	C2)	•	
PROLOG Itland Hy mary Indio Surfac High N Satura Water Sedim Drift E	drology Indicators: cators (minimum of on ce Water (A1) Water Table (A2) ation (A3) r Marks (B1) nent Deposits (B2)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alon	d 4B)) ng Living Roots (C3)	Wa	ater-Stained L ILRA 1, 2, 4A, rainage Patterr ry-Season Wat aturation Visible	eaves (B9 and 4B) ns (B10) ter Table (e on Aeria	C2)	•	
PROLOG etland Hy mary Indio Surfac High \ Satura Water Sedim Drift D	drology Indicators: cators (minimum of on ce Water (A1) Water Table (A2) ation (A3) r Marks (B1) nent Deposits (B2) Deposits (B3) Mat or Crust (B4)			Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alon Presence of Reduced Iron (d 4B)) ng Living Roots (C3)(C4)	W:	ater-Stained L ILRA 1, 2, 4A, rainage Patterr ry-Season Wat aturation Visibl eomorphic Pos nallow Aquitaro	eaves (B9 and 4B) as (B10) ter Table (e on Aeria sition (D2)	C2)	•	
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PROLOG Itland Hy mary India Surfac High N Satura Water Sedim Drift D Algal Iron D Surfac Inunda	drology Indicators: cators (minimum of once Water (A1) Water Table (A2) ation (A3) In Marks (B1) Inent Deposits (B2) Deposits (B3) Mat or Crust (B4) Deposits (B5) Deposits (B5) Deposits (B6)	ne required		Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alon Presence of Reduced Iron (Recent Iron Reduction in Til	d 4B) ng Living Roots (C3) (C4) Illed Soils (C6) (D1) (LRR A)	W:	ater-Stained L ILRA 1, 2, 4A, rainage Patterr ry-Season Wat aturation Visible eomorphic Pos nallow Aquitaro	eaves (B9, and 4B) as (B10) ter Table (e on Aeria sition (D2) d (D3) st (D5) and (D6) (l)	C2) li Image	ery (C9)	
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Surface Water Sedim Drift Date Surface Water Surface S	drology Indicators: cators (minimum of once Water (A1) Water Table (A2) ation (A3) r Marks (B1) ment Deposits (B2) Deposits (B3) Mat or Crust (B4) Deposits (B5) ce Soil Cracks (B6) ation Visible on Aerial ately Vegetated Concaverations: ever Present? Yes	Imagery (live Surface	B7)	Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alone Presence of Reduced Iron (Recent Iron Reduction in Till Stunted or Stresses Plants (Other (Explain in Remarks)	d 4B) ng Living Roots (C3) (C4) Illed Soils (C6) (D1) (LRR A)	W:	rater-Stained L ILRA 1, 2, 4A, rainage Patterr ry-Season Wat aturation Visible eomorphic Pos hallow Aquitarc AC-Neutral Tes aised Ant Moun	eaves (B9, and 4B) as (B10) ter Table (e on Aeria sition (D2) d (D3) st (D5) and (D6) (l)	C2) li Image	ery (C9)	
DROLOG etland Hy mary India Surfac High \ Satura Water Sedim Drift E Algal Iron D Surfac Inunda Spars eld Obser rface Wat ater Table	drology Indicators: cators (minimum of once Water (A1) Water Table (A2) ation (A3) r Marks (B1) nent Deposits (B2) Deposits (B3) Mat or Crust (B4) Deposits (B5) ce Soil Cracks (B6) ation Visible on Aerial aely Vegetated Concaveryations: ter Present? Yes	Imagery (live Surface		Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres alone Presence of Reduced Iron (Recent Iron Reduction in Till Stunted or Stresses Plants (Other (Explain in Remarks)	d 4B) ng Living Roots (C3) (C4) Illed Soils (C6) (D1) (LRR A)	W:	rater-Stained L ILRA 1, 2, 4A, rainage Patterr ry-Season Wat aturation Visible eomorphic Pos hallow Aquitarc AC-Neutral Tes aised Ant Moun	eaves (B9, and 4B) as (B10) ter Table (e on Aeria sition (D2) d (D3) st (D5) and (D6) (l)	C2) li Image	ery (C9)	
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Attachment B

Altmann Oliver Associates, LLC

PO Box 578

Carnation, WA 98014

Office (425) 333-4535

Fax (425) 333-4509



August 26, 2020

AOA-5152

Tanya Tonnu Tanya.T.Tonnu@boeing.com

SUBJECT: Critical Areas Impact Assessment (DWEL16-0236)

Parcel 722980-0390, King County, WA (Revised)

Dear Tanya:

We have prepared an updated wetland buffer averaging and enhancement plan (**Figures 1 through 5**) for the proposed single-family residence on the subject property.

One wetland (Wetland A) is located in the southwest corner of the property. Wetland A is a Sloped Hydrogeomorphic (HGM) Class wetland that slopes gently down from northeast to southwest. Vegetation within Wetland A consisted of a forested plant community that was dominated by a canopy of black cottonwood (*Populus trichocarpa*) and willow (*Salix* sp.) with an understory of Himalayan blackberry (*Rubus armeniacus*), salmonberry (*Rubus spectabilis*), and vine maple (*Acer circinatum*). Wetland A meets the criteria for a Category IV wetland that requires a standard 50-foot buffer plus 15-foot building setback from the wetland edge.

Although the project has been designed to minimize impacts to the buffer on the site, it is my understanding that due to the septic drainfield requirements, buffer averaging is required for construction of the residence.

Wetland buffer averaging can be approved by King County if the following conditions outlined in the applicable code (KCC 21A.24.325.C) are met:

a. the ecological structure and function of the buffer after averaging is equivalent to or greater than the structure and function before averaging;

The existing buffer consists of a mix of native vegetation as well as non-native and invasive Himalayan blackberry and laurel. As part of the project, invasive species would be removed and the area re-planted with native trees, shrubs, and groundcover to increase the plant species and structural diversity of the buffer over current conditions. Following re-planting the ecological structure and function of the buffer after averaging will be greater than the structure and function before averaging.

- 2. The resulting buffer meets the following standards:
- a. the total area of the buffer after averaging is equivalent to or greater than the area of the buffer before averaging;

Under the proposed buffer averaging plan, 460 s.f. of buffer area would be reduced and replaced with 681 s.f. of additional buffer area.

b. the additional buffer is contiguous with the standard buffer; and

The additional buffer area is contiguous to the standard buffer and this criterion is met.

c. if the buffer width averaging allows a structure or landscaped area to intrude into the area that was buffer area before averaging, the resulting landscaped area shall extend no more than fifteen feet from the edge of the structure's footprint toward the reduced buffer.

The reduced buffer is 15 feet from the edge of the buffer and this condition has been met.

Buffer Enhancement

The buffer enhancement plan includes removing the invasive species and replanting with native species. The proposed plantings would significantly increase the plant species and structural diversity of the buffer over current conditions and would provide much improved physical and visual screening to the wetland from the proposed residence.

As required, a three-year maintenance and monitoring program has been prepared (**Figure 4**) and will be implemented as part of the project.

If you have any questions regarding the buffer averaging or proposed mitigation, please give me a call.

Sincerely,

ALTMANN OLIVER ASSOCIATES, LLC

John Altmann Ecologist

Attachment