

May 31, 2016

Désirée Goble
City of Kirkland
Planning & Community Development
123 Fifth Avenue
Kirkland, WA 98033

Re: Bristol Lane Sensitive Area Study and Buffer Enhancement Plan Review

The Watershed Company Reference Number: 140622.68

Dear Désirée:

On May 16, 2016, ecologist Anna Hoenig from The Watershed Company visited Bristol Lane subdivision to verify the encumbering wetland/stream delineation boundaries and classifications, using the *Kirkland Wetland Field Data Form*, and to evaluate the mitigation plan. This letter is a summary of the site visit findings and review findings. Attached is a markup of the wetland/stream delineation map.

The following documents were provided for this review:

- *Sensitive Area Study and Buffer Enhancement Plan for Bristol Lane, Kirkland WA*, February 29, 2016. Prepared by Wetland Resources, Inc. for Northwest Equity Fund LLC.
- *Bristol Lane Civil Plans Proposal*, March 11, 2016. Prepared by Civil Engineering Solutions.
- *Bristol Lane: City of Kirkland Preliminary Short Plat Plan*, March 14, 2016. Prepared by Axis Survey & Mapping.

Findings

Wetland Resources, Inc. (WRI) conducted a wetland and stream delineation study of the 3.85-acre parcel (parcel number 1926059085) on November 14 and 25, 2014 in Kirkland, WA.

Wetland A

Wetland A is located next to the driveway off of Simmonds Road. Classification as a Type 2 wetland is correct, despite minor scoring differences. Two sections of Wetland A's boundaries were not consistent with field observations. The encumbering

boundaries between flags 1 and 2 should extend further west, and the wetland boundary to the northeast should extend to the base of the quarry spill sides of the driveway (Photo 1).

Wetland B

Classification of Wetland B as a Type 2 wetland is correct, despite minor scoring differences. Wetland B extends across the eastern property line, along both banks of Stream A. The left bank (looking downstream) wetland boundary flagging appears to be correct; however, at the eastern property line, wetland conditions are also present on the right (south) bank of Stream A. The WRI map does not show wetlands on this side of the stream. A WRI wetland boundary flag (Photo 2) was found in this area, indicating that it was delineated but not mapped. On the right bank, the wetland starts near the toe of the steep slope and connects to Stream A. The lack of mapped wetland features is concerning as it is also in the vicinity of the proposed stormwater outfall.

Stream B Wetlands

Riverine/slope wetland(s) were found along both banks of stream B but were not described or delineated by WRI (Photo 3).

Stream A

Classification of Stream A as Class A is consistent with publicly available sources. Stream A OHWM flagging appears to be too narrow (Photo 4). OHWM indicators, including erosion patterns and hydraulically sorted sediment, were found outside the flagged stream banks.

Stream B

The OHWM of Stream B appears to be correct. Based on field observations and calculations using the provided, survey topography maps, the approximate location of fish break use also appears to be correct as well as classification of Stream B as Class A downstream of the fish break point and Class B upstream of the point.

Stream C

The OHWM of Stream C appears to be correct as well as the classification of Stream C as a Class A stream

Shed Removal

The shed near the western property line, near Tract A is indicated to be removed on the delineation map. As depicted on the map, the shed is located on the edge of the buffer, mostly within the buffer setback. The report does not include an infill planting plan.

Stormwater Outfall

Stormwater outfall requirements in KZC 90.45.3 and 90.90.3 were not adequately addressed in the WRI report. Stormwater outfalls are allowed within the buffer setback

and within wetland/stream buffers only when slope stability could be compromised by surface water discharge through the buffer. The applicant must demonstrate that surface discharge of stormwater through the buffer would clearly pose a threat to slope stability. WRI did not indicate that a geotechnical engineer analyzed slope stability or addressed provisions outlined in KZC 90.45.3(a-e). Other options, such as a rock-lined channel with check dams, should be considered instead of the above-ground pipe.

The current design of the stormwater outfall does not address or depict anticipated clearing limits required for installation of the pipe and energy dissipation system. Likewise, design of the energy dissipation system at the bottom of the outfall is not shown or described; a qualified professional should address the energy dissipation system and use of one line of dogwood. It is also unclear how a surface mounted pipe that is low to the ground will avoid vegetative or soils impacts; a description of the diameter of the pipe in addition to height above ground should be included.

As mentioned above, the proposed stormwater outfall appears to be located within Wetland B.

Mitigation Plan and Monitoring Notes

As plans for the stormwater outfall pipe may change, the exact details of the mitigation plan are also expected to be amended. This review of the mitigation plan and monitoring notes is only cursory and should take the following critique into consideration for future mitigation and monitoring plans.

As the report does not adequately describe the design of the stormwater outfall and pipe, clearing limits and temporary impacts, it is difficult to assess whether the amount and type mitigation proposed is sufficient. One word is missing from each performance standard description, making that phrase in the sentence unclear. Required irrigation of the mitigation plants for the duration of the project has not been included in the monitoring notes.

Recommendations

Wetland and Stream Delineation

- Re-delineate the encumbering boundaries of Wetland A indicated on the map.
- Re-delineate and re-classify Wetland B.
- Delineate boundaries and classify Stream B associated wetland(s).
- Re-flag OHWM of Stream A.
- Delineation map should indicate the wetland boundaries were mapped by a licensed surveyor.

Stormwater Outfall

- A qualified professional should assess slope stability, and based on the analysis by the qualified professional, the applicant should describe how the outfall complies with KZC 90.45.3 / KZC 90.90.3, particularly sections a-e. Assuming that a stormwater outfall pipe is approved by the City, the location of the stormwater outfall should be re-considered so to not impact the wetland. Moving the outfall away from wetlands will also avoid state and federal permitting requirements.
- If applicable, all aspects of the stormwater feature, including installation, should be described and depicted, such as stormwater outfall energy dissipation system, extent of clearing limits and associated temporary impacts, design and size of outfall pipe.

Structure Removal

- To promote native plant diversity, avoid erosion and prevent spread of invasive plant species, namely Himalayan blackberry, an infill planting plan should be created.

Mitigation and Monitoring Plans

- The mitigation plan should take all impacts into consideration, both temporary and permanent, and address all aspects of installation in addition to continued maintenance of the stormwater outfall and pipe.
- Include irrigation system requirement for duration of the monitoring period.
- Fix typographical errors under performance standards.

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,

A handwritten signature in blue ink that reads "A. Hoenig". The signature is written in a cursive style with a large, looped initial "A".

Anna Hoenig, WPIT
Ecologist

A handwritten signature in blue ink that reads "Hugh Mortensen". The signature is written in a cursive style with a large, looped initial "H".

Hugh Mortensen, PWS
President / Sr. Ecologist

Enclosures

Site visit photographs

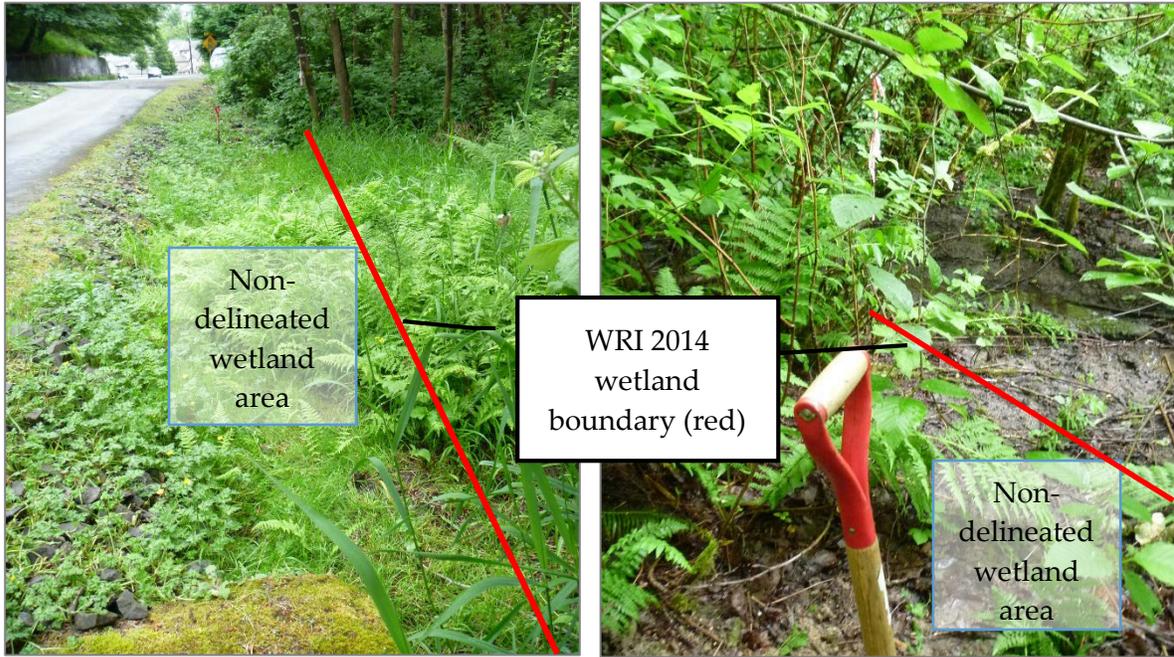


Photo 1. Slightly larger wetland area of encumbering boundaries of Wetland A.



Photo 2. Unmapped Wetland B flag (WRB5) south of stream A. This part of Wetland B is in the vicinity of the proposed stormwater outfall.



Photo 3. Slope/riverine wetland(s) next to Stream B.

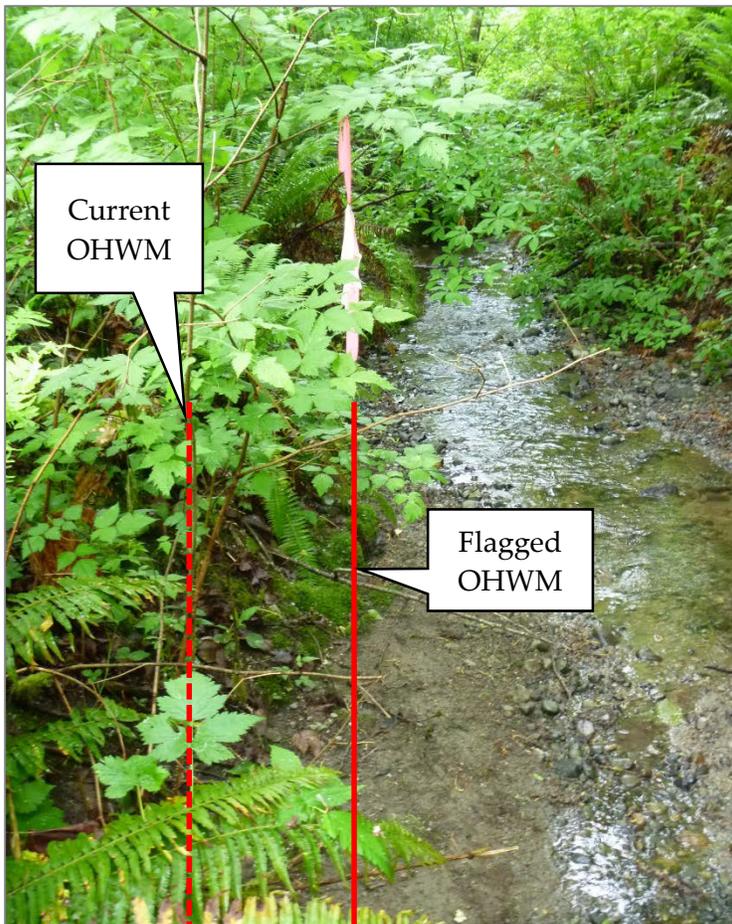
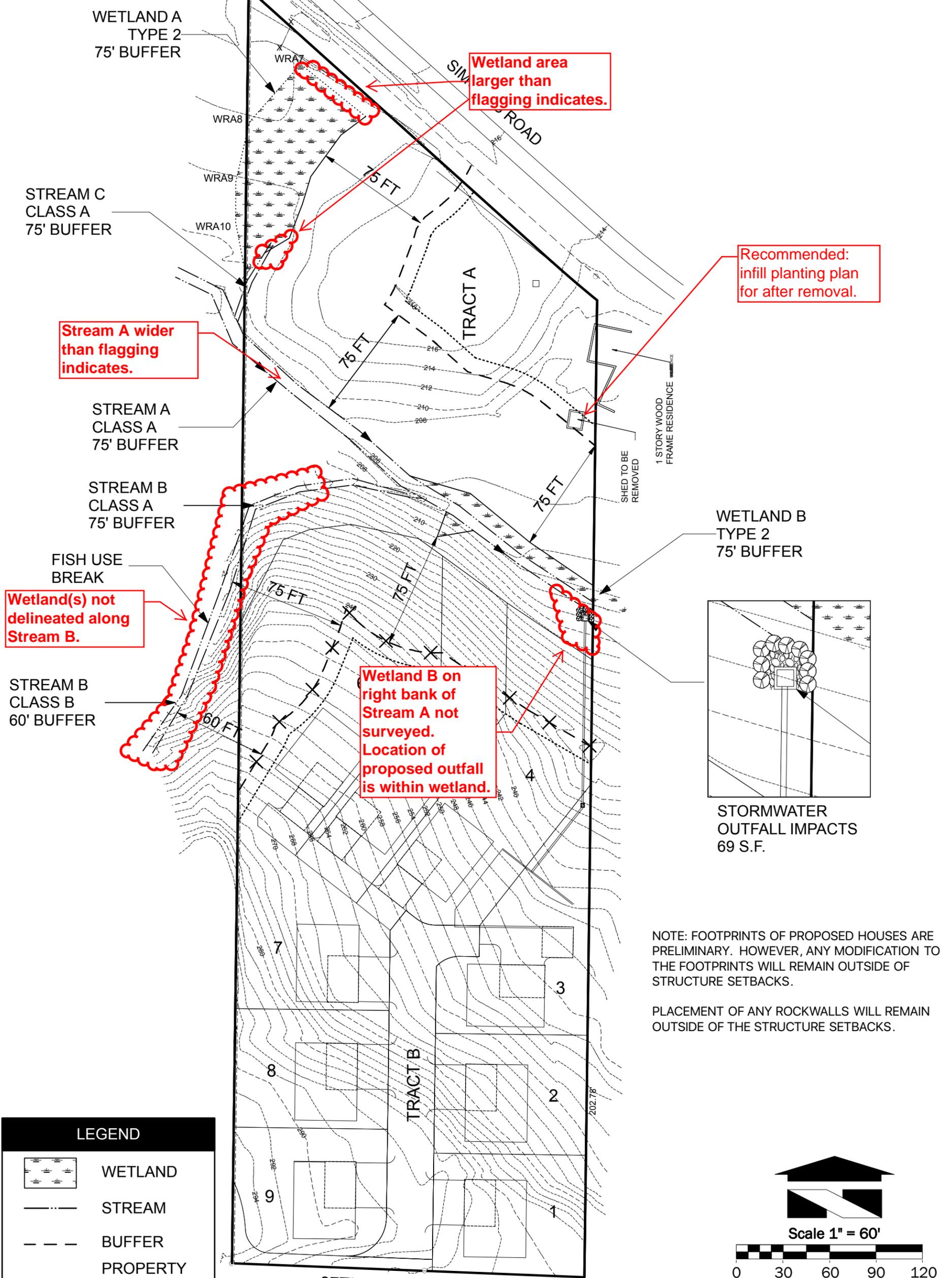


Photo 4. Stream A OHWM is wider than flagging indicates.

SENSITIVE AREA STUDY AND BUFFER MITIGATION MAP

BRISTOL LANE

PORTION OF SECTION 19, TOWNSHIP 26N, RANGE 05E, W.M.



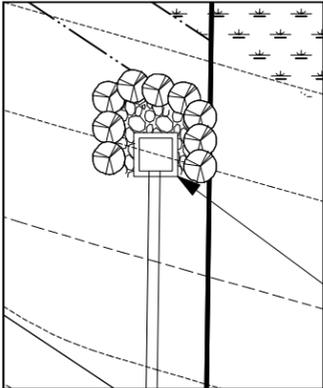
Stream A wider than flagging indicates.

Wetland area larger than flagging indicates.

Recommended: infill planting plan for after removal.

Wetland(s) not delineated along Stream B.

Wetland B on right bank of Stream A not surveyed. Location of proposed outfall is within wetland.



NOTE: FOOTPRINTS OF PROPOSED HOUSES ARE PRELIMINARY. HOWEVER, ANY MODIFICATION TO THE FOOTPRINTS WILL REMAIN OUTSIDE OF STRUCTURE SETBACKS.

PLACEMENT OF ANY ROCKWALLS WILL REMAIN OUTSIDE OF THE STRUCTURE SETBACKS.

LEGEND	
	WETLAND
	STREAM
	BUFFER
	PROPERTY LINE
	NATIVE DOGWOOD
	FENCING

Wetland Resources, Inc.
 Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
 9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
 Phone: (425) 337-3174
 Fax: (425) 337-3045
 Email: mailbox@wetlandresources.com

Scale 1" = 60'

SENSITIVE AREA DETERMINATION MAP
BRISTOL LANE

James Jordan
PO Box 100
Kirkland, WA 98083

Sheet 1/1
WRI Job # 14285
Drawn by: S. Walters
Date: Feb 29, 2016

DP- 1

Project Site: Bristol Lane		Sampling Date: 5/16/2016
Applicant/Owner: Desiree Goble, City of Kirkland		Sampling Point: DP- 1
Investigator: A. Hoenig		City/County: Kirkland/King County
Sect., Township, Range: S 19 T 26N R 05E		State: WA
Landform (hillslope, terrace, etc): hillslope	Slope (%): 5	Local relief (concave, convex, none): none
Subregion (LRR): A	Lat:	Long:
Soil Map Unit Name: Kitsap silt loam, 15 to 30 percent slopes		NWI classification: none
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic		
(If needed, explain any answers in Remarks.)		

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydic Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet			
1. <i>Alnus rubra</i>	50	Yes	FAC	Number of Dominant Species that are OBL, FACW, or FAC:	4 (A)		
2. <i>Acer macrophyllum (rooted out)</i>				Total Number of Dominant Species Across All Strata:	4 (B)		
3.				Percent of Dominant Species that are OBL, FACW, or FAC:	100 (A/B)		
4.	50	= Total Cover					
Sapling/Shrub Stratum (Plot size: 3m diam.)							
1. <i>Alnus rubra</i> saplings	50	Yes	FAC	Prevalence Index Worksheet Total % Cover of Multiply by			
2. <i>Rubus spectabilis</i>	30	Yes	FAC				
3. <i>Frangula purshiana</i>	Trace	No	FAC				
4.							
5.							
	80	= Total Cover		OBL species	x 1 =		
Herb Stratum (Plot size: 1m diam.)							
1. <i>Athyrium cyclosorum</i>	50	Yes	FACW	FACW species	x 2 =		
2. <i>Rubus ursinus</i>	Trace	No	FACU	FAC species	x 3 =		
3.				FACU species	x 4 =		
4.				UPL species	x 5 =		
5.				Column totals	(A) (B)		
Prevalence Index = B / A =							
Hydrophytic Vegetation Indicators							
6.				<input checked="" type="checkbox"/> Dominance test is > 50%			
7.				<input type="checkbox"/> Prevalence test is ≤ 3.0 *			
8.				<input type="checkbox"/> Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)			
9.				<input type="checkbox"/> Wetland Non-Vascular Plants *			
10.				<input type="checkbox"/> Problematic Hydrophytic Vegetation * (explain)			
11.				* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
	50	= Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Woody Vine Stratum (Plot size:)							
1.							
2.							
				= Total Cover			
% Bare Ground in Herb Stratum: 70							
Remarks:							

SOIL

Sampling Point – DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/2	95	10YR 5/8	5	C	M	Clay loam	
8-16	10YR 4/1	60	10YR 5/6 2.5Y 5/2	25 15	C D	M M	Clay loam	

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)

Indicators for Problematic Hydric Soils³

<input type="checkbox"/> 2cm Muck (A10)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (explain in remarks)

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required):

<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Frost-Heave Hummocks

Field Observations Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (in): 11" (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



WETLAND DETERMINATION DATA FORM
 Western Mountains, Valleys, and Coast Supplement to the
 1987 COE Wetlands Delineation Manual

750 Sixth Street South
 Kirkland, Washington 98033
 (425) 822-5242
 watershedco.com

DP- 2

Project Site: Bristol Lane		Sampling Date: 5/16/2016
Applicant/Owner: Desiree Goble, City of Kirkland		Sampling Point: DP- 2
Investigator: A. Hoenig		City/County: Kirkland/King County
Sect., Township, Range: S 19 T 26N R 05E		State: WA
Landform (hillslope, terrace, etc): hillslope	Slope (%): 3	Local relief (concave, convex, none): none
Subregion (LRR): A	Lat:	Long:
Soil Map Unit Name: Kitsap silt loam, 15 to 30 percent slopes		NWI classification: none
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic		
(If needed, explain any answers in Remarks.)		

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydric Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Point within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetlands associated with Stream B			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet	
1.				Number of Dominant Species that are OBL, FACW, or FAC:	2 (A)
2.				Total Number of Dominant Species Across All Strata:	2 (B)
3.				Percent of Dominant Species that are OBL, FACW, or FAC:	100 (A/B)
4.				= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m diam.)					
1. <i>Rubus spectabilis</i>	30	Yes	FAC	Prevalence Index Worksheet Total % Cover of Multiply by OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column totals (A) (B)	
2.					
3.					
4.					
5.					
	30			= Total Cover	
Herb Stratum (Plot size: 1m diam.)					
1. <i>Equisetum telmateia</i>	10	No	FACW	Prevalence Index = B / A = Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance test is > 50% <input type="checkbox"/> Prevalence test is ≤ 3.0 * Morphological Adaptations * (provide supporting data in remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants * <input type="checkbox"/> Problematic Hydrophytic Vegetation * (explain)	
2. <i>Oemleria cerasiformis</i> starts	5	No	FACU		
3. <i>Athyrium cyclosum</i>	5	No	FACW		
4. <i>Tolmiea menziesii</i>	100	Yes	FAC		
5.					
6.					
7.					
8.					
9.					
10.					
11.					
	120			= Total Cover	
Woody Vine Stratum (Plot size:)					
1.				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
2.					
= Total Cover					
% Bare Ground in Herb Stratum:					
Remarks:					

SOIL

Sampling Point – DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/2	100					Sandy loam	Organic matter
8-14	10YR 2/2 10YR 2.5/1	90 10					Sandy loam Sand	Mixed matrix
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains ² Loc: PL=Pore Lining, M=Matrix								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)								
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Sandy Redox (S5)			Indicators for Problematic Hydric Soils³		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> 2cm Muck (A10)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input checked="" type="checkbox"/> Other (explain in remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/>		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Redox Dark Surface (F6)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic		
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Depleted Dark Surface (F7)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Redox Depressions (F8)					
Restrictive Layer (if present): Type: _____ Depth (inches): _____						Hydric soil present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Organic matter masking redox. F6 presumed.								

HYDROLOGY

Wetland Hydrology Indicators: <i>Primary Indicators (minimum of one required: check all that apply):</i>				<i>Secondary Indicators (2 or more required):</i>			
<input checked="" type="checkbox"/> Surface water (A1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (except MLRA 1, 2, 4A & 4B) (B9)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Frost-Heave Hummocks	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Other (explain in remarks)		<input type="checkbox"/> Iron Deposits (B5)			
<input type="checkbox"/> Surface Soil Cracks (B6)				<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
Field Observations Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (in): 3" Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (in): surface				Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:							
Remarks:							



WETLAND DETERMINATION DATA FORM
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 1987 COE Wetlands Delineation Manual

750 Sixth Street South
 Kirkland, Washington 98033
 (425) 822-5242
 watershedco.com

DP- 3

Project Site: Bristol Lane		Sampling Date: 5/16/2016
Applicant/Owner: Desiree Goble, City of Kirkland		Sampling Point: DP- 3
Investigator: A. Hoenig		City/County: Kirkland/King County
Sect., Township, Range: S 19 T 26N R 05E		State: WA
Landform (hillslope, terrace, etc): hillslope	Slope (%): 5	Local relief (concave, convex, none): concave
Subregion (LRR): A	Lat:	Long:
Soil Map Unit Name: Kitsap silt loam, 15 to 30 percent slopes		NWI classification: PFOC
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic		
(If needed, explain any answers in Remarks.)		

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Point within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet																					
1.				Number of Dominant Species that are OBL, FACW, or FAC: 5 (A) Total Number of Dominant Species Across All Strata: 5 (B) Percent of Dominant Species that are OBL, FACW, or FAC: 100 (A/B)																					
2.																									
3.																									
4.																									
_____ = Total Cover																									
Sapling/Shrub Stratum (Plot size: 3m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet																					
1. <i>Rubus spectabilis</i>	30	Yes	FAC	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Total % Cover of</th> <th>Multiply by</th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td></td> <td>x 1 =</td> </tr> <tr> <td>FACW species</td> <td></td> <td>x 2 =</td> </tr> <tr> <td>FAC species</td> <td></td> <td>x 3 =</td> </tr> <tr> <td>FACU species</td> <td></td> <td>x 4 =</td> </tr> <tr> <td>UPL species</td> <td></td> <td>x 5 =</td> </tr> <tr> <td>Column totals</td> <td>(A)</td> <td>(B)</td> </tr> </tbody> </table>	Total % Cover of		Multiply by	OBL species		x 1 =	FACW species		x 2 =	FAC species		x 3 =	FACU species		x 4 =	UPL species		x 5 =	Column totals	(A)	(B)
Total % Cover of		Multiply by																							
OBL species		x 1 =																							
FACW species		x 2 =																							
FAC species		x 3 =																							
FACU species		x 4 =																							
UPL species		x 5 =																							
Column totals	(A)	(B)																							
2. <i>Rubus armeniacus</i>	60	Yes	FAC																						
3.																									
4.																									
5.																									
_____ 90 = Total Cover																									
Herb Stratum (Plot size: 1m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet																					
1. <i>Tolmiea menziesii</i>	40	Yes	FAC	Prevalence Index = B / A =																					
2. <i>Stachys chamissonis</i>	50	Yes	FACW																						
3. <i>Athyrium cyclosum</i>	70	Yes	FACW	Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance test is > 50% <input type="checkbox"/> Prevalence test is ≤ 3.0 * Morphological Adaptations * (provide supporting data in remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants * <input type="checkbox"/> Problematic Hydrophytic Vegetation * (explain)																					
4. Grass species	Trace	No	FAC*																						
5. <i>Cardamine oligosperma</i>	30	No	FAC																						
6.																									
7.																									
8.																									
9.																									
10.																									
11.																									
_____ 190 = Total Cover				* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic																					
Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status																						
1.				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																					
2.																									
_____ = Total Cover																									
% Bare Ground in Herb Stratum:																									
Remarks: *presumed																									

SOIL

Sampling Point – DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/2	93	10YR 3/6	7	C	M	Sandy clay loam	
5-8	10YR 3/2	90	7.5YR 3/4	10	C	M	Sandy loam	
8-16	5Y 2.5/1	70	5YR 3/4	30	C, PL	M	Sandy silty loam	

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)

Indicators for Problematic Hydric Soils³

<input type="checkbox"/> 2cm Muck (A10)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (explain in remarks)

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required):

<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Frost-Heave Hummocks

Field Observations Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (in): 10" Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (in): 8" (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Project Site: Bristol Lane		Sampling Date: 5/16/2016
Applicant/Owner: Desiree Goble, City of Kirkland		Sampling Point: DP- 4
Investigator: A. Hoenig		City/County: Kirkland/King County
Sect., Township, Range: S 19 T 26N R 05E		State: WA
Landform (hillslope, terrace, etc): slope	Slope (%): 10	Local relief (concave, convex, none): concave
Subregion (LRR): A	Lat:	Long:
Soil Map Unit Name: Kitsap silt loam, 15 to 30 percent slopes		NWI classification: none
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic		
(If needed, explain any answers in Remarks.)		

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Hydric Soils Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Point within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Remarks:				

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet	
1. <i>Alnus rubra</i>	60	Yes	FAC	Number of Dominant Species that are OBL, FACW, or FAC:	3 (A)
2.				Total Number of Dominant Species Across All Strata:	3 (B)
3.				Percent of Dominant Species that are OBL, FACW, or FAC:	100 (A/B)
4.	60	= Total Cover			
Sapling/Shrub Stratum (Plot size: 3m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet	
1.					
2.				OBL species	x 1 =
3.				FACW species	x 2 =
4.				FAC species	x 3 =
5.				FACU species	x 4 =
				UPL species	x 5 =
				Column totals	(A) (B)
				Prevalence Index = B / A =	
Herb Stratum (Plot size: 1m diam.)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators	
1. <i>Lawn grasses*</i>	30	Yes	FAC		
2. <i>Ranunculus repens</i>	90	Yes	FAC		
3. <i>Taraxacum officinale</i>	Trace	No	FACU		
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
	120	= Total Cover		* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status		
1.				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
2.					
% Bare Ground in Herb Stratum:					
Remarks:					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	7.5YR 2.5/1	97	10YR 3/6	3	C	M	Gravelly sandy clay loam	

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)

Indicators for Problematic Hydric Soils³

<input type="checkbox"/> 2cm Muck (A10)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (explain in remarks)

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

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

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one required: check all that apply):

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

Secondary Indicators (2 or more required):

<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Frost-Heave Hummocks

<p>Field Observations</p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (in): _____</p> <p>Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (in): 4"</p> <p>Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (in): 2"</p>	<p>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: