

MAIN FILE COPY

C. Gary Schulz

Wetland/Forest Ecologist

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December 1, 2017

RECEIVED

DEC 14 2017

KING COUNTY  
D.P.E.R.

Mr. John Priebe  
Raging River Mining, LLC

Re: **Technical Response for the Raging River Quarry Expansion (Parcel # 222407-9033): Clearing & Grading Permit Application # GRDE15-0166 King County, WA.**

Dear Mr. Priebe:

Per your request this letter is written as response to current County review comments for "Raging River Quarry Expansion" (Review of Ecological Critical Areas and Shorelines - 4/11/17 Memo from Laura Casey). The intent of the response letter is to address the County's 4/11/17 Memo comments and provide technical information to support the findings of the 2016 wetland report (Wetland & Stream Reconnaissance for the Raging River Quarry Expansion: (Parcel # 2224079033) King County, WA, 8/27/16 Schulz).

The critical areas comments from the 4/11/17 Memo were not numbered but are listed below and followed by responses. The County comments have been numbered in this response letter and retain their original order for reference and citation.

- 1) "There is a stream crossing the southern portion of the site....I did not see any deep pools that could support trout during the dry season in the area I observed. This is not addressed in the critical areas reports. The stream slope is mapped as greater than 16% as it drops to the Raging River. Therefore, the stream meets the presumption that it does not provide salmonid fish habitat. The stream qualifies as a Type N aquatic area. The standard buffer on a Type N stream is 65 feet on either side of the ordinary high mark of the stream channel. However, where the stream buffer falls on a steep slope or mapped landslide hazard as on this property, the aquatic area buffer extends to the top of the steep slope or hazard area".

*Response: On 5/9/17 an additional stream reconnaissance was conducted starting at about the northeast corner of the Ditch property (Parcel No. 2124079088). Similar physical and hydrologic conditions were observed as during the initial 2016 investigations. The stream channel was dry near the north boundary of the Expansion Parcel. Stream flow was observed to daylight near Wetland Transect point T-3-2.*

*The winter and spring seasons of 2017 had above normal rainfall. Deep pool areas containing water within the stream channel were not observed. It is very unlikely that resident trout could survive in the stream due to the very seasonal hydrology, lack of refugia, and steep channel gradients.*

*Acknowledge that there are steep slope areas adjacent to the subject stream. The top of 40% steep and/or landslide hazard slopes has been approximately mapped using topographic resources that are available such as iMap and Lidar. The accurate locations will be surveyed and accurately mapped during the Quarry Expansion phase of mining to coincide with extended stream buffer.*

- 2) "I observed a few small riverine wetlands along the stream. It is likely the buffer from the stream and steep slope would encompass any potential wetland buffer. I also observed a wetland southwest of the stream in one location. No mining is proposed south of the stream so it is not necessary to delineate and rate those wetlands".

*Response: "Riverine" wetlands are described as being in an active floodplain of a river, and have important hydrologic links to the water dynamics of the river or stream. "The distinguishing characteristic of riverine wetlands in Washington is that they are frequently flooded by overbank flow from the stream or river. The floodwater is a major environmental factor that structures the ecosystem in these wetlands" (page 27, WA State Wetland Rating System for Western WA - Ecology 2004). Wetland Data Plot 8 sampled an area upstream of the Property on 4/19/16 that was flat and about 15 feet from the active channel. Non-hydric soils were observed with no wetland hydrology and the stream channel was dry. The majority of stream area observed has distinct banks due to channel incision. No areas of overbank flooding were observed.*

*The 4/11/17 County Memo does not include any scientific data or approximate mapping of observed wetland locations. Therefore as stated in the 1<sup>st</sup> response on page 1 an additional stream and wetland reconnaissance was conducted on 5/9/17 within the stream corridor. Wetland soil pits were excavated in two areas that may have developed wetland conditions. Both of these areas were flagged and labeled. The first location is off-site and upstream of the Property. This location is the confluence of a small tributary stream that flows into the subject stream from the southwest side. Two wetland soil pits were excavated at the confluence. Both pits were non-hydric soil to a depth of 18 inches and dry at a time of year when wetland hydrology is a reliable criteria. The second location is on the north side of the stream channel near Transect T-3-1. The soil is non-hydric but water was seeping into the pit at 16 inches deep.*

*All riparian areas reviewed were determined to be non-wetland areas. Groundwater seepage rather than overbank flooding would likely be the support for wetland hydrology. No groundwater seepage zones were observed along the stream corridor.*

- 3) "I also observed wetland conditions along Transect T-1 at data point 2 identified in the Schulz report. There is a ponded area surrounded with saturated soils that appear to be hydric, and hydrophytic vegetation growing in the area".

*Response: The Data Plot 2 location along Transect T-1 was re-investigated on 4/28/17. A second wetland data plot (#2A) was installed and flagged near the Data Plot 2 that was installed during the 2016 investigation. All wetland data plots (2016 & 2017) from this location are attached to this letter. The vegetation cover is nearly the same and dominated by hydrophytic species – salmonberry and lady fern. However, both soil pits exhibited non-hydric soil due to lighter soil color above a depth of 12 inches (10YR2/2) and below 12 inches (10YR5/3). The soil data as recorded does not meet the criteria of having a "depleted matrix" typical of a hydric soil.*

*Acknowledge that there was a ponded area adjacent to the Data Plot 2 location. This small area of 100 to 200 square feet in size is an old excavated pit from previous quarry research related to bedrock depth and the mine. Vegetation was not observed growing in the inundated pit. An attempt to excavate a soil pit in about 4 inches of standing water during the 4/28/17 investigation found the soil profile to be similar as the adjacent soil pits for Data Plot 2. This data plot point is numbered 2B.*

*Due to the timing related to the completion of this response letter a second re-investigation site visit was conducted 10/4/17. The primary purpose of this site visit was to observe the soils during a dryer period when inundation and over-saturation is absent and a more intact soil profile can be viewed. Two additional wetland data plots were installed (#2C and #2D). Data plot #2C was installed in the center of the excavated depression and #2D was installed downslope of the depression. The observed soil in the depression found mixed soil chroma values (colors) with gravel and wood debris. This is typical of a disturbed soil. Data plot #2D exhibited soil color and profile similar to the two data plots upslope of the depression area (#2 and #2A). The results of the second site visit did not observe hydric soil criteria including a "depleted matrix". The depression is reportedly manmade and the investigations confirm it is a disturbed area within a natural swale. Several photographs of this location are attached to this letter.*

- 4) "Neither report addresses the wildlife corridor along the Raging River, or any possible wildlife habitat conservation areas on site".

*Response: The stated "Purpose" sections in both reports were to determine wetland and/or stream habitats on the subject parcels. However, the County's 2016 Comprehensive Plan has mapped Wildlife Habitat Network & Public Ownership. This mapping shows the 300-foot wide Raging River Wildlife Corridor and it is outside of the active mining operation. The Wildlife Corridor (150 feet on each side of the River) is contained with the 200-foot Shoreline Management Zone.*

*The Schulz reports did not include identifying possible wildlife habitat conservation areas. Although none of the wildlife species the County is required to protect were observed on the site the reports were not intended to conduct wildlife studies.*

- 5) "Impacts to fish and wildlife from increased dust and particulates, and blasting noise have not been addressed in the critical areas report".

*Response: The Schulz reports focused on wetland and buffer determinations and reconnaissance level investigation. The intent of mining plans is to avoid direct impacts to critical areas as regulated by the County and specific to the mining operation. There is no assessment of potential impacts other than to identify and use the standards found in the County's Critical Areas code.*

*Potential dust and particulates caused by the mining operation and blasting noise levels are regulated by State agencies (PSCAA, WADNR, WADOE). Periodic inspections and reports are required by regulatory agencies. Reportedly the monitoring of air quality and evaluation of blasting noise has been on-going and is focused on potential impacts to humans.*

In summary the County comments that were considered to be primary and requiring responses are cited and listed in the same order as in the review memo for GRDE15-0166. The intent is not to eliminate or overlook any of the comments but to work towards resolving them. Additional field investigations and review of wetland information found determinations to be nearly the same as provided in the August 27, 2016 wetland and stream report. Please contact me if there are questions or a need for more information.

Sincerely,



C. Gary Schulz

Wetland/Forest Ecologist

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

Project Site: Raging River Quarry Expansion City/County: King Sampling Date: 4/28/17  
 Applicant/Owner: John Priebe State: WA Sampling Point: 2A-2017  
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0  
 Subregion (LRR): A Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks: <u>Transect T-1 at Flag # T-1-2 in dry swale. This plot is a re-sample of same location as 2016.</u>					

**VEGETATION – Use scientific names of plants**

Tree Stratum (Plot size: <u>1/100<sup>th</sup> acre</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	<u>n/a*</u>	=	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
<b>Sapling/Shrub Stratum (Plot size: <u>1/100<sup>th</sup> acre</u>)</b>				
1. <u>Rubus spectabilis</u>	<u>90</u>	<u>yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	<u>n/a*</u>	=	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% = _____, 20% = _____	<u>90</u>	= Total Cover		
<b>Herb Stratum (Plot size: <u>1/100<sup>th</sup> acre</u>)</b>				
1. <u>Athyrium felix-femina</u>	<u>40</u>	<u>yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Tolmeia menziesii</u>	<u>I</u>	<u>no</u>	<u>FAC</u>	
3. <u>Polystichum munitum</u>	<u>10</u>	<u>no</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% = _____, 20% = _____	<u>50</u>	= Total Cover		
<b>Woody Vine Stratum (Plot size: _____)</b>				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
% Bare Ground in Herb Stratum _____				

Remarks:

**SOIL**

Sampling Point: 2A-2017

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 <sup>1</sup>	Loc <sup>2</sup>		
8	10YR2/2	100	_____	_____	_____	_____	sandy loam	dry - moist
14	10YR5/3	100	_____	_____	_____	_____	sandy loam	dry
18	10YR5/3	95	7.5YR5/6	5	C	M	sandy loam	dry
_____	10YR4/4	_____	_____	_____	_____	_____	sand	thin sand layer
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

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

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

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

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

**HYDROLOGY**

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<b>(except MLRA 1, 2, 4A, and 4B)</b>	<b>(MLRA 1, 2, 4A, and 4B)</b>	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

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

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

Project Site: Raging River Quarry Expansion City/County:       /King Sampling Date: 4/28/17  
 Applicant/Owner: John Priebe State: WA Sampling Point: 2B-2017  
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0  
 Subregion (LRR): A Lat:        Long:        Datum:         
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification:         
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks: Near sample point 2A along Transect T-1 in a dry swale. This plot is located within the ponded depression just south of Flag # T-1-2.					

**VEGETATION – Use scientific names of plants**

Tree Stratum (Plot size: <u>1/100<sup>th</sup> acre</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	<u>n/a*</u>	=	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
<u>Sapling/Shrub Stratum (Plot size: <u>1/100<sup>th</sup> acre</u>)</u>				<b>Prevalence Index worksheet:</b>	
1. <u>Rubus spectabilis</u>	<u>65</u>	<u>yes</u>	<u>FAC</u>	Total % Cover of:	Multiply by:
2. _____	_____	<u>n/a*</u>	=	OBL species _____	x1 = _____
3. _____	_____	_____	_____	FACW species _____	x2 = _____
4. _____	_____	_____	_____	FAC species _____	x3 = _____
5. _____	_____	_____	_____	FACU species _____	x4 = _____
50% = _____, 20% = _____	<u>65</u>	= Total Cover		UPL species _____	x5 = _____
<u>Herb Stratum (Plot size: <u>1/100<sup>th</sup> acre</u>)</u>				Column Totals: _____ (A)	_____ (B)
1. <u>Athyrium felix-femina</u>	<u>10</u>	<u>no</u>	<u>FACW</u>	Prevalence Index = B/A = _____	
2. _____	_____	<u>n/a*</u>	=		
3. _____	_____	<u>n/a*</u>	=		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = _____, 20% = _____	<u>10</u>	= Total Cover			
<u>Woody Vine Stratum (Plot size: _____)</u>				<b>Hydrophytic Vegetation Indicators:</b>	
1. _____	_____	_____	_____	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
2. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum _____				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks: No groundcover vegetation growing in the ponded depression.



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

Project Site: Raging River Quarry Expansion City/County:       /King Sampling Date: 10/4/17  
 Applicant/Owner: John Priebe State: WA Sampling Point: 2C-2017  
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0  
 Subregion (LRR): A Lat:        Long:        Datum:         
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification:         
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks: Near sample point 2A along Transect T-1 in a dry swale. This plot is located within the ponded depression just south of Flag # T-1-2.					

**VEGETATION – Use scientific names of plants**

Tree Stratum (Plot size: 1/100 <sup>th</sup> acre)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	n/a*	=	Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	2 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	50 (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
<u>Sapling/Shrub Stratum (Plot size: 1/100<sup>th</sup> acre)</u>					
1. <u>Rubus spectabilis</u>	40	yes	FAC	<b>Prevalence Index worksheet:</b>	
2. _____	_____	n/a*	=	Total % Cover of:	Multiply by:
3. _____	_____	_____	_____	OBL species _____	x1 = _____
4. _____	_____	_____	_____	FACW species _____	x2 = _____
5. _____	_____	_____	_____	FAC species _____	x3 = _____
50% = _____, 20% = _____	40	= Total Cover		FACU species _____	x4 = _____
<u>Herb Stratum (Plot size: 1/100<sup>th</sup> acre)</u>					
1. <u>Athyrium felix-femina</u>	I	no	FACW	UPL species _____	x5 = _____
2. <u>Polystichum munitum</u>	20	yes	FACU	Column Totals: _____ (A)	_____ (B)
3. _____	_____	n/a*	=	Prevalence Index = B/A = _____	
4. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b>	
5. _____	_____	_____	_____	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
6. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
7. _____	_____	_____	_____	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
8. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
9. _____	_____	_____	_____	<input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup>	
10. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
11. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
50% = _____, 20% = _____	20	= Total Cover			
<u>Woody Vine Stratum (Plot size: _____)</u>					
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b>	
2. _____	_____	_____	_____	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum _____					

Remarks: No groundcover vegetation growing in the ponded depression.

**SOIL**

Sampling Point: 2C-2017

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 <sup>1</sup>	Loc <sup>2</sup>		
18	10YR2/2	80	_____	_____	_____	_____	sandy loam	moist
_____	10YR5/3	20	_____	_____	_____	_____	sandy loam	mixed soil matrix with wood pieces
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

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

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soils Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks: This soil appeared mixed from past excavation and included wood and gravel. Depleted soil conditions not observed.

**HYDROLOGY**

Wetland Hydrology Indicators:					
Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)		
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Water-Stained Leaves (B9)	<input type="checkbox"/>	Water-Stained Leaves (B9)
<input type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	(except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/>	(MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Salt Crust (B11)	<input type="checkbox"/>	Drainage Patterns (B10)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Aquatic Invertebrates (B13)	<input type="checkbox"/>	Dry-Season Water Table (C2)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Presence of Reduced Iron (C4)	<input type="checkbox"/>	Shallow Aquitard (D3)
<input type="checkbox"/>	Iron Deposits (B5)	<input type="checkbox"/>	Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/>	FAC-Neutral Test (D5)
<input type="checkbox"/>	Surface Soil Cracks (B6)	<input type="checkbox"/>	Stunted or Stresses Plants (D1) (LRR A)	<input type="checkbox"/>	Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Other (Explain in Remarks)	<input type="checkbox"/>	Frost-Heave Hummocks (D7)
<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)				

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

Remarks: Assumed by non-hydric soil.

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

Project Site: Raging River Quarry Expansion City/County:       /King Sampling Date: 4/28/17  
 Applicant/Owner: John Priebe State: WA Sampling Point: 2D-2017  
 Investigator(s): Gary Schulz Section, Township, Range: 22, 24N, 7E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0  
 Subregion (LRR): A Lat:        Long:        Datum:         
 Soil Map Unit Name: Alderwood & Kitsap (AkF) NWI classification:         
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks: <u>Transect T-1 near Flag # T-1-2 in dry swale. This plot is on the south side and downslope of the depression.</u>					

**VEGETATION – Use scientific names of plants**

Tree Stratum (Plot size: <u>1/100<sup>th</sup> acre</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																	
1. <u>      </u>	<u>      </u>	<u>n/a*</u>	<u>=</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)																
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)																
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)																
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
50% = <u>      </u> , 20% = <u>      </u>	<u>      </u>	<u>= Total Cover</u>																			
<b>Sapling/Shrub Stratum (Plot size: <u>1/100<sup>th</sup> acre</u>)</b>																					
1. <u>Rubus spectabilis</u>	<u>60</u>	<u>yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Total % Cover of:</td> <td style="width: 50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>      </u></td> <td>x1 = <u>      </u></td> </tr> <tr> <td>FACW species <u>      </u></td> <td>x2 = <u>      </u></td> </tr> <tr> <td>FAC species <u>      </u></td> <td>x3 = <u>      </u></td> </tr> <tr> <td>FACU species <u>      </u></td> <td>x4 = <u>      </u></td> </tr> <tr> <td>UPL species <u>      </u></td> <td>x5 = <u>      </u></td> </tr> <tr> <td>Column Totals: <u>      </u> (A)</td> <td><u>      </u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>      </u></td> </tr> </table>		Total % Cover of:	Multiply by:	OBL species <u>      </u>	x1 = <u>      </u>	FACW species <u>      </u>	x2 = <u>      </u>	FAC species <u>      </u>	x3 = <u>      </u>	FACU species <u>      </u>	x4 = <u>      </u>	UPL species <u>      </u>	x5 = <u>      </u>	Column Totals: <u>      </u> (A)	<u>      </u> (B)	Prevalence Index = B/A = <u>      </u>	
Total % Cover of:	Multiply by:																				
OBL species <u>      </u>	x1 = <u>      </u>																				
FACW species <u>      </u>	x2 = <u>      </u>																				
FAC species <u>      </u>	x3 = <u>      </u>																				
FACU species <u>      </u>	x4 = <u>      </u>																				
UPL species <u>      </u>	x5 = <u>      </u>																				
Column Totals: <u>      </u> (A)	<u>      </u> (B)																				
Prevalence Index = B/A = <u>      </u>																					
2. <u>Acer circinatum</u>	<u>5</u>	<u>no</u>	<u>FAC</u>																		
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
50% = <u>      </u> , 20% = <u>      </u>	<u>65</u>	<u>= Total Cover</u>																			
<b>Herb Stratum (Plot size: <u>1/100<sup>th</sup> acre</u>)</b>																					
1. <u>Athyrium felix-femina</u>	<u>I</u>	<u>no</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																	
2. <u>Tolmeia menziesii</u>	<u>I</u>	<u>no</u>	<u>FAC</u>																		
3. <u>Polystichum munitum</u>	<u>15</u>	<u>no</u>	<u>FACU</u>																		
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
11. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
50% = <u>      </u> , 20% = <u>      </u>	<u>15</u>	<u>= Total Cover</u>																			
<b>Woody Vine Stratum (Plot size: <u>      </u>)</b>																					
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																		
50% = <u>      </u> , 20% = <u>      </u>	<u>      </u>	<u>= Total Cover</u>																			
% Bare Ground in Herb Stratum <u>      </u>																					

Remarks:





Wetland Data Plot 2B was located within an old excavated exploration pit.

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Wetland Data Plot 2A was excavated in an undisturbed area adjacent to Data Plot 2B as a reference soil profile.

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Reference Data Plot 2A has chroma / value 10YR 5/3 sandy loam below 8 inches deep. The bright color is not indicative of depleted soil associated with wetland (hydric) soils. No wetland hydrology indicators are present.

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4/28/17 Raging River Quarry Expansion Area Photographs: Near Transect Point T-1-2



Wetland Data Plot 2B was excavated within the depression in approximately 4 inches of standing water. Salmonberry shrubs and lady fern growing around the outer edges of the depression. The depression intercepts shallow groundwater and surface water runoff.

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Wetland Data Plot 2B had a soil profile similar to reference Plot 2A but was disturbed years ago. The 10YR 5/3 chroma / value is present at a depth of 18 inches. The data plots all have a dark brown (10YR2/2) color in the upper layer and the lighter brown 10YR5/3 color at depths to 18 inches. The observed soils are not depleted.



Wetland Data Plot 2B has the same chroma / value color of 10YR 5/3 as observed in the undisturbed area of Wetland Data Plot 2A.