

C. Gary Schulz

Wetland/Forest Ecologist

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August 1, 2017

Mr. John Priebe  
Raging River Mining, LLC

Re: **Technical Response for the Raging River Quarry (Parcel # 222407-9011):  
Clearing & Grading Permit # GRDE15-0004 King County, WA.**

Dear Mr. Priebe:

Per your request this letter is written as response to current County review comments for "Periodic Review of Existing Mine at Raging River Quarry" (Review of Ecological Critical Areas and Shorelines - 4/11/17 Memo from Laura Casey). The intent of the response letter is to address County's 4/11/17 Memo comments and provide technical information to support the findings of the 2016 wetland report (Wetland Determination for the Raging River Quarry (Revised): (Parcel # 2224079011) King County, WA, 9/19/16 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) "Wetland A Delineation. Wetland A is larger than flagged. For example, at Flag A-3 the wetland boundary was 10 feet wider, at A-4 it was 3 feet wider, and at A-12 it was 8 feet wider. This wetland extends off-site to the north".

*Response: As a response to the 4/11/17 County Memo additional wetland delineation data was collected on 4/28/17 at each of the locations. No County flagging or other marking was found but the County referenced wetland boundary locations in Comment 1) were sampled as closely as possible. Additional data plots were installed and flagged in the field at the referenced locations. The data plot forms are attached to the response letter. The findings from the additional wetland data plots are summarized as follows.*

*Flag A-3*

*Within 10 feet of Flag A-3 a new wetland data plot was added and flagged as A-3-A. The excavated soil pit for the added data plot (A-3-A) has brown sandy loam (10YR3/2) from a depth of 6 – 18 inches without a depleted or gleyed matrix. The soil pit was dry at a time of year when wetland hydrology is reliable criteria. This was determined to be a non-wetland area. Wetland area was not observed outside of the surveyed Flag A-3.*

*Flag A-4*

*A new wetland data plot was added and flagged as A-4-A. At about 3 feet outside of Flag A-4 there is a small pocket depression. The excavated soil pit for the added data plot (A-4-A) was located in the depression. The observed soil has a depleted matrix color (2.5Y5/2 with distinct redox features) from a depth of 11 – 18 inches and a dark color (10YR2/1) above the depleted matrix. The soil meets the description of an A-11 hydric (wetland) soil and wetland hydrology was present as saturation within 12 inches of the surface. However the depression is so small that the surrounding vegetation for the data plot radius is dominated by upland plants. This area is predominantly non-wetland area but the wetland boundary can be adjusted to include the pocket depression.*

*Flag A-12*

*Within 8 feet of Flag A-12 a new wetland data plot was added and flagged as A-12-A. The excavated soil pit for the added data plot (A-12-A) has brown sandy loam (10YR3/2 & 10YR4/3) within a depth of 0 – 14 inches. Darker brown soil is present from 14 – 18 inches but is not a depleted or gleyed matrix. The soil pit exhibited wetland hydrology as standing water and saturation but April was a month of higher than normal rainfall. This was determined to be a non-wetland area. Wetland area was not observed outside of the surveyed Flag A-12.*

- 2) “Wetland B Delineation. Wetland B is larger than flagged. For example, at survey stake CP78 the wetland extended 15 feet outside the flagged boundary”.

*Response: As a response to the 4/11/17 County Memo additional wetland delineation data was collected on 4/28/17 at the referenced location. Survey stake CP78 is located near the southwest boundary of Wetland B near Flag B-8. Additional data was collected within 15 feet of the wetland boundary near survey stake CP78. The wetland data plot location was in a low area and assumed to be in the area questioned as wetland outside the wetland boundary. The excavated soil pit has a brown color of 10YR4/3 starting at a depth of 4 inches below the surface without a depleted or gleyed matrix within 18 inches. The soil pit was dry at a time of year when wetland hydrology is reliable criteria. This was determined to be a non-wetland area. Wetland area was not observed outside of the surveyed Flag B-8 in the area of the CP78 survey stake.*

- 3) “Wetland Rating. King County has not adopted Ecology’s 2015 wetland rating methodology, and Schulz rating forms are from the correct 2008 methodology. Gary Schulz revised the Wetland A rating arguing that untreated stormwater does not discharge to the wetland. This is likely correct. However, the only information provided on the source of wetland hydrology indicates it is groundwater. This revision would reduce the water quality score to 11”.

*Response: Acknowledged that the scoring assumes untreated stormwater does not discharge to the wetland. This assumption was previously verified by the County during the initial review of the Wetland A rating.*

- 4) "Wetland Rating. There is a wetland to the north on parcel 222407-9108, and a wetland on the Quarry Expansion site to the south. The Habitat score is revised to 20. The total wetland score would be 47. As a Category III wetland with 20 Habitat points, there is a required buffer of 150 feet from a high intensity use."

*Response: The off-site wetland on Parcel # 222407-9108 was observed during a site visit on May 9, 2017. In accordance with the WA State Wetland Rating System for Western WA (Ecology 2004) for Habitat question H 2.4, the scoring adds (5) points to the rating if "There are 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed...NOT bisected by paved roads, fill, fields, pastures, or other development." The term "Relatively undisturbed" means the connections between the wetlands are naturally vegetated (does not, however, have to be native species) and free of regular disturbances such as Tilling and cropping, Residential and urban development, Moderate to heavy grazing, Paved roads or frequently used gravel roads, and Mowing as stated on pages 85 & 86.*

*The residential lot at 32415 S.E. 58<sup>th</sup> Street (Parcel # 2224079107) is situated between Wetland A and the off-site wetland to the north. The residential lot has an actively used gravel road for access to the existing home and is nearly 1/3 developed with maintained lawn area and structures. Therefore a Habitat connection between Wetland A and the off-site wetland would not be considered as "Relatively undisturbed". The presence of "3 other wetlands within ½ mile" was not observed but if they exist it appears the connections would be disturbed.*

*To summarize this response, a Category III wetland with a Habitat score of 18 points has a standard buffer of 80 feet. A Category III wetland with a Habitat score of 20 points has a standard buffer of 150 feet. As part of the wetland report (9/19/16 Schulz) the scoring for this Habitat question H 2.4 added (3) points instead of (5) points because connections between wetlands are disturbed by road systems to the north, west, and east of Wetland A. In addition as stated in the additional wetland report (8/27/16 Schulz) wetland areas were not observed on the Raging River Quarry Expansion area (Parcel # 2224079033) located to the south. The 8/27/16 wetland report investigated the undeveloped area (Parcel # 2224079033) that extends more than a ¼ mile (about 1,625 feet) to the south of Wetland A. Review of aerial photography did not identify potential wetlands to be located south and within a ½ mile of Wetland A that would have "Relatively undisturbed" connections.*

*It was determined that disturbed conditions are likely to exist between at least 3 other wetlands located within ½ mile of the on-site wetlands (A & B). The total Habitat score of 18 points is used for the rating instead of 20 points. The standard buffer of 80 feet is associated with a Category III wetland that has a Habitat score less than 20 points and is adjacent to high intensity uses.*

*Additional field investigation documenting non-wetland conditions on the proposed Quarry Expansion area has been conducted. This information is forthcoming to be included in a second response to the County's review comments.*

- 5) "Wetland A Hydrology. The Schulz report states that Wetland A drains to the north. However, my field observation indicates that this wetland also drains to the south....Without this overflow, the water level in the wetland will rise until it finds another outlet, which may have adverse impacts on the Quarry and/or neighboring properties."

*Response: The Schulz report (9/9/16) states on page 2 "The Core Design survey and evaluation work concluded the wetland drainage slowly flows north." The Core Design letter report was an attachment (Critical Areas Information – Letter to Fred White & Laura Casey, 2/223/16 Core Design). The engineering analysis concludes the natural outlet or natural flow path for Wetland A is located to the north. The report also states on the 2<sup>nd</sup> page "From the analysis of the survey data collected in the field, evidence confirms that Wetland A is mostly restricted at the surface by means of elevated topography at the Southern perimeter. It would suggest that this wetland is unable, but for an excavated breach in elevated topography, to make connection to the man-made ditch to the South by surface flows."*

*The Schulz report also includes information about the overflow ditch for Wetland A on page 3 under the Hydrology subsection. Field observations indicate that the majority of surface water overflows infiltrate within the manmade ditch. The portion of ditch that receives the overflow from high rainfall events will retain an overflow function and remain as part of the wetland buffer. Leaving the ditch area adjacent to Wetland A will insure that wetland hydrology is not altered.*

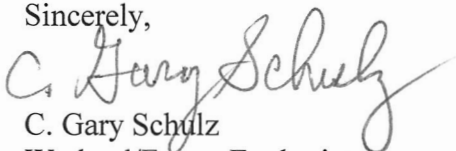
- 6) "Buffer averaging proposal. The wetland buffers are proposed in width adjacent to the quarry operations by 50%.....There is no detailed explanation of the current buffer function and how that will be replaced by the buffer averaging plan, which would be necessary to show that the ecological structure and function of the buffer after averaging is equivalent to or greater than the structure and function before averaging. If the buffer of Wetland A must be reduced to allow reclamation of the site, then it might be necessary to review the proposal to the standards of a critical areas alteration exception rather than through a buffer averaging proposal."

*Response: Buffer averaging is the only code standard allowing rural area wetland buffers to be reduced. As proposed, the primary replacement of buffer function is adding mature forest areas that provide greater habitat function for wildlife with increased tree cover. The added areas are greater than the proposed reduction areas. However a final wetland buffer averaging plan cannot be completed until the rating for Wetland A is resolved.*

*Further clarification related to the mining plan that was not included in past reports is being included in this response. The required reclamation of completed mining includes a safety bench at the top of the quarry face. The safety bench is required by mining regulations along the entire top of quarry excavation. The safety bench will be located 10 feet below the top and will have a width of 25 feet. The quarry face and mining operation work is the inside edge of the 25-foot safety bench. The safety bench area is recognized as a quarry operation but will naturally re-vegetate or be re-vegetated when the mining is completed. Therefore, regardless of the past reports and plan drawings the wetland buffer would effectively be reduced to 65 feet from the standard of 80 feet. This will revise the plans to show the maximum buffer reduction is 15 feet or about 19%.*

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 GRDE15-0004. 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 September 19, 2016 wetland report. Please feel free to 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 City/County:       /King Sampling Date: 4/28/17  
 Applicant/Owner: John Priebe State: WA Sampling Point: A-3-A  
 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"/> | Is the Sampled Area<br>within a Wetland? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present?                                                                                     | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |                                          |                                                                     |
| Wetland Hydrology Present?                                                                               | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |                                          |                                                                     |
| Remarks: Plot is located at Wetland A outside Flag #A-3. There has been above normal rainfall for April. |                                                                     |                                          |                                                                     |

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot size: <u>1/100<sup>th</sup></u> acre)          | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | Dominance Test Worksheet:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------|---------------------|----------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>      </u>                                                  | <u>      </u>       | <u>n/a*</u>          | <u>      </u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. <u>      </u>                                                  | <u>      </u>       | <u>      </u>        | <u>      </u>       | Total Number of Dominant Species Across All Strata: <u>3</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>       | = Total Cover        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Sapling/Shrub Stratum (Plot size: <u>1/100<sup>th</sup></u> acre) |                     |                      |                     | Prevalence Index worksheet:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1. <u>Rubus spectabilis</u>                                       | <u>5</u>            | <u>no</u>            | <u>FAC</u>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. <u>Acer circinatum</u>                                         | <u>10</u>           | <u>no</u>            | <u>FAC</u>          | OBL species <u>      </u> x1 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 3. <u>      </u>                                                  | <u>      </u>       | <u>      </u>        | <u>      </u>       | FACW species <u>      </u> x2 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4. <u>      </u>                                                  | <u>      </u>       | <u>      </u>        | <u>      </u>       | FAC species <u>      </u> x3 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 5. <u>      </u>                                                  | <u>      </u>       | <u>      </u>        | <u>      </u>       | FACU species <u>      </u> x4 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>15</u>           | = Total Cover        |                     | UPL species <u>      </u> x5 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Herb Stratum (Plot size: <u>1/100<sup>th</sup></u> acre)          |                     |                      |                     | Column Totals: <u>      </u> (A) <u>      </u> (B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1. <u>Urtica dioica</u>                                           | <u>40</u>           | <u>yes</u>           | <u>FAC</u>          | Prevalence Index = B/A = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2. <u>Tolmeia menziesii</u>                                       | <u>15</u>           | <u>yes</u>           | <u>FAC</u>          | Hydrophytic Vegetation Indicators:<br><input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. <u>Hydrophyllum fendleri</u>                                   | <u>25</u>           | <u>yes</u>           | <u>FAC</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>80</u>           | = Total Cover        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Woody Vine Stratum (Plot size: <u>      </u> )                    |                     |                      |                     | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1. <u>      </u>                                                  | <u>      </u>       | <u>      </u>        | <u>      </u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. <u>      </u>                                                  | <u>      </u>       | <u>      </u>        | <u>      </u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>      </u>       | = Total Cover        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| % Bare Ground in Herb Stratum <u>      </u>                       |                     |                      |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Remarks:

Project Site: Raging River Quarry

Sampling Point: A-3-A

**SOIL**

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

| Depth<br>(inches) | Matrix         |            | Redox Features |       |                   | Texture    | Remarks         |
|-------------------|----------------|------------|----------------|-------|-------------------|------------|-----------------|
|                   | Color (moist)  | %          | Color (moist)  | %     | Type <sup>1</sup> |            |                 |
| <u>6</u>          | <u>10YR2/2</u> | <u>100</u> | _____          | _____ | _____             | sandy loam | gravelly, moist |
| <u>18</u>         | <u>10YR3/2</u> | <u>100</u> | _____          | _____ | _____             | sandy loam | dry             |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |
| _____             | _____          | _____      | _____          | _____ | _____             | _____      | _____           |

<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.)**

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

☐ 2 cm Muck (A10)☐ Red Parent Material (TF2)☐ Very Shallow Dark Surface (TF12)☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| Type: _____           |                                                                                                  |
| Depth (inches): _____ | <b>Hydric Soils Present?</b> 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) <b>(LRR A)</b> | <input type="checkbox"/> Raised Ant Mounds (D6) <b>(LRR A)</b>     |  |
| <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?<br>(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"/> |

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 City/County:       /King Sampling Date: 4/28/17  
 Applicant/Owner: John Priebe State: WA Sampling Point: A-4-A  
 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"/> | Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present?                                                                                     | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |                                                                                                           |
| Wetland Hydrology Present?                                                                               | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |                                                                                                           |
| Remarks: Plot is located at Wetland A outside Flag #A-4. There has been above normal rainfall for April. |                                                                     |                                                                                                           |

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot size: <u>1/100<sup>th</sup></u> acre)          | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet:                                              |
|-------------------------------------------------------------------|------------------|-------------------|------------------|------------------------------------------------------------------------|
| 1. <u><i>Tsuga heterophylla</i></u>                               | <u>40</u>        | <u>yes</u>        | <u>FACU</u>      |                                                                        |
| 2. <u><i>Alnus rubra</i></u>                                      | <u>5</u>         | <u>no</u>         | <u>FAC</u>       | Total Number of Dominant Species Across All Strata: <u>2</u> (B)       |
| 3. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
| 4. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    |                                                                        |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>45</u>        | = Total Cover     |                  |                                                                        |
| Sapling/Shrub Stratum (Plot size: <u>1/100<sup>th</sup></u> acre) |                  |                   |                  | Prevalence Index worksheet:                                            |
| 1. <u><i>Symphoricarpos alba</i></u>                              | <u>I</u>         | <u>no</u>         | <u>FACU</u>      |                                                                        |
| 2. <u><i>Acer circinatum</i></u>                                  | <u>5</u>         | <u>no</u>         | <u>FAC</u>       | OBL species <u>      </u> x1 = <u>      </u>                           |
| 3. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | FACW species <u>      </u> x2 = <u>      </u>                          |
| 4. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | FAC species <u>      </u> x3 = <u>      </u>                           |
| 5. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | FACU species <u>      </u> x4 = <u>      </u>                          |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>5</u>         | = Total Cover     |                  | UPL species <u>      </u> x5 = <u>      </u>                           |
| Herb Stratum (Plot size: <u>1/100<sup>th</sup></u> acre)          |                  |                   |                  | Column Totals: <u>      </u> (A) <u>      </u> (B)                     |
| 1. <u><i>Polystichum munitum</i></u>                              | <u>75</u>        | <u>yes</u>        | <u>FACU</u>      | Prevalence Index = B/A = <u>      </u>                                 |
| 2. <u><i>Athyrium felix-femina</i></u>                            | <u>5</u>         | <u>no</u>         | <u>FACW</u>      |                                                                        |
| 3. <u><i>Hydrophyllum fendleri</i></u>                            | <u>I</u>         | <u>no</u>         | <u>FAC</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>80</u>        | = Total Cover     |                  |                                                                        |
| Woody Vine Stratum (Plot size: <u>      </u> )                    |                  |                   |                  |                                                                        |
| 1. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    |                                                                        |
| 2. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    |                                                                        |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>      </u>    | = Total Cover     |                  |                                                                        |
| % Bare Ground in Herb Stratum <u>      </u>                       |                  |                   |                  |                                                                        |

Remarks: Plot is located in a pocket depression.

Project Site:     Raging River Quarry    

**SOIL**

Sampling Point: A-4-A

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

| Depth<br>(inches) | Matrix         |            | Redox Features |          |                   |                  | Texture           | Remarks          |
|-------------------|----------------|------------|----------------|----------|-------------------|------------------|-------------------|------------------|
|                   | Color (moist)  | %          | Color (moist)  | %        | Type <sup>1</sup> | Loc <sup>2</sup> |                   |                  |
| <u>11</u>         | <u>10YR2/1</u> | <u>100</u> | _____          | _____    | _____             | _____            | <u>sandy loam</u> | <u>gmoist</u>    |
| <u>18</u>         | <u>2.5Y5/2</u> | <u>95</u>  | <u>10YR4/6</u> | <u>5</u> | <u>C</u>          | <u>M</u>         | <u>sandy loam</u> | <u>saturated</u> |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |
| _____             | _____          | _____      | _____          | _____    | _____             | _____            | _____             | _____            |

<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.)**

| 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"/> Histic Epipedon (A2)                             | <input type="checkbox"/> Stripped Matrix (S6)                     | <input type="checkbox"/> 2 cm 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 type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)     | <input type="checkbox"/> Depleted Matrix (F3)                     | <input type="checkbox"/> Other (Explain in Remarks)       |
| <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 ☒ No ☐

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

| 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"/> High Water Table (A2)                     | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Salt Crust (B11)                                         | <input checked="" 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 checked="" 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): _____     | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Water Table Present?                            | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Depth (inches): _____     |                                                                                                |
| Saturation Present? (includes capillary fringe) | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Depth (inches): <u>12</u> |                                                                                                |

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

Remarks:     Small pocket depression.

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

Project Site: Raging River Quarry City/County:       /King Sampling Date: 4/28/17  
 Applicant/Owner: John Priebe State: WA Sampling Point: A-12-A  
 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"/> | Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present?                                                                                                    | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |                                                                                                           |
| Wetland Hydrology Present?                                                                                              | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |                                                                                                           |
| Remarks: Plot is located at Wetland A at 2 - 3 feet outside Flag #A-12. There has been above normal rainfall for April. |                                                                     |                                                                                                           |

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot size: <u>1/100<sup>th</sup></u> acre)          | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------|------------------|-------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>      </u>                                                  | <u>      </u>    | <u>n/a*</u>       | <u>      </u>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | Total Number of Dominant Species Across All Strata: <u>3</u> (B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 3. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>      </u>    | = Total Cover     |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Sapling/Shrub Stratum (Plot size: <u>1/100<sup>th</sup></u> acre) |                  |                   |                  | Prevalence Index worksheet:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1. <u>Cornus stolonifera</u>                                      | <u>15</u>        | <u>yes</u>        | <u>FACW</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. <u>Rubus spectabilis</u>                                       | <u>10</u>        | <u>no</u>         | <u>FAC</u>       | OBL species <u>      </u> x1 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 3. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | FACW species <u>      </u> x2 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | FAC species <u>      </u> x3 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 5. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    | FACU species <u>      </u> x4 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>15</u>        | = Total Cover     |                  | UPL species <u>      </u> x5 = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Herb Stratum (Plot size: <u>1/100<sup>th</sup></u> acre)          |                  |                   |                  | Column Totals: <u>      </u> (A) <u>      </u> (B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1. <u>Polystichum munitum</u>                                     | <u>25</u>        | <u>yes</u>        | <u>FACU</u>      | Prevalence Index = B/A = <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2. <u>moss sp.</u>                                                | <u>15</u>        | <u>yes</u>        | <u>FAC</u>       | Hydrophytic Vegetation Indicators:<br><input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. <u>Galium aparine</u>                                          | <u>I</u>         | <u>no</u>         | <u>FACU</u>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4. <u>Dicentra formaosa</u>                                       | <u>I</u>         | <u>no</u>         | <u>FACU</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>40</u>        | = Total Cover     |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Woody Vine Stratum (Plot size: <u>      </u> )                    |                  |                   |                  | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. <u>      </u>                                                  | <u>      </u>    | <u>      </u>     | <u>      </u>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 50% = <u>      </u> , 20% = <u>      </u>                         | <u>      </u>    | = Total Cover     |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| % Bare Ground in Herb Stratum <u>      </u>                       |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remarks:                                                          |                  |                   |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Project Site:     Raging River Quarry    

**SOIL**

Sampling Point: A-12-A

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

| Depth<br>(inches)                                                                                                                                      | Matrix                                                                   |            | Redox Features |       |                   | Texture                                                   | Remarks                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|------------|----------------|-------|-------------------|-----------------------------------------------------------|-------------------------------------------------------------|
|                                                                                                                                                        | Color (moist)                                                            | %          | Color (moist)  | %     | Type <sup>1</sup> |                                                           |                                                             |
| <u>6</u>                                                                                                                                               | <u>10YR3/2</u>                                                           | <u>100</u> | _____          | _____ | _____             | <u>sandy loam</u>                                         | <u>saturated</u>                                            |
| <u>14</u>                                                                                                                                              | <u>10YR4/3</u>                                                           | <u>100</u> | _____          | _____ | _____             | <u>sandy loam</u>                                         | <u>saturated</u>                                            |
| <u>18</u>                                                                                                                                              | <u>10YR3/1</u>                                                           | <u>100</u> | _____          | _____ | _____             | <u>sandy loam</u>                                         | <u>saturated</u>                                            |
| _____                                                                                                                                                  | _____                                                                    | _____      | _____          | _____ | _____             | _____                                                     | _____                                                       |
| _____                                                                                                                                                  | _____                                                                    | _____      | _____          | _____ | _____             | _____                                                     | _____                                                       |
| _____                                                                                                                                                  | _____                                                                    | _____      | _____          | _____ | _____             | _____                                                     | _____                                                       |
| _____                                                                                                                                                  | _____                                                                    | _____      | _____          | _____ | _____             | _____                                                     | _____                                                       |
| _____                                                                                                                                                  | _____                                                                    | _____      | _____          | _____ | _____             | _____                                                     | _____                                                       |
| _____                                                                                                                                                  | _____                                                                    | _____      | _____          | _____ | _____             | _____                                                     | _____                                                       |
| <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 |                                                                          |            |                |       |                   |                                                           |                                                             |
| <b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>                                                                       |                                                                          |            |                |       |                   |                                                           | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> |
| <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) <b>(except MLRA 1)</b> |            |                |       |                   | <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 ☐ No ☒

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

|                                                                    |                                                                         |                                                                    |
|--------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                      | <input type="checkbox"/> Water-Stained Leaves (B9)                 |
| <input checked="" type="checkbox"/> High Water Table (A2)          | <b>(except MLRA 1, 2, 4A, and 4B)</b>                                   |                                                                    |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Salt Crust (B11)                               | <input checked="" 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 checked="" 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) <b>(LRR A)</b> | <input type="checkbox"/> Raised Ant Mounds (D6) <b>(LRR A)</b>     |
| <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): _____     | Wetland Hydrology Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Water Table Present?                               | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Depth (inches): <u>12</u> |                                                                                                     |
| Saturation Present?<br>(includes capillary fringe) | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Depth (inches): <u>6</u>  |                                                                                                     |

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

Remarks: