## Forest Practices Application/Notification
### Office Checklist Page 1
### Northwest Region

<table>
<thead>
<tr>
<th>FPA/N CLASSIFICATION:</th>
<th>Biomass</th>
<th>FFFPP</th>
<th>20-acre exempt</th>
<th>Project Name:</th>
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<tbody>
<tr>
<td>[ ] II [ ] III [ ] IVG [ ] IVS</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>Turning Wheel</td>
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<thead>
<tr>
<th>Landowner Name:</th>
<th>Project Name:</th>
<th>WRIA:</th>
<th>WAU:</th>
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<tbody>
<tr>
<td>DNR</td>
<td>Snohomish</td>
<td>Skykomish River</td>
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<th>WRISA:</th>
<th>WAU:</th>
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<tr>
<th>Legal Description:</th>
<th>Activity Type:</th>
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<tbody>
<tr>
<td>12 13 27 NE</td>
<td>Harvest 122.23 ac</td>
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<table>
<thead>
<tr>
<th>Road Construction</th>
<th>Abandonment</th>
</tr>
</thead>
<tbody>
<tr>
<td>8966 ft</td>
<td>3101 ft</td>
</tr>
</tbody>
</table>

### ALTERNATIVE PRESCRIPTIONS

- [ ] Alternate Plan
- [ ] Ten-Year Forest Management Plan
- [ ] Columbia River Gorge National Scenic Area
- [ ] Watershed Analysis: 

### RESOURCE REVIEW

- [ ] Unstable Slopes (Risk: Highway, Water:
- [ ] Soils Map (Highly Erodible & Very Unstable)
- [ ] Landslide Inventory Polygon
- [ ] Rain-on-Snow and Outside Approved WA
- [ ] Hydric Soils
- [ ] Wetland [ ] Forested, [ ] A, [ ] B
- [ ] In WMZ of [ ] A, or [ ] B Wetland
- [ ] In RMZ/ELZ of Type [ ] S, [ ] M, [ ] N water
- [ ] Water Verification

### ASSOCIATED NON-SCANNED DOCUMENTS

- [ ] SEPA Checklist/Documents
- [ ] EPA Checklist/Documents

### ASSOCIATED SCANNED DOCUMENTS

- [ ] Conversion Option Harvest Plan
- [ ] FPHP Plans & Specifications
- [ ] Qualified Expert Report: Geo-letters
- [ ] Natural Regeneration Plan
- [ ] Shoreline Permit
- [ ] Marbled Murrelet Form
- [ ] FPBM Appendix(s)
- [ ] Small Landowner RMAP Checklist
- [ ] CMZ Assessment Form
- [ ] EARR Tax Credit: Yes [ ] No

### ADDITIONAL COMMENTS:

- [ ] Habitat Conservation Plan
- [ ] Landowner Option Plan for Northern Spotted Owl
- [ ] Cooperative Habitat Enhancement Agreement
- [ ] Bull Trout Overlay
- [ ] Group A or B Water Supply
- [ ] Hatchery (Name:)
- [ ] Even-Aged Harvest greater than 120 Acres
- [ ] Ground-based Equipment on Slopes greater than 40%
- [ ] Road Construction on Slopes greater than 65%
- [ ] Saltwater Islands (Name:)
- [ ] In or Over Typed Water
- [ ] Volume greater than 5 mbf per acre
- [ ] Hardwood Conversion Form
- [ ] Wetland Mitigation Plan
- [ ] Water Protocol Surveys
- [ ] Modification Form#
- [ ] Water Classification Worksheet
- [ ] Shade Documentation (Stream Shade Assessment Worksheet)
- [ ] Watershed Analysis Worksheet
- [ ] DFC Printout
- [ ] Slope Stability Informational Form

Form completed by:  
October, 2016 Version
Forest Practices Application/Notification
Western Washington

PLEASE USE THE INSTRUCTIONS TO COMPLETE THIS APPLICATION. TYPE OR PRINT IN INK.

1. Landowner, Timber Owner and Operator

<table>
<thead>
<tr>
<th>Legal Name of LANDOWNER</th>
<th>Legal Name of TIMBER OWNER (if different than Landowner)</th>
<th>Legal Name of OPERATOR (if different than Landowner)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Natural Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mailing Address: 919 N. Township St.</td>
<td>Mailing Address:</td>
<td>Mailing Address:</td>
</tr>
<tr>
<td>City, State, Zip</td>
<td>City, State, Zip</td>
<td>City, State, Zip</td>
</tr>
<tr>
<td>Sedro-Woolley, WA 98284</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone (360) 856-3500</td>
<td>Phone (</td>
<td>Phone (</td>
</tr>
<tr>
<td>Email:</td>
<td>Email:</td>
<td>Email:</td>
</tr>
</tbody>
</table>

2. Contact Person

Contact Person: Laurie Bergvall  
Phone (360) 856-3500  
Email: laurie.bergvall@dnr.wa.gov

3. Landownership information: See instructions

a. ☑ No ☐ Yes Are you a small forest landowner per RCW 76.09.450?  
   If yes, continue to b.

b. ☐ No ☑ Yes Is your entire proposed harvest area on a single contiguous ownership consisting of one or more parcel?

4. If you are harvesting timber, enter the Forest Tax Reporting Account Number of the Timber Owner:

For tax reporting information or to receive a tax number, call the Department of Revenue at 1-800-548-8829.

5. Are you substituting prescriptions from an approved state or federal conservation agreement or watershed analysis?

☐ No ☑ Yes Write ‘HCP’ or ‘Using Prescriptions’ in tables that apply. Attach or reference prescriptions and/or crosswalks on file at the Region office. See Attached HCP
6. What is the legal description of your forest practices?

<table>
<thead>
<tr>
<th>Section</th>
<th>Township</th>
<th>Range</th>
<th>E/W</th>
<th>Tax Parcel Number</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>27</td>
<td>09</td>
<td>E</td>
<td></td>
<td>SNOHOMISH</td>
</tr>
<tr>
<td>13</td>
<td>27</td>
<td>09</td>
<td>E</td>
<td></td>
<td>SNOHOMISH</td>
</tr>
</tbody>
</table>

7. When are you planning to begin work on the proposed activity? In 6+ months.

8. Is the taxpayer eligible for the EARR Tax Credit?
   - No   ☐ Yes

9. Have you reviewed this forest practices activity area to determine whether it may involve historic sites and/or Native American cultural resources? Read the instructions before answering this question.
   - No   ☐ Yes - See FPA Narrative

10. Do you have a DNR approved Road Maintenance and Abandonment Plan (RMAP)?
    a. No   ☐ Yes - List the RMAP number: R2800010L
    If no, continue to b.
    b. No   ☐ Yes - Is a Checklist RMAP required (see instructions)?

11. Are there potentially unstable slopes or landforms in the area of your forest practices activity?
    ☐ No   ☐ Yes - attach Slope Stability Informational Form. If applicable, attach geotechnical report, the SEPA Environmental Checklist, HCP, or Watershed Analysis prescriptions.

12. Are there potentially unstable slopes or landforms around the area of your forest practices activity?
    ☐ No   ☐ Yes - attach Slope Stability Informational Form. If applicable, attach geotechnical report, HCP, or Watershed Analysis prescriptions.

13. Is this forest practice application/notification (answer every question):
    a. ☐ No   ☐ Yes - Within city limits or inside an urban growth area? If yes, see instructions for additional required documents.
    b. No   ☐ Yes - For road work that is included in an approved Road Maintenance and Abandonment Plan (RMAP)?
    c. No   ☐ Yes - Within a public park? If yes, include SEPA Environmental Checklist or SEPA Determination - except for harvest/salvage of less than 5,000 board feet within a developed public park.
    d. No   ☐ Yes - Within 500 feet of a public park? Park name: Forks of the Sky State Park
    e. No   ☐ Yes - In an approved Conversion Option Harvest Plan (COHP) from the local government? If yes, include a copy. This only applies to proposals within urban growth areas.
    f. No   ☐ Yes - Within 260' of the Ordinary High Water Mark (OHWM) or floodway of Type S water? If yes, check with the county or city to determine whether a substantial development permit is required under the local shorelines master plan.
    g. No   ☐ Yes - A request for a multi-year permit? If yes, length requested: ☐ 4 years or ☐ 5 years. Not everyone qualifies for a multi-year permit. See instructions for details.
h. ** No ☐ Yes  An Alternate Plan? If yes, include a copy.

i. ☐ No ☒ Yes Within 50 miles of saltwater and do you own more than 500 acres of forest land in Washington State? If yes, include Marbled Murrelet Form or attach/reference HCP prescriptions.

j. ☐ No ☒ Yes In or directly adjacent to a potential Channel Migration Zone (CMZ)? If yes, include CMZ Assessment Form. Attach/reference applicable HCP and/or Watershed Analysis prescriptions.

**** If not working in or over typed waters, skip to Question 18 ****

You are required to verify Type Np and Ns water types within 200 feet of your proposed forest practices activities prior to submitting a Forest Practices Application/Documents. Use the Additional Information section, additional pages, the Water Type Classification Worksheet, and/or a Water Type Modification form to explain how you verified water types. See Water Typing Requirements in the instructions. Prior to answering Questions 14-17 in this section please refer to the Forest Practices Application Instructions and Forest Practices Board Manual Section 5.

14. Are you proposing any of the following projects NOT permitted by current HPAs from WDFW?
   a. ** No ☐ Yes Installing, replacing, or repairing a culvert at or below the bankfull width of Type S or F water(s) that exceeds a five percent gradient?
   b. ** No ☐ Yes Constructing, replacing, or repairing a bridge at or below the bankfull width of unconfined streams in Type S or F water(s)?
   c. ** No ☐ Yes Placing fill material within the 100-year flood level of unconfined streams in Type S or F water(s)?

15. Have you consulted with DNR and/or WDFW about the proposed hydraulic project(s) in or over Type S or F water? ☐ No ☒ Yes

16. If installing, replacing, removing, or maintaining structures in or over any typed water, complete the table below. Type S and F waters require detailed plan information. Provide plan details in Question 31 or attach plan to the FPA/N. Provide crossing locations and identifiers on your Activity Map. A detailed plan with profiles may also be required for more complex hydraulic projects in Type N Waters per WAC 222-24-042(2).

<table>
<thead>
<tr>
<th>Crossing Identifier (water and/or number)</th>
<th>Water Type (S, F, Np, Ns)</th>
<th>Existing HPA Number (if applicable)</th>
<th>HPA Expiration Date (if applicable)</th>
<th>Planned Activity (install, replace, remove, temporary structure)</th>
<th>Structure (pipe, box, arch, other)</th>
<th>Proposed Size (dimensions of structure)</th>
<th>Culvert Design Method (No-slope, Stream-sim., Hydraulic, Other)</th>
<th>Channel Bed Width (ft) (F and S only)</th>
<th>Stream Gradient (%) (F and S only)</th>
<th>RMAP Project (Y or N)</th>
<th>FFPP Project (Y or N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>See FPA Narrative</td>
<td></td>
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</table>

*Existing HPAs issued by WDFW will be complied and enforced by WDFW until expiration. Plan details are not required for hydraulic projects permitted with an existing HPA (see instructions).

** Fords and equipment crossings on Type S and F Waters may result in an unauthorized incidental take of certain endangered or threatened fish species. For more information, see 'Background for the State's Incidental Take Permits for certain endangered and threatened fish species' following Question 24 of the FPA/N Instructions.
17. If conducting any of the following activities in or over typed water, complete the table below. Some activities will require identifiers on the Activity map and/or more information in Question 31. See instructions.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Type S Water</th>
<th>Type F Water</th>
<th>Type N Water</th>
<th>Type Ns Water</th>
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<tbody>
<tr>
<td>Equipment Crossing**</td>
<td>See FPA</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Suspending Cables</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cable Yarding</td>
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<tr>
<td>LWD Placement/Removal</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Beaver Dam Removal</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Felling and Bucking</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td>Other (describe in Question 31)</td>
<td></td>
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</tr>
</tbody>
</table>

*Existing HPAs issued by WDFW will be compiled and enforced by WDFW until expiration. Plan details are not required for hydraulic projects permitted with an existing HPA (see instructions).

** Fords and equipment crossings on Type S and F Waters may result in an unauthorized incidental take of certain endangered or threatened fish species. For more information, see 'Background for the State's Incidental Take Permits for certain endangered and threatened fish species' following Question 24 of the FPA/N Instructions.

18. If constructing or abandoning forest roads, complete the table below. Show the road locations and identifiers on the Activity Map. Include abandonment plans for temporary roads and abandonment projects.

<table>
<thead>
<tr>
<th>Road Identifier (name, number)</th>
<th>Length (feet)</th>
<th>Steepest Side-slope (%)</th>
<th>Length (feet)</th>
<th>Abandonment Date</th>
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<tbody>
<tr>
<td>Road Construction</td>
<td>7,825</td>
<td>40</td>
<td>8,101</td>
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<tr>
<td>Total Construction</td>
<td>1,141</td>
<td>35</td>
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</table>

See FPA Narrative

19. If depositing spoils and/or expanding or developing a rock pit for forestry use, complete the table below. Show locations and identifiers on the Activity Map.

<table>
<thead>
<tr>
<th>Spoil Area Identifier (letter, number)</th>
<th>Amount of Spoils Deposited (cubic yards)</th>
<th>Rock Pit Identifier (name, number or letter)</th>
<th>Acres of New Rock Pit Developed</th>
<th>Acres of Existing Rock Pit Expanded</th>
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<tr>
<td></td>
<td>1500</td>
<td>DF-21 Pit</td>
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20. If operating in or within 200 feet of a wetland, complete the table below. Show the boundaries of each wetland, along with its identifier, and WMZ on the Activity Map. See instructions for information.

<table>
<thead>
<tr>
<th>Wetland Identifier (number, letter)</th>
<th>Wetland Type (A, B, or Forested)</th>
<th>Planned Activities in Wetland</th>
<th>Planned Activities in Maximum Width WMZ</th>
<th>Total Wetland Area (acres)</th>
<th>How many acres will be drained?</th>
<th>How many acres will be filled?</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Aquatics Addendum</td>
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</table>

**** If not harvesting or salvaging timber, skip to Question 29 ****
21. If harvesting or salvaging timber, complete the table below. Show all harvest areas and unit numbers on the Activity Map. For even-aged harvest units, also show surrounding stand information on the Activity Map.

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Harvest Type (Even-aged, Uneven-aged, Salvage, Right-of-Way)</th>
<th>Biomass Harvest (Y/N)</th>
<th>Harvest Method (Rubber Tired Skidder, Tracked Skidder, Dozer, Shovel, Full Suspension Cable, Lead-end Suspension Cable, Helicopter, Animal, Chipper-forwarder, Slash Bundler)</th>
<th>Acres to be Harvested</th>
<th>Volume to be Harvested (m³)</th>
<th>Volume to be Harvested (biomass tonnage)</th>
<th>Volume to be Harvested (%)</th>
<th>Steepest Slope in Harvest Unit (%)</th>
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<tr>
<td>See FPA Narrative</td>
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</table>

Total 122.23 4535 -- 95 60

22. Reforestation. Check the appropriate box(es).

- [X] Planting. Tree Species: Douglas-fir, western redcedar
- [-] Natural. Include a Natural Regeneration Plan
- [-] Not required because of one or more of the following:
  - [ ] I am converting some or all of this land to non-forest land in the next 3 years or lands are exempted under WAC 222-34-050.
  - [ ] Individual dead, dying, down, or wind-thrown trees will be salvaged.
  - [ ] Trees are removed under a thinning program reasonably expected to maximize the long-term productivity of commercial timber.
  - [ ] I am leaving at least 100 vigorous, undamaged, and well-distributed saplings or merchantable trees per acre.
  - [ ] An average of 190 tree seedlings per acre are established on the harvest area and my harvest will not damage it.
  - [ ] Road right-of-way or rock pit development harvest only.

*** If you own MORE than 80 forested acres in Washington, skip to Question 27 ***

23. Are you using the exempt 20-acre parcel riparian management zone (RMZ) rule on type S, F, or Np waters?

- [ ] No If no, continue to Question 27.
- [ ] Yes If yes, continue to Question 24. See instructions for qualifications and information.

24. Choose the answer below that best fits your situation. Show all RMZs on the Activity Map.

- [ ] a. ALL of the following apply to me and my land: (If no, answer b.)
  - Between June 5, 2006 and today's date I have always owned less than 80 acres of forestland in Washington.
  - Between June 5, 2006 and today's date this parcel has always been 20 acres or less of contiguous ownership. See RCW 76.09.020 for definition of 'contiguous'.
  - Between June 5, 2006 and today's date this parcel has always been owned by me or someone else that has owned less than 80 acres of forestland in Washington.
b. ONE OR MORE of the following apply to me and/or my land (check all that apply):

- I currently own more than 80 acres of forestland in Washington.
- Between June 5, 2006 and today's date I have owned more than 80 acres of forestland in Washington.
- Between June 5, 2006 and today's date this parcel has been a part of more than 20 acres of contiguous ownership. See RCW 76.09.020 for definition of 'contiguous'.
- Between June 5, 2006 and today's date this parcel has been owned by someone that has owned more than 80 forested acres in Washington.

If any of the statements in (b) above apply AND you use the 20-acre exempt RMZ rule, you are NOT authorized under the State's Incidental Take Permits (see explanation in FPA instructions under Questions 24).

25. If harvesting within 115 feet of a Type S or F water on an exempt 20-acre parcel, complete the table below. Show RMZs and stream segment identifiers on the Activity Map. If you are harvesting within 75 feet or within the maximum RMZ (whichever is less), stream shade must be assessed and met following harvest. Describe how stream shade was determined to be met, using the 'Stream Shade Assessment Worksheet' if necessary.

<table>
<thead>
<tr>
<th>Stream Segment Identifier (letter)</th>
<th>Water Type (S, F)</th>
<th>Segment Length (feet)</th>
<th>Bankfull Width (feet)</th>
<th>Maximum RMZ Width (feet)</th>
<th>Are you harvesting within the maximum RMZ? (Y or N)</th>
</tr>
</thead>
<tbody>
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26. Are you harvesting within 29 feet of a Type Np water on a 20-acre exempt parcel?

- No Continue to Question 29.
- Yes See instructions and describe leave tree strategy in Question 31. Then continue to Question 29.

27. If harvesting within 200 feet of any of Type S or F water, complete the table below. Include DFC for all inner zone harvests unless you have an HCP prescription. Show RMZs, CMZs, and stream segment identifiers on the Activity Map. If you are harvesting within 75 feet or within the maximum RMZ (whichever is less), stream shade must be assessed and met following harvest. Describe how stream shade was determined to be met, using the 'Stream Shade Assessment Worksheet' if necessary.

<table>
<thead>
<tr>
<th>Stream Segment Identifier (letter)</th>
<th>Water Type (S or F)</th>
<th>Site Class (I - V)</th>
<th>Stream Width (feet)</th>
<th>Is there a CMZ? (Y/N)</th>
<th>RMZ Harvest Code(s) (see instructions)</th>
<th>DFC Run Number</th>
<th>Total width of RMZ (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

See Aquatics Addendum
28. If harvesting within 50 feet of Type Np water, complete the table(s) below. Show RMZs and stream segment identifiers on the Activity Map.

<table>
<thead>
<tr>
<th>Stream Segment Identifier (letter)</th>
<th>Total Stream Length in Harvest Unit (feet)</th>
<th>Length of No-Harvest, 50-foot Buffers in Harvest Unit (feet)</th>
<th>Stream Segment Identifier (letter)</th>
<th>Total Stream Length in Harvest Unit (feet)</th>
<th>Length of No-Harvest, 50-foot Buffers in Harvest Unit (feet)</th>
</tr>
</thead>
<tbody>
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29. How are the following marked on the ground? *(Flagging, paint, road, fence, etc.)*

- **Harvest Boundaries**: White "Timber Sale Boundary" tags, BPA power line right-of-way, DF-ML
- **Clumped Wildlife Reserve Trees/Green Recruitment Trees**: Blue paint and yellow "Leave Tree Area" tags
- **Right-of-way limits/road centerlines**: Orange "Right-of-Way" tags, centerlines marked with stakes and orange flagging
- **Stream Crossing Work**: To be flagged by operator, then approved by State lands Contract Administrator with consultation of FP Forester.
- **Riparian Management Zone Boundaries and Leave/Take Trees**: White "Timber Sale Boundary" tags
- **Channel Migration Zone**: N/A
- **Wetland Management Zone Boundaries and Leave/Take Trees**: White "Timber Sale Boundary" tags

30. Are you converting the land to non-forestry use within 3 years of harvest?

- ☑ No  ☐ Yes  If yes, include your SEPA Determination and/or SEPA checklist.

31. Additional Information (attach additional pages if necessary): For hydraulic projects in or over Type S, F, or complex N water(s) see instructions for required plan information.

See attached FPA Narrative.
32. We acknowledge the following:

- The information on this application/notification is true.
- We understand this proposed forest practice is subject to:
  - The Forest Practices Act and Rules AND
  - All other federal, state or local regulations.
- Compliance with the Forest Practices Act and Rules does not ensure compliance with the Endangered Species Act or other federal, state or local laws.
- If we said that we would not convert the land to non-forestry use, the county or city may deny development permits on this parcel for the next 6 years.
- The following may result in an unauthorized incidental take of certain endangered or threatened fish species:
  - Conversion of land to non-forestry use.
  - Harvesting within the maximum RMZ on a 20-acre exempt parcel that was acquired after June 5, 2006.
  - Equipment Crossings/Fords in or over Type S and F Waters.
- Inadvertent Discovery – Chapters 27.44, 27.53, 68.50 and 68.60 RCW
  - If you find or suspect you have found an archaeological object or Native American cairn, grave, or glyptic record, immediately cease disturbance activity, protect the area and promptly contact the Department of Archaeology and Historic Preservation at 360 586-3077.
  - If you find or suspect you have found human skeletal remains, immediately cease disturbance activity, protect the area, and contact the County Coroner or Medical Examiner and local law enforcement as soon as possible. Failure to report human remains is a misdemeanor.

The landowner understands that by signing and submitting this FPA, he/she is authorizing the Department of Natural Resources to enter the property in order to review the proposal, inspect harvest operations, and monitor compliance for up to three years after its expiration date. RCW 76.09.150

<table>
<thead>
<tr>
<th>Signature of LANDOWNER</th>
<th>Signature of TIMBER OWNER*</th>
<th>Signature of OPERATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(If different than landowner)</td>
<td>(If different than landowner)</td>
</tr>
<tr>
<td>Print Name:</td>
<td>Print Name:</td>
<td>Print Name:</td>
</tr>
<tr>
<td>John Van Hellebeke</td>
<td>Date: 1/11/17</td>
<td>Date:</td>
</tr>
</tbody>
</table>

*NOTE: If you are a “Perpetual Timber Rights Owner,” and are submitting this without the Landowner’s Signature, provide written evidence the landowner has been notified.

Please make a copy of this FPA/N for your records. If this FPA/N contains a hydraulic project requiring WDFW concurrence review, it will not be available online for public review until after the WDFW concurrence review period.
FPA Narrative

This proposed activity is being conducted on lands covered by the Department's multi-species HCP. These planned activities are consistent with our approved HCP dated September 1997 and associated Incidental Take Permits. See the attached HCP checklist for habitats and species both covered by our HCP agreement and specifically addressed with this proposal. Additionally, attached are DNR proprietary HCP/FPA substitute Addendums for Aquatic Resources, Northern Spotted Owl and Marbled Murrelets. This proposal also complies with the letter of agreement dated February 23, 2007 between DNR state lands and the US Fish and Wildlife Service.

Question #9:
45SN623 is located within the boundaries of the proposal. An assessment of this site was conducted by a State Lands Archaeologist and reviewed by the Department of Archaeology and Historic Preservation. It has been determined ineligible for listing on any national, state, or local preservation registers and does not require any mitigation measures.

The Tulalip Tribes, Stillaguamish Tribe of Indians, and Snoqualmie Indian Tribe were contacted on December 6, 2016 regarding cultural resources, and at this time no response has been received.

If any cultural resources are discovered during forest activity operations, a DNR archaeologist will be notified and will follow the department’s “Cultural Resources Inadvertent Discovery Guidance” procedure.

Question #12:
A State Lands Licensed Engineering Geologist, a Forest Practices Qualified Expert, reviewed the proposed Turning Wheel timber sale and found no Rule Identified Landforms in the harvest area.

The Forest Practices Landslide Inventory GIS layer shows polygon #16836 approximately 900 feet to the south-southeast of the southern portion of Unit 2 of the Turning Wheel timber sale. This polygon and its associated geologic features were evaluated as part of the field review for FPA #2814443. A State Lands Licensed Engineering Geologist, a Forest Practices Qualified Expert, prepared a Geologic Letter Report dated February 6, 2015. This letter was submitted to Forest Practices with FPA #2814443, see also Informal Conference Note #135421.
Question #16:
If installing, replacing, removing or maintaining structures in or over any typed water, complete the table below. Type S and F waters require detailed plan information. Provide plan details in number 31 or attach plan to the FPA/N. Provide crossing locations and identifiers on your Activity Map. (A detailed plan with profiles may also be required for more complex hydraulic projects in Type N Waters per WAC 222-24-042(2)).

<table>
<thead>
<tr>
<th>Crossing Identifier</th>
<th>Water Type (S/F, N, etc.)</th>
<th>Existing HPA Number (if applicable)</th>
<th>HPA Expiration Date (if applicable)</th>
<th>Planned Activity (install, replace, remove, temporary, structure maintenance)</th>
<th>Structure (culvert, bridge, etc.)</th>
<th>Proposed Size (dimensions of structure)</th>
<th>Culvert Design Method (Fixed, Modular, etc.)</th>
<th>Channel Bed Width (ft)</th>
<th>Stream Gradient (%)</th>
<th>RMAP Project (Y or N)</th>
<th>FFPP Project (Y or N)</th>
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<tr>
<td>DF-RRG1004 1+50 (C)</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>Remove</td>
<td>culvert</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>DF-RRG1004 3+40 (D)</td>
<td>5</td>
<td>N/A</td>
<td>N/A</td>
<td>*</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>DF-RRG1004 4+80 (F)</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>Remove</td>
<td>culvert</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
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<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>Remove</td>
<td>culvert</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>CRT-37 22+94</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>Install</td>
<td>bridge 50' span</td>
<td>N/A</td>
<td>15' 12.5</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*There is no structure. This is a stream that has been redirected by an orphaned grade. The proposal is to restore the stream to its original channel. See Road Plan for additional details on stream restoration specifications.

Question #17:
Further information relating to question 17:
Type 5 stream crossings by ground-based equipment shall be as close to perpendicular as possible and may require log cribbing, culvert installation, or other approved methods to be in place to protect channels and banks. Timber will be felled and yarded away from all streams when possible.

One bridge will be installed over a type 3 stream in between the two portions of Unit 2. It will be necessary to ford this stream prior to bridge installation. The location of the ford will be immediately downstream of the bridge installation site (See Road Plan for mapped location). At the ford location, untreated large woody debris (cut logs) will be placed in the stream channel. The large woody debris will be sufficiently large enough to allow machinery to pass over the open water so the drive mechanisms do not enter the channel. See attached Road Plan for bridge installation and crossing details.
Question #18:
Any roads to be built then abandoned (also known as temporary road) that are listed in the table for Question #18, are “optional construction roads”. Of the length listed in the table, zero feet up to the entire length listed may be built. For further information please see the road plan associated with the timber sale, on file at the Northwest Region Office.

<table>
<thead>
<tr>
<th>Road Identifier (Name, Number)</th>
<th>Road Construction</th>
<th>Steepest Side-slope (%)</th>
<th>Abandonment Plan</th>
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<tbody>
<tr>
<td></td>
<td>Length (feet)</td>
<td></td>
<td>Length (feet)</td>
</tr>
<tr>
<td>DF-RRG1004</td>
<td>-</td>
<td>-</td>
<td>870</td>
</tr>
<tr>
<td>CRT-36</td>
<td>-</td>
<td>-</td>
<td>2,812</td>
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<td>CRT-3603</td>
<td>1,836</td>
<td>40</td>
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<td>CRT-37*</td>
<td>4,927</td>
<td>35</td>
<td>2,583</td>
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<tr>
<td>DF-26</td>
<td>2,203</td>
<td>35</td>
<td>0</td>
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</table>

*Approximately 1,141 feet is reconstruction.

Question #19:
Additional pit(s) may be developed/utilized along haul route or constructed roads. These will be less than 0.5 acre, and located outside RMZ’s or sensitive areas.

Question #21:

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Harvest Type</th>
<th>Biomass Harvest (Y/N)</th>
<th>Harvest Method</th>
<th>Acres to be Harvested</th>
<th>Volume to be Harvested (mbf)</th>
<th>Volume to be Harvested (biomass tonnage)</th>
<th>Volume to be Harvested (%)</th>
<th>Steepest Slope in Harvest Unit (º)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Even-aged*</td>
<td>N</td>
<td>Ground/Cable</td>
<td>52.2</td>
<td>1906</td>
<td>--</td>
<td>95</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>Even-aged**</td>
<td>N</td>
<td>Ground/Cable</td>
<td>68.53</td>
<td>2597</td>
<td>--</td>
<td>95</td>
<td>60</td>
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<tr>
<td>3</td>
<td>ROW</td>
<td>N</td>
<td>Ground/Cable</td>
<td>1.5</td>
<td>32</td>
<td>--</td>
<td>95</td>
<td>35</td>
</tr>
</tbody>
</table>

*Includes 1.0 acres of ROW.
**Includes 2.43 acres of ROW.

Ground-based equipment operations will be limited to sustained slopes less than 35% with the exception of where tethered and self-leveling equipment may operate on sustained slopes up to 50% with the approval of the Contract Administrator.
Question #31:
Activity Map – Leave Tree locations depicted are approximate. Leave trees may be exchanged or traded to locations other than mapped on the Activity Maps to facilitate operational feasibility.
ICN No. 135507

Landowner
WADNR NW Region – John Van Hollebeke

Timber Owner
same as landowner

Operator
same as landowner

Mailing Address
919 N Township Street

City, State/Province), Zip/Postal Code
Sedro-Woolley, WA 98284

Meeting Location
On site

Meeting Date
12/19/2016

Time
0900

Region
NW

Subjects Discussed:

Landowner representatives requested a pre-application review of the proposed 2 unit “Turning Wheel” timber sale. Both harvest units will be VRH and are planned for both ground based and cable logging. The State Lands Geologist had identified 2 potential deep-seated landslide features to the east of unit 2. Topographical zones that would contribute any ground water to those features were bounded outside of the proposed unit.

Topics discussed during the on-site were:

1. Request to construct stream parallel road as alternative road location would require a stream crossing at an undesirable location.
2. Culvert removals and reconnecting pirated stream on an orphaned road adjacent to and within the proposed harvest unit.
3. Bridge installation to cross a type 3 Stream.

RMZs were spot checked on 1/3/17.

Decisions Made:

The proposals discussed were acceptable to the group with the following conditions. See attached.

Forest Practice Geologist and Tulalip Tribes Geologist will be consulted to determine if additional field visit will be needed to review the potential unstable features associated with this proposal.

**SIGNATURES of Participants**

<table>
<thead>
<tr>
<th>PRINT Participants' Names</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Van Hollebeke</td>
<td>landowner</td>
</tr>
<tr>
<td>John Moon</td>
<td>landowner</td>
</tr>
<tr>
<td>Amy Halgren</td>
<td>landowner</td>
</tr>
<tr>
<td>Allen McGuire</td>
<td>landowner</td>
</tr>
<tr>
<td>Jamie Balls</td>
<td>Landowner</td>
</tr>
<tr>
<td>Derek Marks</td>
<td>DFW</td>
</tr>
<tr>
<td>Neil Shea</td>
<td>Tulalip Tribes</td>
</tr>
<tr>
<td>Dean Warner</td>
<td>Tulalip Tribes</td>
</tr>
</tbody>
</table>

**Signature & Title of DNR Representative**

Steven Huang
Forest Practice Forester

Date
1/4/17

Work Phone
(360) 856-3500

*(Participant signature means Note is correct for subjects discussed and decisions made at the meeting.)*

Did not attend – mail copies to: WFPARM, FPDM, FPCOORD, SKY30L, USFS, GA

- Timber Owner
- Landowner
- Others: SNOCO, ECY, DDFW, DOR, TULALIP

E-mailed 1-5-17
The proposal is acceptable as-is. It is not necessary to have a vertical segment to maximize the gap between armoring — requiring the armoring to be placed at a 1:1 ratio will allow a gap of 20' (the average CBW is 15') and this is sufficient.

- Be sure to use typical contract language that requires placement of woody debris downstream of the bridge site.
- Equipment may cross the channel for access to the opposite bank using logs to keep the drive mechanism out of the water.
- In-stream work isn’t expected to be necessary on this site but if needed is limited to the July 1 to October 1 window.
Turning Wheel:
Orphaned Culvert Removals

Site 1: T3
Site 2: T5
Site 3: T3
Site 4: T3

No action

Unit 1
T27R09E

Unit 2A

No action

Cascade District, Boulder Unit
T27N R09E, Sec. 12 and 13

Scale: 1:200

120 Feet
0 30 60
Stream Parallel Road
- The alternative road location would require a stream crossing in an undesirable location. This option has less impact.
- Right-of-way will be replanted.
- Catch-basin settling ponds will be used to help manage water and protect streams from sediment delivery.

Culvert Removals and Pirated Stream
- Require pull back at least 2x bank full width
- Remove shoulder berms and notch the orphaned grade to the ditchline wherever there is a seep (in the areas highlighted on the map below)
- Provide profiles for each removal site
- Timing window for activity on T3 streams is July 1 to October 1
Appendix D. Slope Stability Informational Form

Complete and attach this form to your FPA if you answered 'Yes' to FPA Question 11 or 12. Refer to WAC 222-16-050(1)(d) and Forest Practices Board Manual Section 16—Guidelines for Evaluating Potentially Unstable Slopes for definitions and descriptions of potentially unstable slopes or landforms.

1. What screening tools were used? ☑ Aerial Photo, ☑ LiDAR, ☑ Landslide Inventory, ☑ Landslide Hazard Zone Polygon, ☑ GIS/Other (describe):

2. Were there any features identified using the screening tools in #1 that did not exist in the field? If yes, describe:
   There were no Landslide Inventory polygons identified in the inventories of the screening tools used.

3. a. What potentially unstable slopes or landforms were identified in the area of your forest practices activity? Check all that apply:
   - Inner Gorge
   - Groundwater recharge areas for glacial deep-seated landslides
   - Bedrock Hollow
   - Convergent Headwall
   - Toe of deep-seated landslide
   - Outer edges of meander bends
   - Other (Deep-seated landslides or other features of potentially unstable slopes). Describe:
     None

   b. What activities may occur in potentially unstable slopes or landforms? Check all that apply:
      - Timber harvest
      - Road construction
      - Suspending cables
      - Yarding
      - Tailholds

4. a. What potentially unstable slopes or landforms were identified around the area of your forest practices activity? Check all that apply:
   - Inner Gorge
   - Groundwater recharge areas for glacial deep-seated landslides
   - Bedrock Hollow
   - Convergent Headwall
   - Toe of deep-seated landslide
   - Outer edges of meander bends
   - Other (Deep-seated landslides or other features of potentially unstable slopes). Describe:

   b. What activities may occur around potentially unstable slopes or landforms? Check all that apply:
      - Timber harvest
      - Road construction
      - Suspending cables
      - Yarding
      - Tailholds

For use with FPA/N dated 6/1/2016 or later
5. If any features identified in #3.a. and/or #4.a. were bounded out, describe the manner in which the boundary was determined:

The groundwater recharge areas of the glacial deep-seated landslides were bounded out of the harvest area. The Northwest Region Geologist assisted in delineating the boundary of the groundwater recharge area as defined in the Washington State Forest Practices Board Manual Guidelines for Evaluating Potentially Unstable Slopes and Landforms. Inner gorge slopes were bounded out by either being within the HCP required riparian management buffer or at a crown width back from the top of the inner gorge slope.

6. Were areas of public use (which may include, but are not limited to: public roads, utilities, designated recreation areas, occupied structures, etc.) identified in or around the area of your proposed forest practices activity? Show these locations on the map in #8.

Yes, Reiter Road. See attached map.

7. Date of field review: 11/9/16

Person(s) that conducted field review: John VanHollebeke NRS1
Name Title/position
John McKenzie Northwest Region LEG/QE
Name Title/position

8. Show all field reviewed areas for potentially unstable slopes or landforms on a map (may use a forest practices activity map, harvest map or GIS map – See example below). Show locations where areas of public use exist. This map is intended to be developed by the field practitioner.
**Forest Practices**

**Informal Conference Note**

<table>
<thead>
<tr>
<th>IGN No.</th>
<th>Legal Subdivision</th>
<th>Section</th>
<th>TWP</th>
<th>RGE</th>
<th>E/W</th>
<th>Application / Notification #</th>
<th>Class</th>
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<td>13</td>
<td>28</td>
<td>7E</td>
<td></td>
<td>2814443</td>
<td>3</td>
</tr>
</tbody>
</table>

**Landowner**
WA DNR NW Region

**Timber Owner**
same as landowner

**Operator**
same as landowner

**Mailing Address**
919 N Township St

**Mailing Address**

**City, State (Province), Zip (Postal Code)**
Sedro-Woolley, WA 98284

**City, State (Province), Zip (Postal Code)**

**Meeting Location**
on site

**Telephone**
Conference

**Date**
March 13, 2015

**Time**
0900

**Region**
NW

---

**Subjects Discussed:**

- On-site review of DNR "Deer Wrap" timber sale. (previously withdrawn FPA 2814344).
- Field review of the mapped Landslide Inventory Polygon adjacent to unit 1 of the proposal; determine the accuracy or extent of the mapped polygon. Review geotechnical analysis prepared by landowner geologist (submitted with the FPA) for this proposal.
- Additional discussion regarding request from the City of Index to identify the watershed that feeds the City's water source.

**Decisions Made:**

- The group generally concurs with the geotechnical analysis prepared by State Lands Geologist - John McKenzie. There were no signs of instability in the sites of interest from his analysis. There was no field evidence of the landslide polygon identified in the Landslide Inventory on the GIS system. If there was indeed a deep seated landslide, it would not be affected by the proposal. The group also did not see any risk to water quality from the proposal.
- The watershed question/request from the City of Index is not a Forest Practice issue. The question/request should be directed to Washington State Department of Health.

Garth Anderson and Neil Shea will provide additional written comments regarding the site visit.

The FPA will be approved.

John McKenzie - Landowner
Al McGuire - Landowner
Jason Teller - Landowner
John Moon - Landowner

---

**Participants' Names**

Garth Anderson
Rich Dodd
Bob Penhale
Derek Marks
Brett Shattuck
Neil Shea

**Representing**

DNR - Forest Practices
DNR - Forest Practices
DOE
Tulalip Tribes
Tulalip Tribes
Tulalip Tribes

**Signature & Title of DNR Representative**

Steven Huang
Forest Practice Forester

**Date**
March 16, 2015

**Work Phone**

(360)856-6500

---

*(Participant signature means Note is correct for subjects discussed and decisions made at the meeting.)*

Did not attend – mail copies to: RPARM, FPDM, FPCOORD, SKY30

Timber Owner  Landowner  Others: SNOCO, DOE, DOWF, DOR, TULALIP, USFS
TO: Al McGuire, District Manager  
Cascade District  
Northwest Region

FROM: John M. McKenzie  
Licensed Engineering Geologist  
Forest Resources Division  
Northwest Region

SUBJECT: GEOLOGIC LETTER REPORT  
Discussion  
Deep-Seated Landslide and Surrounding Terrain  
West of Index  
Snohomish County

DATE: February 6, 2015

The following discussion presents my field observations and opinions based on the field data and office review regarding a possible deep-seated landslide located about one mile west of the Town of Index, on the north side of the Skykomish River, in Sections 18 and 19, T27N, R10E, and about one-quarter mile southwest of the proposed Dear Wrap Timber Sale. Included in this letter report is also a discussion and my opinions regarding the immediate surrounding geologic setting. The area of the possible deep-seated landslide is bounded by State Park lands (Forest of the Sky State Park) to the north; state park and private property to the east; right-of-ways for Reiter Road and Burlington Northern-Santa Fe Railroad, and Skykomish River, and a private residences to the south of the slide; and non-DNR state lands and a small patch of private property to the west. Much of the area of the possible landslide in question appears to be within Forks of the Sky State Park. A power-line transmission corridor crosses the mid- and lower area of the possible landslide in question from the northwest to the southeast.

The possible deep-seated landslide in question is not identified on any layer of the DNR electronic database. It is within a relatively large landslide polygon on the DNR Forest Practices (FP) landslide inventory database. The landslide polygon in the FP inventory is many times larger than the possible deep-seated landslide in question. It appears that the FP landslide (polygon) was taken from the Geologic Map of the Skykomish River 30- by 60-Minute Quadrangle, Washington (Tabor and others, 1993, U.S. Geological Survey Miscellaneous Investigations Series Map I-1963, scale 1:100,000) during compilation of the Forest Practices landslide inventory. Apparently Tabor and others took the landslide from Surficial geology of the west half of the Skykomish River quadrangle, Snohomish and Kings Counties, Washington; (Booth, D.B., 1984, U.S. Geological Survey Open-File Report 84-213, scale 1:50,000). The FP
landslide inventory polygon encompasses topography and geology that argues conclusively that the landslide defined by the FP polygon is just not there.

Over the last 2¼ years I have undertaken six field traverses of the area within the FP inventory polygon, or nearby areas to the north, during field work for timber sales or aerial evaluation of a municipal aquifer. Within the FP polygon the areas traversed include the long north-south draw located in about the center of the FP polygon and the area of the currently recognized possible deep-seated landslide. The timber sale areas reviewed included the hilly terrain of the Dear Wrap Timber Sale.

During reconnaissance of the north-south draw, my traverse included slopes on the northwest side of the draw, the slopes at the head of the draw, slopes on the west side of the draw, lower slopes on the northeast side of the draw, the western ridge of the draw, and on through the bottom along an access road to the area of the mouth of the draw. (Please refer to the attached index map for locations of the features noted in this paragraph and following paragraphs.) I observed a healthy stand of undisturbed trees and stumps on steep slopes. Evidence for localized landslide processes was not observed though the areas traversed. Granitic bedrock was observed along the mid- and lower slopes in the northeast area of the head of the swale. The outcrops were large and the rock showed no evidence of being involved in landslide processes. The granitic rock was judged to be “in place”. Near the top of the western ridge, about half way down the ridge to Reiter Road, essentially flat-lying, soft, “varved-like”, interbedded blue-gray silts and clays were observed. These sediments were interpreted as glacial lake deposits and judged to be in-place and not to have been involved in landslide processes.

Identification of the possible deep-seated landslide is somewhat problematic, the scarp is not as well defined as one would like, and neither are portions of the western lateral-margin, contributing to an argument against the presence of the possible deep-seated landslide in question. On the other hand the subdued hummocky topography in the lower areas of the possible deep-seated landslide in question suggest landslide processes. In addition, the relatively broad, benchy topography in the head area of the possible deep-seated landslide can be interpreted as having developed in response to landslide processes related to the possible deep-seated landslide, or do to other geomorphic processes not connected with deep-seated landslide processes, such as fluvial processes. In this discussion my approach to this question is to take a more conservative position that it is possible that a deep-seated landslide is present.

Both of the field reconnaissances (my initial reconnaissance on 1/8/15 and later the pre-application field review on 2/4/15) of the currently recognized possible deep-seated landslide (from here further referred to as the possible landslide) included a traverse of the western margin, the head and scarp of the slide, the upper area of the eastern margin, and across the lower central area of the possible landslide. This possible landslide is about 1,800-feet long and about 250- to 900-feet wide. Vertical relief from toe to head of the possible landslide is about 240 feet. It is probably best characterized a translational-earthflow. The possible landslide is characterized by very subdued hummocky topography on the gentle slopes in the lower areas to broad benches at the head of the possible landslide, and very localized steep topography. The overall slope of the
possible landslide is (depending on how it is measured) between about 12 to 15 percent. However, within the possible landslide, long stretches (many hundreds of feet long) in the lower about two-thirds, exhibit slopes that vary from 4 to 7 percent. Slopes to about 10 percent in the head area of the possible landslide were observed. The drainage on the possible landslide is well established. Deer Creek (the headwaters of which are 2½, or so, miles to the northeast, above the far side of Deer Flat) follows the western margin or crosses the possible landslide from north to south. During traverse of the scarp area several streams were observed flowing across the granitic rock of the scarp. Several relatively minor tributaries flow across the possible landslide from the head of the possible landslide to Deer Creek. All of these creeks and streams are well established and some locally exhibit inner-gorge-like topography. A road system to access the steel power-line towers meanders across the lower area of the possible landslide, and a road system to access the power-line towers on the ridge to the west of the possible landslide crosses portions of the ridge to the west of the possible landslide. The possible landslide is well vegetated save for the cleared swath of the power line corridor. Likewise the slopes all around the possible landslide are well vegetated. The toe of the possible landslide is about 250 to 850 feet from the present channel of the Skykomish River. The intervening ground between the toe of the possible landslide and the Skykomish River is characterized by alluvial terrace topography. Review of aerial photographs in the files at Northwest Region and orthophotographs in the DNR electronic data base did not reveal evidence for slope instability with respect to the possible landslide during the period of time encompassed by the photography: 1978 to 2013.

In small exposures in cut slopes along Reiter Road and along the access road to the west of the possible landslide, fine-grained, locally poorly-bedded, sediments were observed overlain by very coarse cobble- to boulder-size deposits. The underlying fine-grained sediments appear to be undisturbed. The contacts between the fine-grained sediments and the overlying coarse gravel deposits are sharp, appear to be relative horizontal, and also undisturbed. Traverse of the scarp of the possible landslide revealed granitic rock exposed at many locations along the entire scarp. The joint-spacing could be characterized as medium to wide and the joints tight. That the joint pattern was not disrupted (joints could be followed across other joints) strongly argues that the granitic rock exposed is in-place, and has not been involved in landslide processes. Accumulations of talus blanket the base of the scarp. Only gravel float was observed in high stream bank exposures in the lower central area of the possible landslide.

Using Table 2 (Guidelines for estimating landslide activity based on vegetation and morphology in Rocky Mountain climates) on page 16-48 in the Board Manual (11/2014) Interim Unstable Slopes guidelines, the possible landslide would best be characterized as a dormant-old or relic landslide. Several lines of evidence suggest the possible landslide is relatively stable. These lines of evidence include the low slope inclinations of the possible landslide body, lack of observed ground cracks, undisturbed trees and stumps, the lack of apparent disturbance of the road and railroad at the toe and the power lines and power-line roads traversing the landslide, and the apparent lack of disturbance of the fluvial terraces at the toe of the possible landslide. The well-established drainage system and subdued topography reinforces this characterization. In addition, the undisturbed condition of the current stand of timber and the undisturbed old
growth stumps suggest that, at a minimum, it has been at least many hundreds of years since movement of the possible landslide, if not longer.

Another argument that the possible landslide is relatively stable can be reasoned from the overall low slope inclination of the possible landslide itself. Assuming the possible landslide is there, it is likely that at least a portion of the initial failure occurred in or through glacial deposits – likely glaciolacustrine deposits (as suggested by the outcrop of glacial-like sediments noted above). It is well known that an ancestral glacial lake occupied the current Skykomish River valley, impounded by an ice dam located (at least for a while) just west of Deer Flat (Booth, referenced above). Based on this and field observations, the presence of these deposits is safe to assume. Recent shear testing of samples of the clays and silts from the glaciolacustrine sediments of the Oso landslide produced remolded (residual) shear strengths of about 20 degrees for the fat clays and 27 degrees for silts, as presented in the Geotechnical data report, SR-530 Skaglund Hill vic. to C-post Rd. vic emergency roadway reconstruction DA-153, MP 36.8 to 38.4; (Fiske, A.J., 2014, Washington State Department of Transportation, Construction Division, Geotechnical Office). As noted the overall slope of the possible landslide is about 15 percent (about 8 to 9 degrees), with local areas much less than that: 4 to 7 to 10 percent (all of these percentages convert to values of about 5 degrees or less). The basic concepts regarding the relationship between the shear strength of any given earth material and the inclinations of slopes in those earth materials argue the configuration of the deep-seated landslide is relatively stable because the overall slope and most slopes everywhere on the landslide are less steep than the shear strength of the materials which underlie them; a relative stable condition.

Another line of reasoning regarding the overall stability of the possible landslide is the buttressing effect of the alluvial earth materials of the fluvial terraces between the deep-seated landslide and the Skykomish River. This affect increases the stability of the deep-seated landslide.

Figure 26 on page 16-49 in the Board Manual (11/2014) Interim Unstable Slopes guidelines is a decision pathway along which dormant/indistinct/relic landslides are characterized as low hazard/low delivery potential landslides.

The upper reaches of the slopes northeast of the area of the possible landslide; the areas above the granitic cliffs, are underlain by moraine/glacial recessional out wash deposits (Booth, referenced above), and Geologic map of the Skykomish River 30- by 60-minute quadrangle. Washington: (Tabor and others, referenced above). These deposits underlie Deer Flat and are characterized as stratified sand and gravel with local interbeds of silty sand and silty clay, and are well exposed in a quarry on the Deer Flat Road about 4,000 feet to the northwest of the possible landslide. The slopes underlain by these glacial earth materials are characterized by steep hill side topography and three large hillside draws. All three draws are heavily vegetated (save for the power-line corridor) with a good stand of trees and are occupied by streams of varying magnitude. The western most draw (the north-south-trending draw) was the subject of two reconnaissance traverses for an earlier timber sale and an aquifer evaluation. The LiDAR hill-shade and topography model show the western and northern slopes (head of the draw) as
Geologic Letter Report
Deep-Seated Landslide and Surrounding Terrain
Snohomish County

essentially smooth and uniform. This was confirmed during field reconnaissance. Review of the aerial photography and field reconnaissance suggests some small-scale, very localized, instability in the vicinity of the Index wells. The eastern slopes of the western draw are characterized by some "fluted" topography suggesting localized instability. The western draw is not adjacent to the Dear Wrap Timber Sale. The middle draw contains Deer Creek. The slopes of this draw are portrayed as relatively smooth and uniform. Review of aerial photography did not reveal evidence for recent or on-going instability in the middle draw, the light tones observed on the aerial photographs were interpreted to be exposed granitic bedrock. Likewise, the slopes in eastern draw are portrayed on the LiDAR model as being smooth and uniform. However, review of aerial photography showed a linear shadow, or break, in the forest canopy in the center line of the draw that could be interpreted as a relatively small debris slide. It appears to have originated about 100 feet below the top edge of Deer Flat. Based on the break/shadow of the vegetation cover it appears that the debris slide (if that is the reason for the vegetation break/shadow) traveled about a few hundred feet down slope, but not as far as the glacial deposits-granitic bedrock contact. In summary, interpretation of the LiDAR imagery suggests some evidence for instability on the eastern slopes of the western draw. In the other two draws the topography and hill-shade models, and aerial photography do not suggest a recent or ongoing history of slope instability, save for the one possible event noted above. The intervening slopes between the draws are essentially planar to slightly divergent and do not show evidence for recent or on-going slope instability.

The origin of these three draws does require an explanation. If it will be remembered, it has been recognized (Booth, referenced above) that the area in question was (at one time, for some uncertain amount time) at the eastern margin of the Puget ice lobe. The lobe dammed the ancestral Skykomish River valley, resulting in deposition of the glacial lake deposits that crop out at lower (and higher) elevations along the Skykomish River, and the recessional deposits that underlie Deer Flat and blanket the granitic bedrock. The west-facing slope that defines the western edge of Deer Flat likely denotes the edge of the ice lobe at the time the glacial deposits of Deer Flat were laid down. Review of the LiDAR imagery shows what could be interpreted as broad, shallow, generally north-south oriented channels that would have directed melt water from the margin of the glacier toward the location of the three draws. Booths mapping (referenced above) also supports this interpretation. This suggests that the origins of the three draws could be explained as being due to erosion processes as channelized stream-water flowed over the southern ancestral edge of Deer Flat, creating erosion gullies that are now recognized as the draws discussed above. It would not be unreasonable to assume that these erosion gullies could have been and likely were later modified by landslide processes following further retreat of the ice sheet. However, save for the aforementioned apparent landslide topography on the western-facing slopes in the western draw, and the debris slide noted in the eastern draw, the smooth, uniform nature of the slopes in the draws suggest that it has been some time since landslide processes were an important process on the slopes of the draws.

It should also be noted that the granitic bedrock that underlies Deer Flat acts as a hydrologic groundwater-barrier between the glacial deposits of Deer Flat and the possible landslide. Water that percolates down through the glacial deposits, once encountering the granitic bedrock cannot
percolate through the granitic bedrock, save along the joint/fracture system (which likely cannot move much water), and more likely flows along the buried granitic surface to Deer Creek. Some of the subsurface water in the glacial deposits must also surface to the south of Deer Flat, at or above the glacial sediments-granitic bedrock contact, to feed the several streams that were observed flowing over the granitic bedrock of the scarp of the possible landslide. These streams then flow across the surface of the possible landslide into Deer Creek. There is, for all practical purposes, essentially little subsurface groundwater-flow connection between Deer Flat and the possible landslide. The creeks that flow across the possible landslide also act, in part, as a dewatering system for the possible landslide, helping to control the groundwater levels in the possible landslide.

If you have any questions, please feel free to contact me.

Respectfully submitted,

John M. McKenzie
Northwest Region Engineering Geologist
LEG #861

Attachment: Index Map of Area Around the Possible Landslide

It should be noted that based on additional research, analysis of the information obtained during later office and field review of the possible landslide, and based on discussions between three licensed engineering geologists, each of whom is a Qualified Experts, and has been on the ground at the possible landslide, it was determined that there is not a ground-water recharge question in this case. This is, in part, contradictory to some of the points of information, maps, and opinions presented and discussed in my earlier emails regarding this possible landslide and the Deer Wrap Timber Sale. Those earlier opinions did not benefit from the additional information obtained and analysis undertaken following those emails and the pre-application field review. This additional information is included in the discussions presented above.
INDEX MAP OF AREA AROUND THE POSSIBLE LANDSLIDE

Geologic Letter Report
West of Index, Snohomish County
The following discussion presents additional information and clarification of points of discussion with regards to my Geologic Letter Report dated February 6, 2015. The additional information provided is based on a reconnaissance of the Eastern Draw, and a traverse of the area of steep slopes between the granitic cliffs and the essentially flat area around the perimeter of the Deer Wrap Timber Sale, including the area of the eastern draw. Please see attached map for the locations referred to.

Reconnaissance of the slopes above the granitic bedrock cliffs and below the outer edge of the essentially level areas that, in part, underlie the southern, southwestern, and western perimeter of Unit 1 of the Deer Wrap Timber Sale was undertaken along with additional reconnaissance of the Eastern Draw. The slopes were traversed from the area of the eastern stream that flows out of the eastern area of Unit 1, westward to Deer Creek, and hence downslope along Deer Creek to the area of the possible deep-seated landslide. The glacial deposits that underlie the steep slopes in question thin rapidly to the east and the slopes underlain by glacial deposits quickly transition into slopes underlain by granitic bedrock. Stumps from the last entry and the current stand of trees show no indication of disturbance. Save for one location discussed below, landforms suggestive of historic, recent, or on-going deep-seated or shallow landslide processes were not observed. Only one damp area suggestive of a seep was noted at the eastern area of the traverse of the slopes in question. The slopes were essentially uniform as suggested by the LIDAR generated topography. A debris slide scar was observed at about the location of the dot shown on the attached map. It is about 12- to 15-feet wide and up to about 6-feet deep. Its length is...
estimated at about 40 feet. The interior of the scar is covered with leaves, and some brush was noted. It may be fairly recent (i.e., 5 to 10 years old). In the geologic letter report of February 6, 2015 it was reported that an area of shadows in the eastern draw was interpreted as a possible relatively-small debris slide. Reconnaissance of the Eastern Draw did not reveal evidence for a debris slide, no debris slide scar-like landforms were observed, nor was any debris-slide hillside-scour track noted in the Eastern Draw. At about the same location as the shadow noted on the aerial photographs, a poorly developed break in the canopy was noted in the field. This break coincided with a narrow, linear accumulation of cobbles and small-size boulders. The accumulation of boulders did not appear to be part of any type of mass wasting process. There was no evidence of water flowing through the area of the boulders. (The existence of a stream in this draw based on FPA maps was misstated.) In addition, near the mouth of the Eastern Draw no evidence of past debris slide activity passing through the mouth was observed.

It should be noted that in my letter of February 6, 2015 the morphology of the three draws is not attributed only to erosion processes related to runoff from the glacial ice sheet that was located just to the west at the last maximum stade. The idea that the morphology of the draws has been modified by slopes processes was also included in the discussion concerning the origin of the draws, and on-going relatively small-scale landslide processes were recognized in the Western Draw. The morphology of the Middle Draw is clearly related to Deer Creek as it erodes headward into the glacial deposits. In my opinion, it is unlikely that deep-seated landslide processes alone would create the current draw-like landforms of the Western and Eastern Draws. If the landforms in question were a product of deep-seated landslide processes in granular earth materials the arcuate shape of the top of the landform could be explainable. However, it is unlikely that in the case of the Eastern Draw that such a landslide would be characterized by such a narrow toe, the toe would be much wider, as would be characteristic of deep-seated landslides in such earth materials. In addition, field reconnaissance along the bottom of the granitic rock cliffs did not reveal evidence for an accumulation of slide debris as would be expected if large-scale deep-seated landslide processes were the major driving processes creating the landform that characterizes the Eastern Draw. Reconnaissance showed there are talus slopes but no large accumulations of earth materials that can be traced upslope to the landforms in question.

It is not necessary to derive the earth materials that compose the possible deep-seated landslide from the Middle and Western Draws when "suitable" earth materials to create the possible deep-seated landslide are readily available in the area in which the possible deep-seated landslide is situated. The interpretation that the origin of the earth materials that compose the possible deep-seated landslide came from the draws seems overly complicated, and unnecessary to explain the origin of the possible deep-seated landslide, since weak earth material were located right where the possible deep-seated landslide developed (if it is even there).

Timber harvest of the Deer Wrap Timber Sale will to some extent increase subsurface ground water flow and surface flow in Deer Creek. This will increase delivery of water to the possible deep-seated landslide and could add to the groundwater table in the possible deep-seated
landslide. However, Deer Creek and the associated system of tributaries that flow across the possible deep-seated landslide will also work to moderate the increase in groundwater levels. This moderation will be in the form of the creeks acting as a dewatering system that will limit the accumulation of water in the possible deep-seated landslide by providing a relatively simple and quick route for water to be drained from the body of the possible landslide.

The overall slope (longitudinal slope - the generalized slope along the long axis of the possible deep-seated landslide) as reported in the February 6, 2015 Geologic Letter Report is not misleading. It is based on simple mathematical relationship between the difference in elevation between the toe of the possible deep-seated landslide and the head of the landslide, divided by the total length of the possible deep-seated landslide. This is a reasonable approach to characterizing the overall slope of a landslide to compare it with the strength of the materials of which it is composed or in which it failed. Granted there are localized areas along the length of the slide that exhibit steep slopes, however, steep slopes that face southward (the direction that movement would occur if the entire possible deep-seated were to move) comprise a small component (about 10%) of the longitudinal length of the possible deep-seated landslide. Locally westerly-facing, steep, well-vegetated slopes border Deer Creek, deep-seated failures here would impact Deer Creek; however, based on field reconnaissance, LiDAR, and review of aerial photographs none were observed, suggesting such events are rare, if they have occurred at all after the last entry.

It should be noted that the landslide outlined in Figures 1 and 2 attached to the February 26, 2015 Washington Forest Law Center letter inaccurately represents, and is not the same as, the landslide outlined on the map attached to the February 6, 2015 Geologic Letter Report prepared by this office. There are several exposures (two along Reiter Road) of undisturbed, in place, glacial deposits and overlying coarse-grained alluvial deposits that are included in the lower portion of the landslide shown on Figures 1 and 2 accompanying the February 26, 2015 Washington Forest Law Center letter. Because these exposures reveal in-place earth materials (materials that have not been involved in landslide processes), this rules out those areas being mapped as landslide. An accurate representation of the landslide as shown on the map attached to the February 6, 2015 Geologic Letter Report would show that much of the steep slopes alluded to in the February 26, 2015 Washington Forest Law Center letter are not associated with, or part of, the possible deep-seated landslide.

The area of the Deer Wrap Timber Sale and area surrounding the sale, including the steep slopes above the granitic bedrock cliffs, were cut in the early 1940s. Subsequently, the area was subjected to several rainy seasons in the later 1940s and 1950s that exceeded the annual mean rainfall for the area based on the Start Up rain-fall record from 1924 to 2012, (including the highest on record, 1959). During the field reconnaissance undertaken for this sale any significant impacts to the slopes above the granitic bedrock cliffs and to the possible deep-seated landslide were not observed. This suggests that the slopes in question are relatively stable and not likely to be adversely influenced by the proposed Deer Wrap Timber Sale, a sale in which it is proposed to cut an area much less in size than was cut in the early 1940s.

If you have any questions, please feel free to contact me.
Respectfully submitted,

John M. McKenzie
Northwest Region Engineering Geologist
LEG #861

Attachment: Index Map of Area Around the Possible Landslide
INDEX MAP OF AREA AROUND THE POSSIBLE LANDSLIDE

Geologic Letter Report
Discussion
Response to February 26, 2015 Washington Forest Law Center Letter
Deer Wrap Timber Sale
Snohomish County
Please refer to the DNR Proprietary HCP Substitution Agreement for Aquatic Resources, 2008. Please check all HCP prescriptions and/or activities, which are relevant to this proposal and describe the management prescriptions and final stand composition at the end of this checklist.

**NOTE:** When assessing hydrologic maturity for each sub-basin inside the rain-on-snow zone, DNR staff will use the most updated data layer delineating Watershed Administrative Units as designated by Forest Practices.

- Assessing Hydrologic Maturity in the Rain-On-Snow (ROS) Zone (Refer to item A in the Agreement Memo). If the activity lies within the ROS zone and subbasin will be managed for ROS, fill out the following table. If within ROS zone, but subbasin will not be managed for ROS, describe why in additional information section below.

<table>
<thead>
<tr>
<th>1. SUB-BASIN NAME</th>
<th>2. TOTAL ROS ACRES (DNR) WITHIN SUB-BASIN</th>
<th>3. HYDRO TARGET ACRES (2/3 of Column 2)</th>
<th>4. CURRENT DNR SUB-BASIN ACRES IN HYDRO MATURE FOREST IN ROS</th>
<th>5. ACRES OF HYDRO MATURE FOREST TO BE REMOVED</th>
<th>6. SURPLUS (+) OR DEFICIT (-) ACRES AFTER ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skykomish River Sub-basin 2*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Wetlands Protection, road construction within wetlands or wetland buffers, requires mitigation. (Refer to item B in the Agreement Memo). If this activity will include road construction within a wetland or WMZ, describe the type of wetland, potential loss of wetland function and how and where the loss of function will be mitigated.

- Harvesting within Forested Wetlands. (Refer to items C & E in the Agreement Memo). Describe the remaining stand characteristics within the wetland and map any forested wetlands greater than 3 acres.

- Wetland Management Zones. (Refer to item D in the Agreement Memo). Describe the site index and WMZ width. If harvesting within the WMZ, describe the remaining stand characteristics within the WMZ.

- Riparian Management Zones for Type 1, 2 and 3 Waters (Refer to item F and Appendix 1 in the Agreement Memo). Describe the site index, RMZ width and if a wind buffer was applied. Describe if the RMZ begins from the outer edge of a CMZ or 100-year floodplain and how they were typed.

- Riparian Management Zones for Type 4 and 5 Waters (Refer to item G and Appendix 1 in the Agreement Memo). Describe any special protection for Type 5 waters.

- Harvesting or Salvaging within Type 1, 2, 3 and 4 Riparian Management Zones. (Refer to item F-J and Appendix 3 in the Agreement Memo). If harvesting, describe the general
HCP Riparian Forest Restoration Strategy management scenario under which the proposal's riparian stand will be managed. Describe stand treatment including removals, down wood and snag recruitment and type of activities. Describe post-harvest stand; how it meets the management parameters of the general management scenario, what species composition and diameter classes will remain, trees per acre, basal area, relative density. If salvaging, describe how you will be meeting the RDFC conditions, what you will retain and removals and other salvage/restoration conditions described within the Ecosystem Services Section approved site specific restoration plan (and/or attach plan).

Please provide any requested additional information below. If varying from standard HCP guidance, attach concurrence/variance approval from Land Management Division and/or Federal Services and discuss below (e.g. research).

**Hydrologic Maturity in the ROS zone:**
*Sub-basin 2 of the Skykomish River WAU has less than one-third of its area in the significant ROS zone; therefore it will not be managed for hydrologic maturity.*

**Wetland Management Zones:**
Wetlands are greater than one acre and are protected with a 154-foot no-harvest site index buffer. Road construction on the CRT-37 Road is outside the WMZ, therefore no mitigation is required.

**Riparian Management Zones for all typed waters:**
All Type 3 streams are protected with a 154-foot no-harvest site index buffer.
All Type 4 streams are protected with a 100-foot no-harvest buffer.
All Type 5 streams are protected with a 30-foot equipment limitation zone applied to both side of the stream channel. All timber will be felled and yarded away perpendicular to the stream channel.

See attached table
## Forest Practices Application/Notification Addendum

**DNR Proprietary HCP, WAC Replacement Summary for Aquatic Resources, 2008**

**Five West-side Planning Units, Excluding the OESF**

<table>
<thead>
<tr>
<th>Stream Segment Identifier or Wetland Identifier</th>
<th>Water Type or Wetland “forested or open water”</th>
<th>Site Class FP Base Map / Other source</th>
<th>Stream Width (feet) or Wetland Size</th>
<th>Is there a CMZ?</th>
<th>Thinning RMZ/WMZ? Yes or No</th>
<th>Total Width of RMZ/WMZ FP width / Actual width (feet)</th>
<th>Wind Buffer? Yes, No (for T-3, 2, 1) or N/A</th>
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</thead>
<tbody>
<tr>
<td>A (Austin Creek)</td>
<td>4</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>50 / 100</td>
<td>N/A</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>III</td>
<td>&lt;2 feet</td>
<td>No</td>
<td>No</td>
<td>0 / 30 foot equipment limitation zone</td>
<td>N/A</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>140 / 154</td>
<td>No</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>140 / 154</td>
<td>No</td>
</tr>
<tr>
<td>E</td>
<td>5</td>
<td>III</td>
<td>&lt;2 feet</td>
<td>No</td>
<td>No</td>
<td>0 / 30 foot equipment limitation zone</td>
<td>N/A</td>
</tr>
<tr>
<td>F</td>
<td>3</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>140 / 154</td>
<td>No</td>
</tr>
<tr>
<td>G</td>
<td>5</td>
<td>III</td>
<td>&lt;2 feet</td>
<td>No</td>
<td>No</td>
<td>0 / 30 foot equipment limitation zone</td>
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</tr>
<tr>
<td>H</td>
<td>5</td>
<td>III</td>
<td>&lt;2 feet</td>
<td>No</td>
<td>No</td>
<td>0 / 30 foot equipment limitation zone</td>
<td>N/A</td>
</tr>
<tr>
<td>I</td>
<td>3</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>140 / 154</td>
<td>No</td>
</tr>
<tr>
<td>J</td>
<td>4</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>50 / 100</td>
<td>N/A</td>
</tr>
<tr>
<td>K</td>
<td>3</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>140 / 154</td>
<td>No</td>
</tr>
<tr>
<td>L</td>
<td>5</td>
<td>III</td>
<td>&lt;2 feet</td>
<td>No</td>
<td>No</td>
<td>0 / 30 foot equipment limitation zone</td>
<td>N/A</td>
</tr>
<tr>
<td>M</td>
<td>3</td>
<td>III</td>
<td>&gt;2 feet</td>
<td>No</td>
<td>No</td>
<td>140 / 154</td>
<td>No</td>
</tr>
<tr>
<td>N</td>
<td>5</td>
<td>III</td>
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<td>No</td>
<td>No</td>
<td>0 / 30 foot equipment limitation zone</td>
<td>N/A</td>
</tr>
<tr>
<td>O</td>
<td>5</td>
<td>III</td>
<td>&lt;2 feet</td>
<td>No</td>
<td>No</td>
<td>0 / 30 foot equipment limitation zone</td>
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<tr>
<td>W1</td>
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<td>140 / 154</td>
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<tr>
<td>W2</td>
<td>Forested Wetland</td>
<td>III</td>
<td>&gt;1 acre</td>
<td>N/A</td>
<td>No</td>
<td>140 / 154</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Within your road construction and harvest area, you need to physically review these streams on the ground to determine if they meet the criteria of Type 3 water. Refer to DNR Trust Forestland HCP Water Typing System to determine Type 1 and 2 waters.

1. Were any fish observed in the stream segment, or are fish known to use this stream segment?
   ___ Yes. Type 3 stream.
   ___ No. Go to question # 2.
2. Has the stream been surveyed?
   ____ Yes. Attach the survey data to the Application/Notification.
   ___ Fish found. Type 3 stream.
   ___ No fish. Is the average width of the stream segment two feet (2') or wider between the ordinary high water marks?
      ___ Yes. Type 4 stream.
      ___ No. Type 5 stream.
   ___ No. Go to question # 3.
3. Is the average width of the stream segment two feet (2') or wider between the ordinary high water marks?
   ___ Yes. Go to question # 4.
   ___ No. Type 5 Stream.
4. Is the gradient of the stream segment 16% or less?
   (Example: 16' fall in elevation over 100 feet of stream = 16/100= .16 or 16%).
      ___ Yes. Type 3 stream.
      ___ No. Go to question # 5.
5. Is the average gradient of the stream segment greater than 16% and less than or equal to 20%?
      ___ Yes. Go to question # 6.
      ___ No.. Type 4 stream.
6. Is the contributing basin (watershed) size to the stream segment greater than 50 acres?
   ___ Yes. Type 3 stream.
   ___ No. Type 4 stream.

Definitions:

Stream Width: To determine the Ordinary High Water Mark (OHWM) of the stream(s), observe the break between the water influence zone and upland vegetation on the stream bank; this is usually the spring high water mark. Then measure stream width between the OHWMs on either side of the stream at 50 feet intervals along the stream bank for a minimum distance of 500 feet. This determines the average width of the stream. For further information see page M-11 of the board manual.

Stream Gradient: The gradient of a stream is defined as the inclination or rate of fall of a stream bed, expressed as a percentage. The average gradient of a stream is determined by calculating the inclination of individual sub-reaches over a minimum distance of 500 feet along a stream or to a point where distinct gradient changes occur. For further information see page M-14 of the board manual (only use the method for field measurements; do not use the mapping method).

Note: Streams with widths of twenty feet (20') or greater or lakes, ponds, or impoundments having a surface area of 1 acre or greater at seasonal low water, may be type 2 waters.

1-14-08
DNR Trust Forestland HCP Water Typing Key
ADDENDUM TO INSTRUCTIONS FOR COMPLETING THE FOREST PRACTICE APPLICATION

STREAM(S) ID ___C, D, F, I, K, M, ____________ DATE ___12/6/16__________

Within your road construction and harvest area, you need to physically review these streams on the ground to determine if they meet the criteria of Type 3 water. Refer to DNR Trust Forestland HCP Water Typing System to determine Type 1 and 2 waters.

1. Were any fish observed in the stream segment, or are fish known to use this stream segment?
   ___ Yes. Type 3 stream.
   ___ No. Go to question #2.

2. Has the stream been surveyed?
   ___ Yes. Attach the survey data to the Application/Notification.
   ___ Fish found. Type 3 stream.
   ___ No fish. Is the average width of the stream segment two feet (2') or wider between the ordinary high water marks?
   ___ Yes. Type 4 stream.
   ___ No. Type 5 stream.
   ___ No. Go to question #3.

3. Is the average width of the stream segment two feet (2') or wider between the ordinary high water marks?
   ___ Yes. Go to question #4.
   ___ No. Type 5 Stream.

4. Is the gradient of the stream segment 16% or less?
   (Example: 16' fall in elevation over 100 feet of stream = 16/100 = .16 or 16%).
   ___ Yes. Type 3 stream.
   ___ No. Go to question #5.

5. Is the average gradient of the stream segment greater than 16% and less than or equal to 20%?
   ___ Yes. Go to question #6.
   ___ No. Type 4 stream.

6. Is the contributing basin (watershed) size to the stream segment greater than 50 acres?
   ___ Yes. Type 3 stream.
   ___ No. Type 4 stream.

Definitions:

Stream Width: To determine the Ordinary High Water Mark (OHWM) of the stream(s), observe the break between the water influence zone and upland vegetation on the stream bank; this is usually the spring high water mark. Then measure stream width between the OHWMs on either side of the stream at 50 feet intervals along the stream bank for a minimum distance of 500 feet. This determines the average width of the stream. For further information see page M-11 of the board manual.

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Note: Streams with widths of twenty feet (20') or greater or lakes, ponds, or impoundments having a surface area of 1 acre or greater at seasonal low water, may be type 2 waters.
DNR Trust Forestland HCP Water Typing Key
ADDENDUM TO INSTRUCTIONS FOR COMPLETING THE FOREST PRACTICE APPLICATION

STREAM(S) ID __B, E, G, H, L, N, O ______________ DATE __12/6/16__________

Within your road construction and harvest area, you need to physically review these streams on the ground to determine if they meet the criteria of Type 3 water. Refer to DNR Trust Forestland HCP Water Typing System to determine Type 1 and 2 waters.

1. Were any fish observed in the stream segment, or are fish known to use this stream segment?
   __Yes. Type 3 stream.
   __X No. Go to question # 2.

2. Has the stream been surveyed?
   __Yes. Attach the survey data to the Application/Notification.
   __Fish found. Type 3 stream.
   __No fish. Is the average width of the stream segment two feet (2') or wider between the ordinary high water marks?
     __Yes. Type 4 stream.
     __No. Type 5 stream.
     __X No. Go to question # 3.

3. Is the average width of the stream segment two feet (2') or wider between the ordinary high water marks?
   __Yes. Go to question # 4.
   __X No. Type 5 Stream.

4. Is the gradient of the stream segment 16% or less?
   (Example: 16' fall in elevation over 100 feet of stream = 16/100= .16 or 16%).
   __Yes. Type 3 stream.
   __No. Go to question # 5.

5. Is the average gradient of the stream segment greater than 16% and less than or equal to 20%?
   __Yes. Go to question # 6.
   __No. Type 4 stream.

6. Is the contributing basin (watershed) size to the stream segment greater than 50 acres?
   __Yes. Type 3 stream.
   __No. Type 4 stream.

Definitions:

Stream Width: To determine the Ordinary High Water Mark (OHWM) of the stream(s), observe the break between the water influence zone and upland vegetation on the stream bank; this is usually the spring high water mark. Then measure stream width between the OHWMs on either side of the stream at 50 feet intervals along the stream bank for a minimum distance of 500 feet. This determines the average width of the stream. For further information see page M-11 of the board manual.

Stream Gradient: The gradient of a stream is defined as the inclination or rate of fall of a stream bed, expressed as a percentage. The average gradient of a stream is determined by calculating the inclination of individual sub-reaches over a minimum distance of 500 feet along a stream or to a point where distinct gradient changes occur. For further information see page M-14 of the board manual (only use the method for field measurements; do not use the mapping method).

Note: Streams with widths of twenty feet (20') or greater or lakes, ponds, or impoundments having a surface area of 1 acre or greater at seasonal low water, may be type 2 waters.
Refer to the DNR Proprietary HCP Implementation Agreement for the NSO, 2008.

1. Is the Forest Practice activity within a NRF Management Area?
   • Yes, Go to #2.
   • No, Go to #6.

2. Is the Forest Practice activity within a designated 500-acre Nest Patch?
   • Yes, No timber harvest allowed, harvest deferment of Nest Patches, refer to Substitution Agreement, Section I.A. End Checklist. Maintenance of existing roads is permitted. Describe road maintenance activity in Question #13.
   • No, Go to #3.

3. Is the Forest Practice activity within 0.7 miles of a spotted owl nest site (status 1 or 2)?
   • Yes, Apply timing restrictions; refer to Substitution Agreement, Section I. Go to #4.
   • No, Go to #4.

4. Is the SOMU where the Forest Practice activity is located, above the threshold of NRF habitat?
   • Yes, Proceed with the activity, ensuring that habitat within the SOMU will not fall below the target amount. Please describe in Question #13; if the activity will be harvesting habitat or non-habitat, whether it is an enhancement activity or even-age harvest and how many acres or percentage of NRF habitat will remain within the SOMU after harvest. Go to #13.
   • No, Go to #5.

5. Is the Forest Practice activity within suitable submature habitat or better or “next best”? 
   • Yes, Ensure NRF habitat remains after completion of the harvest activity or that the activity will not increase the length of time for the target amount to reach a suitable habitat condition. Please describe in Question #13, type of activity, how habitat will be maintained or next best stands enhanced and what the final stand condition will be. Go to #13.
   • No, Ensure that target amount of habitat within the SOMU will not take longer to achieve after activity. Please describe in Question #13 how management activity will maintain and/or achieve the NRF target amount. Go to #13.

6. Is the Forest Practice activity within a Dispersal or DFC Management Area?
   • Yes, Go to #7.
   • No, Go to #10.

7. Is the Forest Practice activity within 0.7 miles of a spotted owl nest site (status 1 or 2)?
   • Yes, Apply timing restrictions; refer to Substitution Agreement, Section I. Go to #8.
   • No, Go to #8.

8. Is the SOMU where the Forest Practice activity is located, above the threshold of dispersal habitat?
   • Yes, Proceed with the activity, ensuring that habitat within the SOMU will not fall below the target amount. Please describe in Question #13; if the activity will be harvesting habitat or non-habitat, whether it is an enhancement activity or even-age harvest and how many acres or percentage of dispersal habitat will remain within the SOMU after harvest. Go to #13.
9. Is the Forest Practice activity within suitable dispersal habitat or better or “next best”?  
☐ Yes, Ensure dispersal habitat remains after completion of the harvest activity or that the activity will not increase the length of time for the target amount to reach a suitable habitat condition. Please describe in Question #13, type of activity, how habitat will be maintained or next best stands enhanced and what the final stand condition will be. Go to #13.  
☐ No, Ensure that target amount of habitat within the SOMU will not take longer to achieve after activity. Please describe in Question #13 how management activity will maintain and/or achieve the dispersal target amount. Go to #13.

10. Is the Forest Practice activity located within the OESF?  
☐ Yes, Go to #11.  
☐ No, Go to #12.

11. Landscape planning has been initiated, but has it been completed?  
☐ Yes, Proceed with the activity, ensuring that all commitments of the Landscape Plan are fulfilled. Please describe in Question #13; if the activity will be harvesting habitat or non-habitat, whether it is an enhancement activity or even-age harvest and how many acres or percentage of suitable habitat will remain within the SOMU after harvest. Go to #12.  
☐ No, Proceed with the activity, ensuring that the total amount of habitat harvested since HCP implementation will not exceed the allowable amount as described within the substitution agreement, Section II. Please describe in Question #13; if the activity will be harvesting habitat or non-habitat, whether it is an enhancement activity or even-age harvest and how many acres or percentage of suitable habitat will remain within the SOMU after harvest. Go to #12.

12. Is the Forest Practice activity located within a Status 1 or 2 spotted owl management circle based on the WDFW database?  
☐ Yes, Apply harvest timing restrictions to activities within the best 70-acre core around the site center, refer to Substitution Agreement, Section III. Include location of best 70-acre core on Forest Practices Map. Go to #13.  
☐ No, Go to #13.

13. Provide any additional information or details requested from previous questions on the following lines. If no additional information is required, simply state “not applicable” below. Otherwise, include the SOMU name(s) when necessary if activity is within NRF or dispersal management areas or OESF and how habitat will be maintained or enhanced, etc. If varying from standard HCP guidance, attach concurrence/variance approval from Land Management Division and/or Federal Services and discuss below.

End checklist.

Proposal is located on land that is designated for NRF management, but is classified as "non-habitat".

Page 2 of 2
Forest Practices Application/Notification Addendum
DNR Trust Lands HCP Implementation Checklist for the Marbled Murrelet, 2014
North Puget Planning Unit Only

Refer to the DNR Trust Lands HCP Implementation Summary for the Marbled Murrelet, 2014 and North Puget Planning Unit (NPPU) memos dated 02/23/2007 and 06/12/2009. Marbled Murrelet GIS habitat and occupied site delineation is available at on the Quick Data Loader and State Uplands Viewing Tool titled “State Lands – Marbled Murrelet – HCP Policy”.

1. Is the proposed Forest Practices activity within potential habitat, occupied site, Criteria 3 newly identified habitat or suitable habitat not available for release?
   - Yes, proposal is inconsistent with current HCP strategy. Stop Proposed Activity or document in Question #6 specifics of proposal and Forest Resources Division approval if intending to proceed.
   - No, not within suitable habitat not available for release, potential, occupied, or Criteria 3 newly identified habitat. Go to Question #2.

2. Is the proposed activity within releasable1 suitable habitat according to the NPPU memo (dated 6/12/2009)?
   - Yes, document in Question #6 the WAU name, total suitable MM habitat acres allowed to be harvested within the WAU and the total acres to date of suitable MM habitat harvested within the WAU after this proposed harvest. Go to Question #3.
   - No, proposal is not within releasable suitable habitat. Go to Question #3.

3. Is the proposed activity located within unsurveyed Criteria 1 newly identified habitat that is within 0.25 miles of an occupied site, or unsurveyed Criteria 2 newly identified habitat?
   - Yes, proposal is inconsistent with the current HCP strategy. Stop Proposed Activity or document in Question #6 specifics of proposal and Forest Resources Division approval if intending to proceed.
   - No, go to Question #4.

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1 Some suitable habitat may be available for harvest (releasable) if 50% of the habitat will remain within the WAU and it is greater than 0.5 miles from an occupied site and identified per NPPU memo dated 6/12/2009. Criteria 1 habitat is: Habitat ≥ 5 acres but ≤ 10 acres with ≤ 10 platforms per acre OR Habitat > 10 acres but ≤ 20 acres with ≤ 5 platforms per acre. Criteria 2 habitat is: Habitat ≥ 5 acres but ≤ 10 acres with > 10 platforms per acre OR Habitat > 10 acres but ≤ 20 acres with > 5 platforms per acre OR Habitat > 20 acres with ≤ 15 platforms per acre. Criteria 3 is: Habitat ≥ 20 acres with > 15 platforms per acre.
4. Is the proposed activity located within surveyed and unoccupied Criteria 1 or 2 newly identified habitat, or unsurveyed Criteria 1 that is greater than 0.25 miles from an occupied site and is the activity only for operational access (roads or yarding corridors) through this habitat type?
   □ Yes, proposal is consistent with the current HCP. Timing restrictions are applied when operating within this habitat and remaining habitat is deferred from harvest. Consult with Region biologist/specialist for recommendations on minimizing platform tree removal. Document in Question #6 the type of operational access, but first go to Question #5.
   ✔ No, go to Question #5.

5. Is the proposed harvest activity within ¼ mile of any marbled murrelet occupied site(s), Criteria 3 newly identified habitat or unsurveyed suitable MM habitat?
   □ Yes, consult with Region biologist/specialist for recommendations on buffers and timing restrictions. Go to Question #6 and document type of buffer of occupied site or suitable habitat.
   ✔ No, proceed with activity; go to Question #6 if any documentation is required.

6. This question or section is for additional information the checklist suggested you provide in previous questions or any additional information you think is relevant to the proposal. If you were able to answer the previous questions without a “Stop Proposed Activity” notification then your proposal is consistent with the HCP and may proceed. Otherwise, more documentation is required here. If varying from current HCP guidance, attach consultation agreement from Forest Resources Division and/or USFWS and discuss below.

   Does not apply.

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2 “Unsurveyed suitable habitat” refers to potential habitat identified per the NPPU 2007 memo that has been field verified as suitable, but not yet surveyed.
January 5, 2017

TO: John Van Hollebeke, Forester
FROM: Lisa Egtvedt, Wildlife Biologist
SUBJECT: Wildlife Review of the Proposed Turning Wheel Timber Sale

This memo serves as documentation of a region biologist review of the proposed Turning Wheel Timber Sale in sections 12 and 13 of Township 27 North, Range 9 East. I conducted field reviews of portions of the proposal on two separate visits. On 7/22/16 I covered areas within and adjacent to the upper portion of Unit 2B, in order to verify marbled murrelet habitat delineation that had been conducted by DNR seasonal biologists. On 10/21/16 I covered portions of Unit 1, 2A, and the lower portion of 2B, in order to verify delineation that had been conducted by John Van Hollebeke (presales forester, trained to conduct delineation), and by DNR seasonal biologists. An additional purpose of my visit was to assess the proposal for HCP habitat features and provide recommendations for the leave tree strategy.

Based on the site visit and a GIS review, I have the following input:

Unit 1

- I verified the general lack of platform trees within the unit, other than one anomaly in the stand, which is a ~34" Douglas-fir (DF) tree with a forked top. I recommended marking this tree as a leave tree, primarily because it is a "structurally unique tree", rather than because it is a high-quality platform tree. I have since been informed that it was indeed marked as an individual leave tree. Following my field visit, an additional area within a steep drainage located to the northwest of this unit was delineated by John Van Hollebeke (in order to cover the area within 350 feet of the unit boundary). A total of three platform trees was found at this location, but none of the platform trees constitute a suitable marbled murrelet habitat polygon. Therefore, neither this stand nor the adjacent stands contain suitable marbled murrelet habitat.

- Several snags were observed during the field visit, and I provided John Van Hollebeke with their locations and other data, suggesting that at least some of them would be good candidates for leave tree clumps (which would provide L&I buffers for them). It does not appear that any of these specific snags had leave tree areas marked around them, but I have been informed that several alder snags with cavities are included in one clump, and a large (~35" dbh) DF with a large cavity was also marked for retention.

Unit 2

- I did not walk around in Unit 2A specifically, as this compartment was added to the proposal after my field visit. However, I did pass through the middle of it on my way to 2B, resulting in a general observation of the stand composition. This compartment is very similar to the areas that I covered more extensively. There were two things that I noted as I passed through this area:
  - Just north of 2A is an area with a considerable amount of standing and flowing water that seemed to converge from two directions, none of which was mapped
in the surface water layer in GIS. John has since updated the maps to show the water bodies in this area, and also located the boundary of this sub-unit in order to provide appropriate buffers for these water features (two type 3 streams and a forested wetland).

- I heard a kingfisher calling to the west, in the stream drainage that is located between Units 2A & 2B. This seemed strange at the time (as kingfishers tend to be associated with open bodies of water), but after I reviewed the location in GIS, I discovered that there is an open body of water located approximately 1100 feet from the detection, and approximately 950 feet from the boundary of Unit 2B. This water body is located far enough from the proposal that it does not warrant recommendations for mitigation related to the proposal activities.

- Neither this stand nor adjacent stands contain suitable marbled murrelet habitat. There are two platform trees located within Unit 2B, very far apart. One is a ~40” DF with a mossy branch platform, and the other is a ~19” WH with a split top platform. The latter tree is included in a leave tree clump. The former was missed during leave tree marking, but trees of similar size and potential for development of mossy branches (due to proximity to a type 5 stream) have been marked for retention.

- The most notable habitat features in 2B were observed in the lower (western) portion of the unit. I observed a significant amount of vine maple clumps in this sub-unit, some with well-developed moss communities, and recommended placing leave trees around some of them. I have since been informed that several clusters of mossy vine maple have been included in leave tree areas.

- Other recommendations for leave tree selection included targeting some structurally unique trees that I specifically located, including an unusually large black cottonwood tree and a larger DF. It was not possible to mark the DF for retention, as it is located along a planned road, but several other structurally unique trees have been painted as individual leave trees.

- Other notes regarding leave trees in Unit 2 include:
  - Sub-unit 2A is relatively small (~8 acres), with one small leave tree clump marked on the edge, and the remaining 22 leave trees marked as scattered individuals. Most of the latter are large DF and cedar trees ranging in size from 14 to 32” dbh.
  - A large clump (~1.7 acres) containing 192 leave trees was marked in the north-central portion of 2B in order to protect multiple headwaters of perennial type 5 streams; a steep, wet area; and a number of cedar trees of varying sizes.
  - Four other smaller clumps have been marked in 2B that are well-distributed across the sub-unit. There are also 62 scattered individual leave trees painted throughout this sub-unit, which include some structurally unique trees (of special note was a DF with a kinked/forked top).

**General Proposal Area**

Field reconnaissance found no other uncommon habitat features within or adjacent to either of the units of the proposal.

Following a GIS review of WDFW and DNR wildlife & habitat databases, it was determined:
• The nearest known occupied marbled murrelet site is located approximately 6.8 miles north of Unit 1. This distance is such that no mitigation measures are warranted for the protection of known occupied sites (in association with this proposal).
• The proposal is located on land that is designated for NRF management, but is classified as “non-habitat”. Therefore, the proposed variable retention harvest is allowable as currently mapped.

Besides those mentioned above, no other occurrences of habitats or species of concern are reported within or near enough to the proposal area to warrant mitigation measures.

Thank you for the opportunity to review and provide input for this proposal.
Van Hollebeke, John (DNR)

From: HALGREN, AMY (DNR)  
Sent: Friday, January 06, 2017 10:21 AM  
To: Van Hollebeke, John (DNR); Moon, John (DNR)  
Subject: FW: Bridge site review - and more?

See concurrence from WDFW below.

Amy Halgren

From: Bails, Jamie L (DFW)  
Sent: Thursday, January 5, 2017 10:40 AM  
To: HALGREN, AMY (DNR) <AMELIA.HALGREN@dnr.wa.gov>  
Subject: RE: Bridge site review - and more?

Hi Amy, WDFW concurs with the project as proposed.

Sincerely, Jamie

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From: HALGREN, AMY (DNR)  
Sent: Wednesday, January 04, 2017 9:44 AM  
To: WARNER, DEAN (DNR); Derek Marks; HUANG, STEVEN (DNR); Bails, Jamie L (DFW); Neil Shea; Neil Shea  
Cc: MCGUIRE, AL (DNR); Moon, John (DNR); Van Hollebeke, John (DNR)  
Subject: RE: Bridge site review - and more?

Hello all! I hope you had good holidays.

I'm writing in hopes of getting written concurrence on the design as proposed, modified as discussed below. Let me know if you need any further information.

Thanks,

Amy Halgren

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From: WARNER, DEAN (DNR)  
Sent: Tuesday, December 20, 2016 12:10 PM  
To: Derek Marks <dmarks@tulaliptribes-nsn.gov>; HALGREN, AMY (DNR) <AMELIA.HALGREN@dnr.wa.gov>; HUANG, STEVEN (DNR) <STEVEN.HUANG@dnr.wa.gov>; Bails, Jamie L (DFW) <Jamie.Bails@dfw.wa.gov>; Neil Shea <nshea@tulaliptribes-nsn.gov>; Neil Shea <nshea@tulaliptribes-nsn.gov>  
Cc: MCGUIRE, AL (DNR) <al.mcguire@dnr.wa.gov>; Moon, John (DNR) <John.Moon@dnr.wa.gov>; Van Hollebeke, John (DNR) <John.VanHollebeke@dnr.wa.gov>  
Subject: RE: Bridge site review - and more?

Hi Amy,

Your notes capture everything that I remember being discussed. I concur with Derek’s assessment of 2XBFW when removing pipes and fill.

Happy Holidays,
Looks fairly good, Amy. I would prefer pullback for stream crossings to be at least 2x BFW. You can certainly draw some x-sections to illustrate how you’d want that done... It doesn’t need to be a flat x-section to the 2x BFW mark and could taper down slightly. The goal is to give the stream room to respond after being geomorphically set in place for the last half century or so.

Derek Marks
Tulalip Tribes-Timber Fish and Wildlife Program Manager
(360) 716-4614

Thank you all for joining us today. This is a summary of today’s discussion and decisions. Please share with the group if you have any additions or corrections. I’ve included some site activity maps below; let me know if you need me to send the corresponding vicinity maps again for context.

Stream Parallel Road

- The alternative road location would require a stream crossing in an undesirable location. This option has less impact.
- Right-of-way will be replanted.
- Catch-basin settling ponds will be used to help manage water and protect streams from sediment delivery.
Culvert Removals and Pirated Stream

- Require pull back 2x bank full width (note: or did we settle on 1.2xBFW + 2' ??)
- Remove shoulder berms and notch the orphaned grade to the ditchline wherever there is a seep (in the areas highlighted on the map below)
- We will provide profiles for each removal site
- Timing window for activity on T3 streams is July 1 to October 1
The proposal is acceptable as-is. It is not necessary to have a vertical segment to maximize the gap between armoring — requiring the armoring to be placed at a 1:1 ratio will allow a gap of 20’ (the average CBW is 15’) and this is sufficient.

- Be sure to use typical contract language that requires placement of woody debris downstream of the bridge site.
- Equipment may cross the channel for access to the opposite bank using logs to keep the drive mechanism out of the water.
- In stream work isn’t expected to be necessary on this site but if needed is limited to the July 1 to October 1 window.

Please let us all know if I’ve left anything out.

Thanks!

Amy Halgren
Hey everybody!

I have attached the first draft of the proposed bridge design that we will be reviewing this Monday December 19th for the Turning Wheel timber sale. I’ve also attached a vicinity map and a quick work-area map that shows the areas we will visit.

Heads up -- It may be wise to come prepared for snowy walking and driving conditions. I haven’t seen the sale area in a couple of weeks but I heard they got a foot of snow up above in the Deer Flats area. With that in mind it might also be prudent to plan for a full day in the field.

Stay warm! See you Monday!

Amy Halgren

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Hey folks!
I’m still looking forward to seeing everyone on Monday December 19th at 9am at the Sultan Basin Park and Ride —but we would indeed like to request to add a couple items to our agenda the day of the bridge site inspection. Here is what we are proposing in addition to the bridge installation:

- Removal of culverts from three type 3 fish streams on an orphaned grade
- Restoration of a TS stream that has been pirated by the same orphaned grade into its original channel

Review of these three sites should take about half a day. Everything is fairly accessible from user-built trails and orphaned grades with no steep hills but will require walking approximately 1.5 miles. I’m still shooting to have you a design by Wednesday December 14. Let me know if you have any other questions or requests.

Thanks!

Amy Halgren
360-333-7480

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From: HALE, AMY (DNR)
Sent: Thursday, December 01, 2016 3:14 PM
To: Derek Marks <dmarks@tulaliptribes-nsn.gov>; Huang, Steven (DNR) <STEVEN.HUANG@dnr.wa.gov>; Bails, Jamie L (DFW) <Jamie.Bails@dfw.wa.gov>; Penhale, Bob (ECY) <BPEN461@ECY.WA.GOV>; Neil Shea <nshea@tulaliptribes-nsn.gov>
Cc: MC GUIRE, AL (DNR) <al.mcguire@dnr.wa.gov>; Moon, John (DNR) <John.Moon@dnr.wa.gov>; Van Hollebeke, John (DNR) <John.VanHollebeke@dnr.wa.gov>
Subject: RE: Bridge site review - and more?

Hey folks!
I’m still looking forward to seeing everyone on Monday December 19th at 9am at the Sultan Basin Park and Ride —but we would indeed like to request to add a couple items to our agenda the day of the bridge site inspection. Here is what we are proposing in addition to the bridge installation:

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Review of these three sites should take about half a day. Everything is fairly accessible from user-built trails and orphaned grades with no steep hills but will require walking approximately 1.5 miles. I’m still shooting to have you a design by Wednesday December 14. Let me know if you have any other questions or requests.

Thanks!

Amy Halgren
360-333-7480
Subject: RE: Bridge site review - and more?

I've heard back from everyone at this point. Let's plan to meet on Monday December 19th at 9am at the Sultan Basin Park and Ride. I will aim to have materials completed for everyone's review by the previous Wednesday.

If anyone would prefer an office review please let me know; I'd be happy to make that happen. This is a fairly standard bridge installation but it will be permanent (for future recreational use). Also we may need to add a couple other items to the agenda that would best be reviewed in the field.

Thanks everyone!

Amy Halgren

From: Derek Marks [mailto:dmarks@tulaliptribes-nsn.gov]
Sent: Thursday, December 1, 2016 7:13 AM
To: HALGREN, AMY (DNR) <AMELIA.HALGREN@dnr.wa.gov>; HUANG, STEVEN (DNR) <STEVEN.HUANG@dnr.wa.gov>; Bails, Jamie L (DFW) <Jamie.Bails@dfw.wa.gov>; Penhale, Bob (ECY) <BPEN461@ECY.WA.GOV>
Cc: MCGUIRE, AL (DNR) <al.mcguire@dnr.wa.gov>; Moon, John (DNR) <John.Moon@dnr.wa.gov>; Van Hollebeke, John (DNR) <John.VanHollebeke@dnr.wa.gov>; Neil Shea <nshea@tulaliptribes-nsn.gov>
Subject: RE: Bridge site review - and more?

Currently, I can be available the 15th, 16th, and 19th. I would request that we receive materials for review prior to the meeting, so that we can come prepared with any comments/concerns we might have for the site. If this is a fairly standard bridge proposal, perhaps an office discussion is appropriate???

In addition, could you please make sure Neil Shea is included in e-mail correspondence for these site review requests?

Thank you.

Derek Marks
Tulalip Tribes-Timber Fish and Wildlife Program Manager
(360) 716-4614

From: HALGREN, AMY (DNR) [mailto:AMELIA.HALGREN@dnr.wa.gov]
Sent: Wednesday, November 30, 2016 11:14 AM
To: HUANG, STEVEN (DNR) <STEVEN.HUANG@dnr.wa.gov>; Bails, Jamie L (DFW) <Jamie.Bails@dfw.wa.gov>; Derek Marks <dmarks@tulaliptribes-nsn.gov>; Penhale, Bob (ECY) <BPEN461@ECY.WA.GOV>
Cc: MCGUIRE, AL (DNR) <al.mcguire@dnr.wa.gov>; Moon, John (DNR) <John.Moon@dnr.wa.gov>; Van Hollebeke, John (DNR) <John.VanHollebeke@dnr.wa.gov>
Subject: Bridge site review - and more?

I would like to invite you all out on a site review for a bridge proposal associated with the Turning Wheel timber sale. I'm hoping that we can find a date that works for everyone December 15-19th (excluding the weekend of course).

Please let me know what dates work for you.

Thanks!

AMY HALGREN
Cascade District Engineer
State Lands, Northwest Region
7-47 PURCHASER SUPPLIED ABUTMENTS
Purchaser shall provide pre-cast concrete abutment designs. Bridge abutments must be designed by an engineer licensed in the state of manufacture. The abutment design includes, but is not limited to wing walls, steel reinforced concrete sills, and permanent, functional provisions for lifting.

7-53 BRIDGE INSTALLATION
Purchaser shall install bridges ensuring there is a full width, continuous deck with no gaps that allow water and sediment to drain from the bridge to the stream.

SECTION 8 – EROSION CONTROL

8-1 SEDIMENT CONTROL STRUCTURES
On the following road(s), Purchaser shall install settling ponds in accordance with the DITCH OUT SETTLING POND DETAIL.

<table>
<thead>
<tr>
<th>Road</th>
<th>Stations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT-3603</td>
<td>2+25</td>
<td>Locate settling pond below the road to intercept the outlet of the cross drain at STA 2+25.</td>
</tr>
<tr>
<td>CRT-3603</td>
<td>4+27</td>
<td>Locate settling pond below the road to intercept the outlet of the cross drain at STA 4+27 and ditchout from the orphaned grade at STA 5+05.</td>
</tr>
<tr>
<td>CRT-3603</td>
<td>5+80</td>
<td>Ditch out at STA 6+05 to settling pond at STA 5+80 to reduce ditchwater velocity and allow infiltration. Do not ditch out to the forest floor. Settling pond outlet ditches out to ditchline at STA 5+53.</td>
</tr>
<tr>
<td>CRT-37</td>
<td>11+28</td>
<td>Ditch out to settling pond.</td>
</tr>
</tbody>
</table>

8-2 PROTECTION FOR EXPOSED SOIL
Purchaser shall provide and evenly spread a 6-inch layer of straw to all exposed soils within 30 feet of a stream or Riparian Management Zone. Soils must be covered before the first anticipated storm event..
8-5 CHECK DAM
On the following road(s), Purchaser shall construct rock check dams every 10 vertical feet in the ditch. Check dams must be built with rock to a depth of 8 inches and a length of 4 feet.

<table>
<thead>
<tr>
<th>Road</th>
<th>Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT-3603</td>
<td>6+05 TO 8+89 (4 check dams)</td>
</tr>
<tr>
<td>CRT-37</td>
<td>13+34 to 14+64 (3 check dams, located in existing swale)</td>
</tr>
</tbody>
</table>

8-15 REVEGETATION
On the following road(s), Purchaser shall spread seed and fertilizer or hydroseed on all exposed soils within the grubbing limits resulting from road work activities. Cover all exposed soils using manual dispersal of grass seed and fertilizer or hydroseeding as indicated. Other methods of covering must be approved in writing by the Contract Administrator.

<table>
<thead>
<tr>
<th>Road</th>
<th>Location</th>
<th>Qty (lbs)*</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT-3603</td>
<td>0+00 to 7+15</td>
<td>80</td>
<td>Hydroseed</td>
<td>Stream parallel road segment; cover the road surface by hydroseeding.</td>
</tr>
<tr>
<td>ALL other locations where soil is exposed due to road work.</td>
<td>-</td>
<td>Seed and fertilizer</td>
<td>Manual dispersal</td>
<td></td>
</tr>
</tbody>
</table>

*Quantities are estimates only. Actual quantities may vary and are the responsibility of the Purchaser.

8-16 REVEGETATION SUPPLY
The Purchaser shall provide the grass seed.

8-17 REVEGETATION TIMING
Purchaser shall revegetate during the first available opportunity after road work is completed. Soils may not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator.
8-27  FERTILIZER

Purchaser shall evenly spread the fertilizer listed below on all exposed soil inside the grubbing limits at a rate of 200 pounds per acre of exposed soil. Fertilizer must meet the following specifications:

<table>
<thead>
<tr>
<th>Chemical Component</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>16</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>16</td>
</tr>
<tr>
<td>Potassium</td>
<td>16</td>
</tr>
<tr>
<td>Sulphur</td>
<td>3</td>
</tr>
<tr>
<td>Inerts</td>
<td>49</td>
</tr>
</tbody>
</table>

8-29  HYDROSEED MULCH

Purchaser shall evenly spread the hydroseed mulch mixture on all exposed soil inside the grubbing limits at a rate of 300 pounds per acre of exposed soil. The hydroseed mulch may not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust may not be used as mulch. The hydroseed slurry must be a homogeneous mix in the following proportions.

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>50 gallons</td>
</tr>
<tr>
<td>Dyed wood cellulose fiber mulch</td>
<td>20 pounds</td>
</tr>
<tr>
<td>Fertilizer mix</td>
<td>4 pounds</td>
</tr>
<tr>
<td>Seed mix: See Clause 8-25 GRASS SEED</td>
<td>1 pound</td>
</tr>
</tbody>
</table>

SECTION 9 – POST-HAUL ROAD WORK

9-2  CULVERT REMOVAL FROM LIVE STREAM

On the following road(s), Purchaser shall remove fill and/or existing culverts from live streams and leave the resulting channel open with excavation slope and excavated channel width as specified. End haul excavated material to a waste area designated in Clause 4-37 WASTE AREA LOCATION. Culvert removal from live streams must be in accordance with the STREAM CULVERT REMOVAL DETAIL.

<table>
<thead>
<tr>
<th>Road</th>
<th>Stations</th>
<th>Excavated Channel Width</th>
<th>Slope Ratio</th>
<th>Comments*</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF-RRG1004</td>
<td>1+50</td>
<td>5.6’</td>
<td>2:1</td>
<td>Stream C</td>
</tr>
<tr>
<td></td>
<td>3+40</td>
<td>3.6’</td>
<td>2:1</td>
<td>Stream D</td>
</tr>
<tr>
<td></td>
<td>4+80</td>
<td>8.2’</td>
<td>2:1</td>
<td>Stream F</td>
</tr>
<tr>
<td></td>
<td>5+50</td>
<td>15.6’</td>
<td>2:1</td>
<td>Stream I</td>
</tr>
<tr>
<td></td>
<td>27+00</td>
<td>3.2’</td>
<td>2:1</td>
<td>Stream O</td>
</tr>
</tbody>
</table>

*See STREAM RESTORATION ACTIVITY MAP
### 9-21 ROAD ABANDONMENT

Purchaser shall abandon the following before the termination of this contract.

<table>
<thead>
<tr>
<th>Road</th>
<th>Stations</th>
<th>Type</th>
<th>Additional Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT-36</td>
<td>0+00 to 16+50</td>
<td>ABANDONMENT FOR TRAIL CONVERSION</td>
<td>Maintain access to utility road per clause 1-42 UTILITY ACCESS ROAD. Retain culverts as designated in clause 9-3 CULVERT MATERIAL REMOVED FROM STATE LAND.</td>
</tr>
<tr>
<td>CRT-36</td>
<td>16+50 to 28+12</td>
<td>ABANDONMENT</td>
<td>See clause 8-15 REVEGETATION. Retain culverts as designated in clause 9-3 CULVERT MATERIAL REMOVED FROM STATE LAND.</td>
</tr>
<tr>
<td>CRT-3603</td>
<td>0+00 to 18+36</td>
<td>ABANDONMENT FOR TRAIL CONVERSION</td>
<td>Woody Debris Barricades must be located at both ends of the road segment. See also STREAM RESTORATION ACTIVITY MAP, STREAM CULVERT REMOVAL DETAIL, and STREAM “D” DETAIL.</td>
</tr>
<tr>
<td>DF-RRG1004</td>
<td>0+00 to 6+00</td>
<td>ABANDONMENT</td>
<td>Place woody debris barricade to prevent access from CRT-37 road. See also STREAM RESTORATION ACTIVITY MAP, STREAM CULVERT REMOVAL DETAIL, and STREAM “O” DETAIL.</td>
</tr>
<tr>
<td>DF-RRG1004</td>
<td>25+30 to 28+00</td>
<td>ABANDONMENT FOR TRAIL CONVERSION</td>
<td>Retain culverts as designated in clause 9-3 CULVERT MATERIAL REMOVED FROM STATE LAND.</td>
</tr>
<tr>
<td>CRT-37</td>
<td>23+44 to 33+79</td>
<td>ABANDONMENT FOR TRAIL CONVERSION</td>
<td>Place woody debris barricade to prevent access from DF-RRG1004 orphaned grade.</td>
</tr>
</tbody>
</table>
ABANDONMENT

- Remove all ditch relief culverts. The resulting slopes must be 1:1 or flatter. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Remove all culverts in natural drainages. The resulting slopes must be $1 \frac{1}{2} : 1$ or flatter except as specified by the STREAM CULVERT REMOVAL DETAIL. Strive to match the existing native stream bank gradient. The natural streambed width must be re-established. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Transport all removed culverts off site. All removed culverts are the property of the Purchaser.
- Construct non-drivable waterbars at natural drainage points and at a spacing that will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Inslope or outslope the road as appropriate.
- Remove bridges and other structures.
- Pull back unstable fill that has potential of failing and entering any Type 1 through 5 waters or wetlands. Place and compact removed material in a stable location.
- Remove berms except as designed.
- Block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cutslope to toe of fillslope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.
- Apply grass seed to all exposed soils resulting from the abandonment work and in accordance with Section 8 EROSION CONTROL.
9-24 ABANDONMENT FOR TRAIL CONVERSION

- Remove all ditch relief culverts. The resulting slopes **must be drivable** and 2:1 or flatter. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Remove all culverts in natural drainages. The resulting slopes must be 2:1 or flatter. Strive to match the existing native stream bank gradient. The natural streambed width must be re-established. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Leave all culverts on site as noted in clause 9-3 CULVERT MATERIAL REMOVED FROM STATE LAND. All other removed culverts are the property of the Purchaser.
- Construct **drivable** waterbars at natural drainage points and at a spacing that will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Inslope or outslope the road as appropriate.
- Pull back unstable fill that has potential of failing and entering any Type 1 through 5 waters or wetlands. Place and compact removed material in a stable location.
- Remove berms except as designed.
- Block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cut-slope to toe of fill-slope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.
- Apply grass seed to all exposed soils resulting from the abandonment work and in accordance with Section 8 EROSION CONTROL. See special requirements in clause 8-15 REVEGETATION.
SETTLING POND DETAIL
NO SCALE

TYPICAL PLAN VIEW

SINGLE POND LAYOUT

DOUBLE POND LAYOUT

TYPICAL PROFILE

DETAIL: BALE SETUP
1) Anchor bales with posts if flow velocity dictates.
2) Pin filter fabric to bale.
3) Use number of bales as needed for effective filtration.

TYPICAL END VIEW OF OUTLET
RESTORE CHANNEL CONNECTIVITY ACROSS THE ORPHANED GRADE (DF-RRG1004) AT EACH STREAM SITE AS LABELED (C, D, F, I, AND O). FOR RESTORATION REQUIREMENTS SEE "STREAM CULVERT REMOVAL DETAIL". FOR STREAMS "D" AND "O" SEE ALSO STREAM DETAIL SHEETS.
### Pull Back Specifications

<table>
<thead>
<tr>
<th>STREAM</th>
<th>LOCATION (STA)</th>
<th>CBW (FT)</th>
<th>PULL BACK (FT)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1+50</td>
<td>2.8</td>
<td>5.6</td>
<td>NO CULVERT, SEE STREAM C DETAIL</td>
</tr>
<tr>
<td>D</td>
<td>3+40</td>
<td>1.8</td>
<td>3.6</td>
<td>SEE STREAM D DETAIL</td>
</tr>
<tr>
<td>F</td>
<td>4+80</td>
<td>4.1</td>
<td>8.2</td>
<td>-</td>
</tr>
<tr>
<td>I</td>
<td>5+50</td>
<td>7.8</td>
<td>15.6</td>
<td>-</td>
</tr>
<tr>
<td>D</td>
<td>27+00</td>
<td>1.6</td>
<td>3.2</td>
<td>NO CULVERT, SEE STREAM D DETAIL</td>
</tr>
</tbody>
</table>

**Notes:**
1. AT EACH STREAM LISTED (SEE ALSO STREAM RESTORATION ACTIVITY MAP) REMOVE CULVERT (IF PRESENT) AND PULL BACK FILL THE MINIMUM DISTANCE INDICATED.
2. IF NO CULVERT IS PRESENT SEE ADDITIONAL DETAIL SHEET AS LISTED.
3. CUT SLOPES FROM FILL REMOVAL MUST BE 2:1 OR SMALLER.
4. END HAUL EXCAVATED FILL MATERIAL TO A WASTE AREA SPECIFIED IN CLAUSE 4-37 (WASTE AREA LOCATION).
5. GRASS SEED ALL DISTURBED AREAS OUTSIDE THE WETTED PERIMETER INCLUDING CUT SLOPES AND FILL AREAS. COVER GRASS SEED WITH HAY MULCH TO 6' DEEP.
STREAM D DETAIL (DF-RRG1004 STA 3+40)

- Remove shoulder berm and outslope road surface.
- Install 3 water bars that intercept the ditch line.
- Existing water bar pull back fill to 36".
- Cut slopes must be 2:1 or shallower.

STREAM C DETAIL (DF-RRG1004 STA 27+00)

- Excavate a channel across the orphaned grade for stream "O".
  1. Skew the channel 30 degrees to perpendicular relative to the grade.
  2. The bottom of the constructed channel must be pulled back to 3.2' wide.
  3. Cut slopes must be 2:1 or shallower.
FOR INITIAL EQUIPMENT CROSSING, PLACE SEVERAL LOGS PARALLEL TO STREAM FLOW SO THAT EQUIPMENT TRACKS REMAIN ABOVE THE WATER SURFACE WHILE CROSSING.

PROTECTION OF FISH AND WATER QUALITY:
1. IN-STREAM WORK MAY ONLY OCCUR ON OR BETWEEN JULY 15TH AND SEPTEMBER 30TH UNLESS AUTHORIZED BY THE CONTRACT ADMINISTRATOR AND PERMITTING AUTHORITIES (INCLUDING FOREST PRACTICES AND WDFW).
2. WORK AREA SHALL BE EITHER Dewatered OR HAVE FISH EXCLUSION MEASURES IN PLACE PRIOR TO BEGINNING ANY IN-STREAM WORK.
3. Dewatering methods may include:
   - Culvert or Flume bypass
   - Cofferdam and Pump(s) equipped with screens to prevent injury of fish
4. Any water that enters the work area shall be pumped to a stable upland location where turbid water will not flow into typed streams. Fish stranded in the bypass reach shall be safely removed to the flowing stream.
5. Where dewatering will not be used, fish shall be excluded from the construction site in accordance with forest practices board manual chapter 5, section 9 fish capture and exclusion.
FPA Notes:
1. CBW = 15.0' BASED ON FOUR MEASUREMENTS IN A 286' REACH
2. ROAD DRAINS POSITIVELY AWAY FROM BOTH SIDES OF THE BRIDGE
3. LOCATION: S13, T27N, R09E

Road Profile

Construction Notes - Riparian Restoration:
1. Place a 30' log from the largest diameter class conifer tree (cut from within 25 feet either side of the stream) in the stream, downstream from the bridge.
2. Retain all grubbed stumps from within 25 feet of the stream. Place three stumps in or adjacent to the stream. The remaining stumps must be placed within the RMZ at least 50' from the road.

Excavate to 89.6' (10' BELOW STREAM CHANNEL). Place 3-foot thick heavy riprap armor at 1:1 slope ratio. Construct with a mix of light and heavy loose riprap (60cy total required).

20' MINIMUM

Elevation of bottom of footing = 97.90'
Excavate 10' below footing grade (96.90') and place 0.8' depth of shot rock (2cy).
Cover shot rock with 0.2' depth of 3/4 crushed rock (2cy) as a leveling course.

Stream Profile

Extent of survey = 286'
(12.5% AVG SLOPE)
Technical Bridge Specifications

PART B.1 – MATERIALS

B.1.1 STRUCTURAL STEEL
Structural Steel shall be ASTM A992. Structural Steel used as main load-carrying tension members or as tension components of flexural members shall be impact tested and shall have a minimum average Charpy V-notch (CVN) toughness of 25 ft-lb at 40°F.

Welded splices are prohibited in main load carrying members.

Mill Test Certificates shall be furnished for all structural steel members used in the fabrication of the bridge. Certified mill test reports for steel members with specified values shall include, in addition to other test results, the results of Charpy V-notch impact tests.

B.1.2 BRIDGE PAINT SYSTEM
All paint coating components of the selected protective coating system shall be produced by the same manufacturer and shall be compatible with one another. The protective coating system shall be a North East Protective Coating Committee (NEPCOAT) Qualified Product from List A or List B or protective coating system approved by the State that meets or exceeds the protection of the pre-approved systems.

Each of the three coats (primer, intermediate, top) shall be of contrasting color to the previously applied full coat. The color of the top coat shall be as specified in the Plans or as selected by the State from a palette of choices provided by the Contractor. Paint systems shall be applied in accordance with manufacturer recommendations.

The minimum dry film thickness of each coat (primer, intermediate, and top coats) shall be as recommended by the manufacturer. Additionally, the minimum dry film thickness of each coat shall be a minimum of 3.0 mils in thickness.

Prior to work the Contractor shall provide a submittal for each paint system used that includes the protective coating system used, on what elements the paint system will be applied, color of each coat, and the manufacturers recommendations for application.

B.1.3 ELASTOMERIC BEARING PADS
Elastomeric bearing pads shall be designed in full accordance with AASHTO LRFD Bridge Design Specifications. The temperature shall be site specific and shall be obtained from the Tables in AASHTO Article 3.12.2.2.

PART B.2 – CONSTRUCTION REQUIREMENTS

B.2.1 STEEL BRIDGE FABRICATOR QUALIFICATIONS
Steel bridge fabricator shall be certified under the AISC Quality Certification Program; Certified Bridge Fabricator - Simple (SBR). When fracture critical members are included in the bridge, bridge fabricators shall also have a Fracture Critical Endorsement (FC), under the AISC Quality Certification Program.

B.2.2 STEEL WELDING AND INSPECTION
Welding and weld qualification tests shall conform to the provisions of the current edition of the AASHTO/AWS D1.5 Bridge Welding Code. No welding, including tack and temporary welds, shall be done in the shop or field unless location of the welds are shown on the approved shop drawings or otherwise approved by the State in writing. Contractor shall provide State proof of welder certification prior to any field welding.

The Contractor is responsible for non-destructive testing and welding inspection in accordance with, and as required by, AASHTO/AWS D1.5 Bridge Welding Code and as otherwise detailed in the Technical Specifications and Plans. Testing and inspection shall apply to welding performed both in the field and in the shop. After the contractors welding testing and inspection is complete, they shall provide copies of procedures, acceptance criteria, results, and inspector qualifications to the State within 48 hours of request.

B.2.3 STEEL SURFACE CLEANING AND PREPARATION
All surfaces of structural steel shall be blast cleaned in accordance with the Steel Structures Painting Council (SSPC), Surface Preparation Specification No. 6, latest edition, (SSPC-SP6), Commercial Blast.
8.2.4 STEEL PAINTING
All exposed steel components shall be painted in accordance with Technical Specification B.1.2 unless otherwise specified as galvanized. The following components shall be galvanized steel: beam guard rail, corrugated deck, and steel sheet pile endwall/wingwall.

8.2.5 STEEL GALVANIZING
All galvanizing must be done after fabrication and must be in accordance with AASHTO Designation M111-09 (ASTM Designation: A123) and/or AASHTO Designation M232-10 centrifuged to remove excess (ASTM Designation A153) and/or AASHTO M298-10 mechanical galvanization (ASTM B695-04). All bolts used to facilitate field assembly will be A325 Type 1 or 2 galvanized.

8.2.6 PRECAST CONCRETE FABRICATOR QUALIFICATIONS
Precast concrete footing fabricator shall be certified under the Precast/Prestressed Concrete Institute's (PCI) Plant Certification Program at a level equivalent or higher than B1 – Precast Bridge Products (No Prestressed Reinforcement).

PART B.3 – STRUCTURE DESIGN

B.3.1 CONTRACTOR’S DESIGN ENGINEER
All design work shall be completed by (or under the direct supervision of) a Professional Engineer, licensed in the State of Washington, in the branch of Civil or Structural Engineering.

B.3.2 DESIGN METHOD
All design work shall be in conformance with the current edition of the AASHTO LRFD Bridge Design Specifications and all subsequent interim specifications. Design details not covered by the AASHTO Specifications shall be in accordance with normally accepted structural design standards.

B.3.3 DESIGN LOADING
Bridge and foundation shall be designed to the HL-93 loading and U-80 special design vehicle with full impact (IM=33%).

U80 TRUCK LOADING - GVW = 80 TONS
(Axle loads are shown)

12k 37k 37k 37k

6.0' 14.0' 4.5' 14' to 30' 4.5'
B.3.4 BRIDGE DESIGN – GENERAL

A. Bridge Rails shall be thrie-beam or W-Beam with steel posts and shall be designed for TL-1 force requirements in accordance with AASHTO LRFD Appendix A 13.2. Bridge Rails are not required to be crash tested. All steel components shall be galvanized. End sections shall conform to WSDOT Standard Plan C-7a, Design C. Rail elements, backup plates, reducer sections, and end sections shall conform to A Guide to Standardized Highway Barrier Hardware published by AASHTO, AGC, and ARTBA. All rail elements shall be formed with minimum 12-guage. The rail splices shall have a minimum total ultimate strength of 80,000 pounds at each joint. The edges of the rails shall be rolled or rounded so they present no sharp edges.

B. Top of rail shall be a minimum of 18” above the top of the wearing surface.

C. Bridge deck shall be continuous full width, with no gaps that allow water and sediment to drain through the bridge deck.

B.3.5 BRIDGE DESIGN – SUPERSTRUCTURE

Bridge superstructure members may be composed of steel and must meet or exceed the following parameters:

**Steel Superstructure Option:**

A. The superstructure shall be a three-piece modular design consisting of steel girder and corrugated steel deck construction with integral bridge rail on each side.

B. Vehicle load deflection limit of L/500 calculated in accordance with AASHTO LRFD Section 3.6.1.3.2.

C. Bridge shall include welded steel side dams installed the full length of the bridge on each side. Minimum height of side dams shall be 4-inches above bridge running surface.

B.3.6 BRIDGE FOUNDATION DESIGN - SPREAD FOOTING

The foundation shall meet or exceed the parameters outlined below.

A. Footing shall be pre-cast.

B. Pre-cast footings shall include functional lifting points, capable of supporting the weight of the footings, which do not interfere with the installed bridge superstructure or endwalls.

C. The bridge connection to the footing shall be per the bridge manufacturer’s written instructions or as designed by the Contractor’s engineer.

D. Nominal bearing resistance of the soil is assumed to be 4,000 pounds per square foot.

E. Number of Design Lanes: This is a single lane bridge with curve widening. It may be evaluated using AASHTO single lane loading.

F. Design of pre-cast components provided by Contractor’s Engineer shall include specifications for:
   i. Required concrete strength at release.
   ii. Required concrete strength for transport.
   iii. Required concrete strength for exposure to construction loads.
   iv. Required concrete strength at 28 days.
   v. Reinforcing steel configuration, size, grade, and coating if applicable.
<table>
<thead>
<tr>
<th>DATE</th>
<th>DOCUMENT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/28/2017</td>
<td>Additional Info</td>
<td>Additional information</td>
</tr>
</tbody>
</table>
February 27, 2017

TO: John Van Hollebeke, Forester, Cascade District, Northwest Region

FROM: Jennifer Parker, LEG #2892, Forest Resources Division  
Greg Morrow, GIT, Forest Resources Division  
Casey Hanel, LEG #2771, Forest Resources Division

SUBJECT: Additional Slope Stability Information for the Proposed Turning Wheel Timber Harvest, Snohomish County, Washington

This memorandum documents potentially unstable landforms around the area of the proposed Turning Wheel timber sale (sale) to supplement the Forest Practices Application to the Washington State Department of Natural Resources (DNR). We provide this information as a response to a Forest Practices request for additional geologic information.

The scope of our services included:
- Review of pertinent published geologic maps.
- Review of historical aerial photographs and orthophotographs (Table 1).
- Review of DNR GIS data including:
  - Digital orthophotographs (Table 2).
  - Light detection and ranging (LiDAR) data.
- Field reconnaissance, November 9, 2016; December 5, 2016; and February 17, 2017.
- Preparation of this memorandum.

The proposed sale is within the Skykomish Watershed Analysis Unit (WAU). Forest Practices Landslide Inventory and Landslide Hazard Zones are not available for this WAU.

Jennifer Parker, a licensed engineering geologist (LEG #2892) prepared this memorandum under the direct supervision of Casey Hanel (LEG #2771). Casey Hanel is a “qualified expert” for timberland slope stability evaluation, as designated by the DNR. Greg Morrow (GIT) assisted with field reconnaissance and preparation of this memorandum.

Site and Project Description

The proposed sale is a variable retention harvest located on west-facing slopes in Snohomish County, approximately 2 miles northwest of Index, Washington (Figure 1). The proposed sale is located in Sections 12 and 13, Township 27 north, Range 9 east. A Bonneville Power Administration (BPA) corridor extends along the southwest boundary of the proposed harvest.
The proposed sale is divided into three units, 1, 2A, and 2B, for a total planned harvest of about 130 acres (Figure 2). Approximately 4,000 lineal feet of new road construction, 4,500 lineal feet of temporary road construction, and 800 lineal feet of road reconstruction are planned as a part of the harvest. Proposed, existing, and abandoned roads are presented in Figure 2. Refer to the Road Plan and Specifications document in the Forest Practices Application for detailed road information.

The site is located on a slope between two partially eroded benches. The highest portion of Unit 1 extends onto the upper, relatively flat bench. The topography between the benches is variable. Previous geologic mapping at a 1:100,000 scale, discussed in more detail below, is available and helped to inform our geomorphic interpretations (Figure 3). Figure 4 shows our geomorphic interpretation of the variable topography based on light detecting and ranging (LiDAR) review and field reconnaissance. Important geomorphic features discussed in the following sections include:

- **Area A**: Dormant-indistinct, rotational deep-seated landslide (DSLS).
- **Area B**: An area with numerous springs, headward erosion, and alluvial deposition.
- **Area C**: An area characterized by erosion, shallow debris-slides, and deep-seated rotational landsliding with loose, wet debris accumulations.
- **Area D**: Incised alluvial fan that is no longer dynamic.
- **Area E**: Stable ridge without signs of slope instability.

The Skykomish River flows below the lower bench, approximately 2700 feet from the lowest portion of the proposed harvest (Figure 1). The nearest home is a mile away, on the opposite side of the Skykomish River.

**Field Observations**

We performed field reconnaissance to characterize the geomorphology of the area and evaluate the relationship between proposed forest practices and potentially unstable landforms (Figure 4). Field reconnaissance was performed by State Lands Licensed Engineering Geologists (LEG) on the following dates:

- **November 9, 2016**: John McKenzie (LEG) and John Van Hollebeke (Forester)
- **December 5, 2016**: Casey Hanell (LEG) and John Moon (Forester)
- **February 17, 2017**: Jennifer Parker (LEG); Greg Morrow (GIT); and John Van Hollebeke (Forester)
Geologic Setting

The published 1:100,000-scale geologic map for the area indicates that the proposed sale is underlain by Pleistocene glacial outwash (Qvr). During the most recent glaciation that covered the Puget Lowland (termed Vashon), glacial ice advanced east into the Skykomish Valley, deposited glacial till, and dammed the ancestral Skykomish River. Water flowing from the glacial ice and the Skykomish watershed deposited glacial outwash (Qvr), which consists of stratified sand and gravel. Glacial outwash (Qvr) overlies glacial till and Oligocene granodiorite (Tig). The approximate distribution of geologic units are shown in Figure 3.

Historic Information

We reviewed aerial photographs and historic maps to characterize previous land use and to look for evidence of landslides. The 1936 Forest Type Map indicates that timber was clear cut between 1920 and 1936. Copies of pertinent photographs and orthophotographs are presented in Figures 5 through 9.

We obtained 1938 aerial photographs flown along the Skykomish River. The aerial photos cover the slopes below the proposed sale. We do not see evidence of fresh sediment deposits within the channels that drain the slopes near the proposed sale.

In 1942, the proposed harvest units and the benches above and below were mostly without trees (Figure 5). The slope between Unit 1 and Units 2A&B had patchy tree growth. Yarding corridor scars are clearly visible in the lower portions of Unit 1 and radiating out of Areas A and B. Yarding corridor scars extend upslope to a denuded landing near the DR-ML road. Deep-seated rotational landslide topography in Area A, scallop-shaped erosional features in Area B, and the size and shape of the funnel-shaped inner gorge in Areas C and D are all the same size and shape as today. The imagery does not show evidence of mass wasting caused by the large-scale timber harvest in this area. The skid trail visible in the orthophotograph around Area C is still present undisturbed by slope movement in the field today. In the orthophotograph there are no signs of debris flows originating from the inner gorge north of Unit 2B, or from Austin Creek. The incised channel in the inactive alluvial fan is in the same location as today.

The BPA corridor is visible for the first time in the 1954 and 1957 aerial photographs. Yarding corridors are more vegetated and are faintly visible. Roads that cross the BPA corridor have cut-slopes that appear to be enlarged. Portions of the Austin Creek inner gorge appear unvegetated. There are no signs of instability in or around the area proposed for harvest.

We obtained partial coverage of the proposed sale with one photo from 1978 (Figure 6). The southern corner of unit 2B is outside the photo coverage. In 1978 the area in and around the proposed sale is forested. However, one harvested area is visible north of the proposed sale, above the upper bench in an area mapped as Tig. Bedrock hollow and inner gorge debris flow scars within the harvested area are visible in the image. A possible small DSLS is visible within the inner gorge associated with the drainage north of Austin Creek. Within the drainage area of the proposed sale, there are no signs of instability within the photo coverage.

We reviewed one aerial photograph from 1983 (Figure 7). The possible small DSLS within the inner gorge associated with the drainage north of Austin Creek is still visible. There are no other signs of instability in or around the area proposed for harvest. The 1983 photo includes the first imagery of the existing borrow pit on the DR-ML road. When viewed in the field, the borrow pit walls consist of glacial outwash, cross-bedded gravel and sand.

In general, the 1996 aerial photos show little change from the 1983 photograph. Debris flow tracks are visible in two locations in 1996 air photos (Figure 8). Both locations are bound out of the proposed harvest.

In the 2001 photos, two areas of commercial thinning are visible. One approximately 80-acre area is located on the upper bench near a curve in the DF-ML road. The 80-acre area is within the groundwater recharge area (GWRA) of the DSLS in Area A. We did not see evidence of deep-seated rotational landslide reactivation in the subsequent photos or in the field. The second approximately 18-acre area is in a portion of Unit 2B.

In 2006, 2009, 2011, and 2013, the forest within the proposed sale continues to mature and there are no signs of instability.

**Discussion**

Based on our field observations and office review, forest practices rule-identified potentially unstable landforms as described in the Forest Practices Board Manual are present around but not in the area of the proposed sale. These landforms include a glacial DSLS, topographically delineated GWRA of DSLS, and bedrock hollows. These features are located within areas labeled A and C (Figure 4) and are described below. Naming terminology for DSLSs is based on definitions of Cruden and Varnes and activity levels using Keaton and DeGraff, as modified by the Washington Forest Practices Board Manual. We delineated the GWRA based on topography, as described in the Forest Practices Board Manual. In addition, we evaluated an area with

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numerous springs and seeps, labeled Area B. Features labeled A, B, and C, and the GWRA of DSLS are outside the proposed sale.

Within the proposed sale, we evaluated a stable ridge, labeled Area E in response to Forest Practices comments regarding possible evidence of landsliding in Unit 2A, and an abandoned alluvial fan, labeled Area D.

The following sections list the observations we used as a foundation of our geomorphic interpretation and landslide hazard analysis:

**Area A:** Glacial deep-seated landslide with dormant-indistinct rotational landslide features.

We delineated this approximately 5 1/2 acre landslide based on LiDAR topography and field mapping of hummocky topography, benches, springs, and seeps. The landslide is in glacial material, therefore we delineated a topographic GWRA using LiDAR data. Observations leading to our interpretation include:

- Landslide is within glacial outwash (Qvr) based on field observations and geologic mapping (Figure 3).
- No evidence of movement in historic imagery.
- Vertical old-growth stumps and vertical live conifers observed in the field throughout the landslide body and headscarp.
- Hummocks are large and rounded.
- Numerous springs in the headscarp and body. The most prominent springs are included in Figure 4. Additional, unmapped springs and seeps are present on the landslide body.
- Flow from springs has dissected the landslide toe.
- Vegetation around springs and depressions is dominantly hardwood. Vegetation throughout the remainder of the slide body and headscarp is a similar age, density, and type, compared with surrounding area.
- Steep, vegetated headscarp is locally eroded.
- No cracks, displaced stumps, leaning trees, or other indications of recent movement was seen in the field.

The topographically-delineated GWRA for the landslide is approximately 18 acres. No management activities are planned on the landslide or the topographically-delineated GWRA for the proposed sale.

**Area B:** Area with numerous springs, recent headward erosion, and recent alluvial deposition.

We delineated an approximately 10-acre area based on LiDAR and in the field based on topography, vegetation, soil saturation, and soil deposits (Figure 4). Observations about this feature include:

- No evidence of mass wasting in historic imagery.
- Vertical old-growth stumps and conifers observed in the field on the feature, however most live trees are alder. While the alder do not appear to be jack-strawed, they are
Growing at variable angles. Alder grow toward the light, and are not good indicators of slope instability. Most of the trees on the surrounding terrain are conifers.

- Springs discharging as much as 100 gallons per minute of clear water. Some of the prominent springs are included in Figure 4. Additional, unmapped springs and seeps are present throughout Area B.
- Topography in the field indicates that the springs have caused headward erosion into the hillslope. The eroded sand and gravel was subsequently deposited on the hill slopes below, in the area outlined on Figure 4. The presence of loose, saturated alluvial deposits may be undergoing shallow soil creep.
- No ground cracks were observed in the field.
- No evidence of displacement across abandoned roads that cross the area.
- We did not observe evidence that this area is a DSLS or earthflow.

No harvest is planned in Area B for the proposed sale.

Area C: Area characterized by active/recent shallow debris slides, deep-seated rotational landsliding, and bedrock hollows, with loose, wet, valley-floor debris accumulations.

The 14-acre, funnel-shaped feature was formed by a combination of erosional and depositional processes. The feature is bisected by an incised, confined stream channel. We hypothesize that this feature primarily formed in a post-glacial environment, under climate conditions that are no longer present. As the glacier receded out of the area and the glacial outwash (Qvr) bench drained, the stream eroded into the cohesionless outwash, forming this broad channel. Through time, the valley was broadened by oversteepening and landslide processes. The eroded material, transported downslope by landslide processes, formed a loose sediment wedge. The stream incised into the wedge and deposited sediment downstream, building an alluvial fan (Area D). The alluvial fan is now abandoned. Portions of the valley side slopes continue to actively erode, as discussed below:

- North of the stream we observed evidence of a recent, deep-seated (about 10 to 20 feet deep), rotational landslide. The extent of recent landslide and its 1/3 acre, topographically-delineated GWRA are included in Figure 4. Field observations include:
  - Back-tilted old-growth stumps
  - Hummocky, wet benches
  - No observed ground cracks

- South of the stream we observed an active, shallow, bedrock hollow-sourced debris slide formed in glacial till and outwash (Qvr). The debris slide was approximately 3 feet deep and 5 feet wide in the initiation zone. Downslope, we observed a 20-foot-wide till exposure. The runout from the debris slide extended about 80 to 100 feet downslope. We did not see evidence that the slide delivered sediment into a stream. We identified vegetated, subdued scars of older, shallow bedrock hollow-sourced landslides based on topography and aerial photograph review. Bedrock hollow point locations are included in Figure 4.

- North and south of the stream we observed wet, loose, hummocky soil debris accumulations without direct evidence of whether the sediment source was shallow or deep-seated landsliding. The extent of debris accumulations are included in Figure 4. The
soil is gravelly with variable amounts of sand, silt, and clay. The stream that bisects Area C is incised into the debris accumulations.

- The area is mostly vegetated with hardwoods. Except in the areas described above, old growth stumps observed were in place.

No harvest is planned in Area C or the topographically-delineated GWRA for the proposed sale.

**Area D:** Incised alluvial fan that is no longer dynamic.

We hypothesize that this alluvial fan formed shortly after the glacier receded out of the area, under climate conditions that are no longer present. Observations include:

- The stream that crosses the alluvial fan is incised into the alluvial deposits.
  - At the apex, the stream is approximately 5 to 8 feet below the alluvial fan surface where an old railroad grade crosses the stream.
  - About 200 feet downstream of the railroad crossing, the stream occupies an approximately 10-foot deep, 80-foot wide channel.
- We did not observe springs or seeps within Area D.
- Trees observed are mostly straight coniferous trees of similar age, species, and density as the surrounding terrain and old growth stumps observed were in place.
- Using LiDAR, we delineated a younger alluvial fan beyond the extent of Area D.

A portion of Unit 2B extends onto the abandoned alluvial fan surface.

**Area E:** Stable ridge without springs or signs of slope instability.

At the request of Forest Practices, we observed features along a ridge that extends between Areas B and C to confirm that this area is not the toe of a DSLS. We conclude that this area consists of intact, glacial material. We base this conclusion on the following:

- Review of LiDAR derived data sets that lack evidence of landforms commonly associated with deep-seated landslides.
- Field reconnaissance confirming LiDAR interpretation.
- Numerous, vertical old growth stumps throughout the feature.
- No springs, seeps, or continuous areas of disturbance vegetation.
- The area is relatively dry compared with surrounding areas that we traversed during our field reconnaissance.

A portion of Unit 2B extends onto Area E.

**Forest Practice Rule Statements**

The following are the Forest Practice Rule statements addressing WAC 222-10-030 (1) (a,b,c). These responses are based on the data and discussion presented above.
(a) The likelihood that the proposed forest practices will cause movement on the potentially unstable slopes or landforms, or contribute to further movement of a potentially unstable slope or landform:

The slope between Unit 1 and Units 2A&B shows evidence of deep-seated slope movement in glacial material and bedrock hollows. The likely triggering mechanism for these features is groundwater-induced instability. The area of the DSLSs and their associated GWRAs have been harvested in the past and no deep-seated movement has been observed on historic aerial photographs. The area proposed for harvest is outside the topographically-delineated GWRA for all of these features. In our opinion, there is a low likelihood the proposed sale will cause or contribute to the movement of potentially unstable slopes or landforms.

(b) The likelihood of delivery of sediment or debris to a public resource, or in a manner that would threaten public safety:

The proposed forest practices are unlikely to increase the delivery of sediment or debris to public resources or to threaten public safety because the features that were recognized in the geologic evaluation as potentially unstable have been bounded out of the proposed harvest. If shallow failures continue to occur in Area C, there may be some likelihood that sediment and debris will be delivered to a public resource. Again, it is our opinion that there is an overall low risk of such an outcome, but the location of potentially unstable slopes is such that if failures do occur it may deliver sediment and debris indirectly to waters draining DNR lands.

(c) Any possible mitigation for the identified hazards and risks:

The primary mitigation measure for the identified hazards and risks is avoidance. Features that were recognized in the geologic evaluation as potentially unstable have been bounded out of the proposed harvest.

Limitations

This memorandum is intended to be additional information submitted with the forest practices application (FPA) for the Turning Wheel timber harvest to document licensed engineering geologist and qualified expert involvement in the timber sale process. This memorandum is not intended to be a geotechnical report for a Class IV-special FPA. The conclusions presented in this memorandum are based on observed site conditions as they existed at the time of the field visits. It is not possible to fully define the geologic conditions of the site based on this limited investigation; however, the work was performed using practices consistent with geologic and geotechnical industry standards in the region for forest slope stability. It is not possible to predict slope movement with certainty with the available scientific knowledge.
ATTACHMENTS:

Table 1, Historical aerial photographs reviewed
Table 2, Historical orthorectified aerial photographs reviewed
Figure 1, Vicinity map
Figure 2, Site map
Figure 3, Geologic map
Figure 4, Geomorphology map
Figure 5, 1942 orthophotograph
Figure 6, 1978 aerial photograph
Figure 7, 1983 aerial photograph
Figure 8, 1996 aerial photograph
Figure 9, 2001 aerial photograph
Table 1 Aerial photographs reviewed.

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(1) Photographs obtained from Earth Explorer6.
(2) Photographs obtained from WADNR aerial photographic library.

Table 2 Orthophotographs reviewed

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* = Washington Department of Natural Resources
† = National Agriculture Imagery Program

Figure 1 - Vicinity map: Proposed Turning Wheel timber sale Units 1, 2A and 2B, located near the Skykomish River and Index, Washington.
Figure 2 - Site Map: Site map of the proposed Tuning Wheel timber harvest. Note that this map and all subsequent figures have north to the left, to allow for a better view of the west-facing slope. The base map is a LiDAR derived hillshade with sun azimuth from 375 degrees and angled 45 degrees.
Figure 3 - Geologic Map: Geologic map of the proposed Turning Wheel timber sale based on Tabor and others (1993) 1:100,000 scale mapping. The base map is a LiDAR derived hillshade with sun azimuth from 315 degrees and angled 45 degrees.
Landforms

- Bedrock Hollow
- Spring
- Abandoned alluvial fan
- Younger alluvial fan
- Alluvial/Colluvial Deposits

Deep-Seated Landslides
- Groundwater recharge area
- Glacial deep-seated landslide
- Recent movement
- Scarp

Figure 4 - Geomorphology map. Areas labeled A through E are geomorphic features discussed in the main text of the Turning Wheel timber sale memorandum.
Figure 5 - 1942 Orthophotograph: The 1942 aerial imagery, published in 1944 by the U.S. Army Corps of Engineers, shows the large-scale harvest that occurred between 1920 and 1936. Yarding corridors are still visible on the landscape. Patchy forested areas are presumably hardwoods, and generally correspond to wet areas observed in the field. We found large, old growth stumps throughout these patchy forested areas. The outlines of features in Areas A, B, and C are visible in this image, and appear to be the same size and shape as today. The incised channel in the inactive alluvial fan is in the same location as today.
Figure 6 - 1978 Aerial photograph: A harvested area is visible north of the proposed Turning Wheel timber sale (red arrow). The harvest is on a bedrock slope and shows bedrock hollow and debris flows in inner gorge topography. These features are in different geologic conditions than the proposed harvest. One possible deep seated landslide, located outside the proposed sale drainage area, is identified with a green arrow.
Figure 7 - 1983 Aerial photograph: A possible deep-seated landslide, located two drainages north of the proposed Turning Wheel timber sale, is marked with a red arrow.
Figure 8 - 1996 Aerial photograph: Possible debris flow tracks are visible in the areas marked with red arrows.
Figure 9 - 2001 Aerial photograph: Two areas of commercial thinning are visible. Thin 1 is located in the groundwater recharge area of Rule Identified Landforms discussed in this memorandum. Thin 2 is located within Unit 2B.
Forest Practices Application/Notification

Notice of Decision

DECISION:

[ ] NOTIFICATION

[X] APPROVED

[ ] DISAPPROVED

[ ] CLOSED

Operations shall not begin before the effective date.

This Forest Practices Application is subject to the conditions listed below.

This Forest Practices Application is disapproved for the reasons listed below.

Applicant has withdrawn FPA/N.

FPA/N CLASSIFICATION

[ ] Class II  [x] Class III  [ ] Class IVG  [ ] Class IVS

Number of Years Granted on Multi-Year Request

[ ] 4yrs  [ ] 5 yrs

Conditions on Approval / Reasons for Disapproval

THIS OPERATION IS SUBJECT TO THESE CONDITIONS:

No additional conditions.

FOR YOUR INFORMATION:

Notify DNR Northwest Region Office (360-856-3500) 48 business hours before commencing timber harvest operations. Please provide the application number and legal description for your operation.

Issued By: Steven Huang
Region: Northwest
Title: Skykomish Forest Practice Forester
Date: 2/28/2017
Copies to: [X] Landowner, Timber Owner and Operator

Issued In Person: [x] Landowner  [ ] Timber Owner  [ ] Operator

Washington State Department of Natural Resources • Notice of Decision July 10, 2012
Appeal Information
You have thirty (30) days to appeal this Decision and any related State Environmental Policy Act determinations to the Pollution Control Hearings Board in writing at the following addresses:
Physical address: 1111 Israel Rd. SW, Ste 301, Tumwater, WA 98501
Mailing address: P.O. BOX 40903, OLYMPIA, WA 98504-0903
Information regarding the Pollution Control Hearings Board can be found at: http://www.ehho.wa.gov/
At the same time you file an appeal with the Pollution Control Hearings Board, also send a copy of the appeal to the Department of Natural Resources' region office and the Office of the Attorney General at the following addresses:
Office of the Attorney General
Natural Resources Division
1125 Washington Street SE
PO Box 40100
Olympia, WA 98504-0100
Department Of Natural Resources
Northwest Region
919 N Township Street
Sedro-Woolley, WA 98284

Other Applicable Laws
Operating as described in this application/notification does not ensure compliance with the Endangered Species Act, or other federal, state, or local laws.
Hydraulic Project Approval (HPA) (Chapter 77.55RCW and WAC 222-50-020(2))
The Department of Fish and Wildlife (WDFW), as the jurisdictional agency issuing HPAs, has final authority for approving water crossing structures in Type S and F waters. WDFW continues to have authority on Type N waters and may exercise that authority on some Type N waters.
Notice: The HPA water crossing requirements supersede what is indicated on the FPA. Landowners are required by law to follow the provisions as directed on the HPA.
Transfer of Forest Practices Application/Notification (WAC 222-20-010)
Use the "Notice of Transfer of Approved Forest Practices Application/Notification" form. This form is available at region offices and on the Forest Practices Division website: http://www.dnr.wa.gov/businesspermits/forestpractices. Notify DNR of new Operators within 48 hours.
Continuing Forest Land Obligations (RCW 76.09.060, RCW 76.09.070, RCW 76.09.390, and WAC 222-20-055)
Obligations include reforestation, road maintenance and abandonment plans, conversions of forest land to non-forestry use and/or harvest strategies on perennial non-fish habitat (Type Np) waters in Eastern Washington.
Before the sale or transfer of land or perpetual timber rights subject to continuing forest land obligations, the seller must notify the buyer of such an obligation on a form titled "Notice of Continuing Forest Land Obligation". The seller and buyer must both sign the "Notice of Continuing Forest Land Obligation" form and send it to the DNR Region Office for retention. This form is available at DNR region offices.
If the seller fails to notify the buyer about the continuing forest land obligation, the seller must pay the buyer's costs related to continuing forest land obligations, including all legal costs and reasonable attorneys' fees incurred by the buyer in enforcing the continuing forest land obligation against the seller.
Failure by the seller to send the required notice to the DNR at the time of sale will be prima facie evidence in an action by the buyer against the seller for costs related to the continuing forest land obligation prior to sale.
DNR affidavit of mailing:
On this day _______, I placed in the United States mail at Sedro-Woolley, WA, postage paid, a true and accurate copy of the attached document. Notice of Decision FPA # __2815___

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WASHINGTON STATE DEPARTMENT OF
Natural Resources

Forest Practices Application/Notification
NOTICE OF TRANSFER

I, DEPARTMENT OF NATURAL RESOURCES, hereby transfer my (our) rights, privileges, and obligations under this approved Forest Practices Application or Notification. I affirm that the information contained below is true and agree to comply with the rules authorized by the Forest Practices Act and to be bound by all conditions on the approved application or notification.

FPA/N Number: 2615612

Original Landowner (Signature): [Signature]
Original Landowner (Printed): [Printed Name] Date: [Date]

30-094393 TURNING WHEEL

New Operator – Fill out this section only if you are changing or adding an operator
Legal Name of New Operator: SIERRA PACIFIC INDUSTRIES
Mailing Address: 14353 MCFARLAND ROAD
MOUNT VERNON, WA 98273
Phone: 360 424-7619
Email: 
New Operator Signature: [Signature] Date: [Date]

New Landowner – Fill out this section only if you are transferring your FPA to a new landowner
Legal Name of New Landowner: [Printed Name]
Mailing Address: 
Phone: 
Email: 
New Landowner Signature: 
Date: 

New Timber Owner – Fill out this section only if you are transferring your timber rights
Legal Name of Timber Owner: SIERRA PACIFIC INDUSTRIES
Mailing Address: 14353 MCFARLAND ROAD
MOUNT VERNON, WA 98273
Phone: 360 424-7619
Email: 
Forest Tax Reporting Account Number: [Number]
800-059-489
New Timber Owner Signature: [Signature] Date: [Date]

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Forest Practices Application/Notification
NOTICE OF TRANSFER

I/we transfer my/our rights, privileges, and obligations under this approved Forest Practices Application or Notification. I/we affirm that the information contained below is true and agree to comply with the rules authorized by the Forest Practices Act and to be bound by all conditions on the approved application or notification.

FPA/N Number: 2815612  Section(s): 12.13  Township: 27N  Range: 09E

Original Landowner (Signature): [Signature]
Original Landowner (Printed): COURTNEY ABENDHOFF  Date: 8/29/17

| New Operator – Fill out this section only if you are changing or adding an operator |
|---------------------------------|---------------------------------|
| Legal Name of New Operator: (Print) | Mailing Address: |
| Nielsen Bros, Inc. | 100 Pine St |
| Phone: 360-671-8078 | Bellingham, WA 98225 |
| Email: david.nielsen@comcast.net | |
| New Operator Signature: [Signature]  Date: 8/29/17 |

| New Landowner – Fill out this section only if you are transferring your FPA to a new landowner |
|---------------------------------|---------------------------------|
| Legal Name of New Landowner: (Print) | Mailing Address: |
| | |
| Phone: | |
| Email: | |
| New Landowner Signature: | Date: |

| New Timber Owner – Fill out this section only if you are transferring your timber rights |
|---------------------------------|---------------------------------|
| Legal Name of Timber Owner: (Print) | Mailing Address: |
| Sierra Pacific Industries | 14353 McFarland Rd |
| Phone: 360-424-7619 | Mount Vernon, WA 98273 |
| Email: | |
| Forest Tax Reporting Account Number: (Contact Dept. of Revenue to get this number: 1-800-548-8829) 800 059 489 | |
| New Timber Owner Signature: | Date: |

Received by: [Signature]  Date: 8/30/17
(DNR Forest Practices Staff Signature)