

STATE FOREST LAND **SEPA ENVIRONMENTAL CHECKLIST**

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

Questions in italics are supplemental to Ecology's standard environmental checklist. They have been added by the DNR to assist in the review of state forest land proposals. Adjacency and landscape/watershed-administrative-unit (WAU) maps for this proposal are available on the DNR internet website at <http://www.dnr.wa.gov/sepa>. These maps may also be reviewed at the DNR regional office responsible for the proposal. This checklist is to be used for SEPA evaluation of state forest land activities.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. BACKGROUND

1. Name of proposed project, if applicable:

Timber Sale Name: **ECHO LAKE**

Agreement # **30-093069**

2. Name of applicant: **Washington Department of Natural Resources**

3. Address and phone number of applicant and contact person:

Washington Department of Natural Resources

South Puget Sound Region

950 Farman Avenue North

Enumclaw, WA 98022

Contact: Audrey Mainwaring

(360) 825-1631

4. Date checklist prepared: **06/06/2016**

5. Agency requesting checklist: **Washington Department of Natural Resources**

6. Proposed timing or schedule (including phasing, if applicable):

a. *Auction Date:* **01/24/2017**

b. *Planned contract end date (but may be extended):* **10/31/2018**

c. *Phasing:* **None**

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Timber Sale:

a. *Site preparation:*

Units 1-3 will be ground herbicide hand spray as needed to ensure establishment of planted seedlings.

b. *Regeneration Method:*

Hand plant native conifers within two years of harvest. Units will be planted at a density that meets or exceeds Forest Practice standards.

c. *Vegetation Management:*

Units 1-3 will have vegetation management needs assessed from plantation ages three to eight. Vegetation control activities will be scheduled as needed.

d. *Thinning:*

Needs will be assessed. Generally, pre-commercial thinning is considered at approximately 8-15 years following planting. Pre-commercial thinning, if needed, will be performed to

retain a healthy, vigorous stand of native conifers.

Roads: Road maintenance will be conducted when necessary to ensure compliance with Forest Practice Rules and Regulations

Rock Pits and/or Sale: Rock may be obtained from any commercial source, or the Esker Pit.

Other: None

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- 303 (d) – listed water body in WAU: temp sediment completed TMDL (total maximum daily load):
- Landscape plan:
- Watershed analysis:
- Interdisciplinary team (ID Team) report:
- Road design plan: Included in Road Plan, dated 06/15/2016
- Wildlife report:
- Geotechnical report:
- Other specialist report(s):
- Memorandum of understanding (sportsmen's groups, neighborhood associations, tribes, etc.):
- Rock pit plan: Included in Road Plan, dated 06/15/2016
- Other:
 - P&T special concerns report
 - Policy for Sustainable Forestry (PSF)
 - Soil Survey
 - Forest Resource Inventory System
 - GIS Analysis
 - South Puget HCP Planning Unit Forest Land Plan
 - DNR Habitat Conservation Plan
 - WA Dept. of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) database
 - RMAP #240027
 - North Puget Planning Unit Marbled Murrelet Reclassified Habitat Model

Referenced documents may be obtained from the South Puget Sound Region office in Enumclaw during the SEPA comment period.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

None known.

10. List any government approvals or permits that will be needed for your proposal, if known.

FPA FPHP Burning permit Shoreline permit Incidental take permit Existing HPA Other: Board of Natural Resources Approval

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

a. Complete proposal description:

The Echo Lake Timber Sale proposal is five total units; three are Variable Retention Harvest (VRH) units, and two are Road Right-of-Way (ROW) units. The VRH units will leave 8 legacy trees per acre, and remove an estimated 2,086 mbf of total timber volume using tracked ground based logging equipment and cable yarding equipment. Approximately 61 acres were considered for harvest, this was reduced to 58 net acres after consideration of riparian management zones (RMZs), leave tree groups, and a special management unit area for leave tree strategy near property boundary. This proposal is located within the Raging River Watershed Administrative Unit (WAU) on mostly west-facing slopes that average 30-40 percent, with max slopes in excess of 100 percent. 559 leave trees have been marked in a combination of individual trees and groups.

Road work associated with this proposal consists of 5,000 feet of required pre-haul maintenance, 14,285 feet of required post-haul maintenance, 2,917 feet of optional construction, 585 feet of required reconstruction, and 1,672 feet of abandonment, if constructed.

b. Timber stand description pre-harvest (include major timber species and origin date), type of harvest, overall unit objectives.

This proposal is a second-growth, naturally regenerated conifer stand. The stand age ranges from 70-75 years. The proposal area primarily contains site class II ground with a base age 50 year Douglas-fir site index of 130. The elevation of the proposal area ranges from 896 to 1,192 feet. The majority of the stand is comprised of Douglas-fir, western hemlock, and western red cedar with pockets of red alder, big leaf maple and cottonwood scattered throughout the proposal area. Sitka spruce can also be found on site.

The overall objective of this proposal is to provide sustainable revenue to the trust beneficiaries through forest management while providing for and creating wildlife habitat as directed under the 1997 Habitat Conservation Plan (HCP), protecting hydrologic function and water quality under forest practices and HCP regulations, retaining visual aesthetics and continuing good working relationships with adjacent landowners and user groups. The desired future condition of the proposal area is a mix of regenerating conifers amidst scattered and grouped large legacy and wildlife trees. Other objectives include proper reforestation and subsequent management activities consistent with DNR policy, Sustainable Forestry Initiative (SFI), DNR's HCP, Policy for Sustainable Forests, and Washington State Forest Practice Rules.

c. Road activity summary. See also forest practice application (FPA) for maps and more details.

| Type of Activity | How Many | Length (feet) (Estimated) | Acres (Estimated) | Fish Barrier Removals (#) |
|-----------------------------------|----------|---------------------------|-------------------|---------------------------|
| Construction | | 2917 | 1.1 | 0 |
| Reconstruction | | 585 | | 0 |
| Abandonment | | 1672 | 0.6 | 0 |
| Bridge Install/Replace | 0 | | | 0 |
| Culvert Install/Replace (fish) | 0 | | | 0 |
| Culvert Install/Replace (no fish) | 4* | | | |

*One (1) replacement culvert / Three (3) new culverts

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

a. Legal description: :

T23N R7E S2
T23N R7E S11
T23N R7E S12

b. Distance and direction from nearest town (include road names):

From Maple Valley: Take WA-18 E towards North Bend for approximately 15.2 miles. Take the last right turn onto SE 104th St before the exit for I-90. Keep right onto Rattlesnake Mainline until reaching gate #832. After 0.5 miles, turn left onto the Esker Pit Rd. This will access Esker Rock Pit and U2. For U2, follow the Mainline for 0.3 miles after the rock pit, then turn left on the Power Line Rd. U2 can also be accessed at 0.4 miles past the start of the Power Line Rd, and U1 0.4 miles further. For U3, keep on the Rattlesnake Mainline for another 0.4 miles after the Power Line Rd.

c. Identify the names of all watershed administrative units (WAU). See also landscape/WAU map on DNR website: <http://www.dnr.wa.gov/sepa> under the topic "Current SEPA Project Actions – Timber Sales" for a broader landscape perspective.

| WAU Name | WAU Acres | Proposal Acres |
|---------------------|-----------------|----------------|
| RAGING RIVER | 22472.10 | 58 |
| Sub basin 2 | 5119 | 44 |
| Sub basin 3 | 2600 | 14 |

13. Discuss any known future activities not associated with this proposal that may result in a cumulative change in the environment when combined with the past and current proposal(s). (See digital ortho-photos for WAU and adjacency maps on DNR website <http://www.dnr.wa.gov/sepa> for a broader landscape perspective.)

The WAU contains varying ownership and land management, ranging from commercial timber lands to residential. Below is a table from DNR's GIS data on March 31, 2016 depicting ownership within Raging River WAU.

Land Management

| Land Manager | Acres | % of WAU |
|--|-------|----------|
| DNR | 15657 | 69.7 |
| Federal | 139 | 0.6 |
| Other Land (Private & Other Public Land) | 6676 | 29.7 |

Future DNR forestry activities within the WAU include timber harvesting, road construction/maintenance, and silviculture activities. These activities have in the recent past, and will continue to follow, the HCP, Policy for Sustainable Forests (PSF), and Forest Practice Rules. This will ensure that components of the environment are protected and minimize the chance of adverse impacts. Below is a table showing timber harvest activity levels within the last seven years on both DNR and non-DNR managed lands.

Forest Practice Approved Applications For Harvest Activities

| Harvest Type | Acres on DNR Land | Acres on Non-DNR Land | Acres on All Lands |
|--------------|-------------------|-----------------------|--------------------|
| EVEN-AGE | 563 | 70 | 633 |
| UNEVEN-AGE | 179 | 97 | 276 |

NOTE: Forest Practice data as of 3/31/16. All acreages are approximate. Rounding to the nearest 10 or even to the nearest 50 acres may be appropriate. Totals may not be the sum of all harvest types due to overlapping activities.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (check one):

Flat, Rolling, Hilly, Steep Slopes, Mountainous, Other:

1) *General description of the WAU or sub-basin(s)(landforms, climate, elevations, and forest vegetation zone).*

The Raging River WAU contains rolling to steep slope terrain. The climate is similar to other locations along the foothills of the western Cascades with elevations ranging from 800 to 4,000 feet. The topography is generally the result of glacial action during the last ice age with recent erosional features from stream action. Approximately 55 percent of the WAU has slopes that range from 0 to 30 percent, 28 percent is in the slope range of 31 to 65

percent, 1 percent is in the 65 to 100 percent range and 16 percent has slopes in excess of 100 percent. The climate is generally moderate with precipitation range of about 35 to 80 inches per year. Temperatures range from 20 degrees Fahrenheit in the winter to 90 degrees Fahrenheit in the summer. The major timber type is Douglas fir and western hemlock.

- 2) *Identify any difference between the proposal location and the general description of the WAU or sub-basin(s).*

The proposal location matches the WAUs general description, except around 20 percent of the timber sale has slopes from 65-100 percent.

- b. What is the steepest slope on the site (approximate percent slope)?

100 percent on very steep areas.

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Specific soil types are listed in the table below. This proposal will not be removing any of these soils. The location will continue in forest land management for the primary purpose of growing trees.

Note: The following table is created from state soil survey data. It is a roll-up of general soils information for the soils found in the entire sale area. It is only one of several site assessment tools used in conjunction with actual site inspections for slope stability concerns or erosion potential. It can help indicate potential for shallow, rapid soil movement, but often does not represent deeper soil sub-strata. The actual soils conditions in the sale area may vary considerably based on land-form shapes, presence of erosive situations, and other factors. The state soil survey is a compilation of various surveys with different standards.

| State Soil Survey # | Soil Texture | % Slope | Mass Wasting Potential | Erosion Potential |
|---------------------|-----------------------|---------|------------------------|-------------------|
| 8107 | GRAVELLY LOAM | 15-30 | INSIGNIFIC'T | LOW |
| 8108 | GRAVELLY LOAM | 30-60 | MEDIUM | MEDIUM |
| 3827 | V.GRAVELLY SANDY LOAM | 30-65 | LOW | MEDIUM |

- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

1) *Surface indications:*

A review of LiDAR digital elevation models (DEMs) and published mapping, including the Forest Practices Landslide Inventory GIS layer and 1:24,000-scale geologic mapping (Dragovich and others, 2012) was conducted remotely showing no mapped landslides or no potentially unstable landforms in the immediate vicinity of Units 2 and 3. There are landslides mapped east/northeast of Unit 1 but none in the immediate vicinity of Unit 1. Analysis of LiDAR DEMs suggested the presence of an inner gorge landform and possible bedrock hollow landforms north and northeast of Unit 1. Field review confirmed that an inner gorge landform has been excluded in the RMZ northeast of Unit 1, and a bedrock hollow landform is excluded by a tagged leave-tree group in the northeast corner of Unit 1

2) *Is there evidence of natural slope failures in the sub-basin(s)?*

- No Yes, *type of failures (shallow vs. deep-seated) and failure site characteristics:*

LiDAR DEMs and published mapping both indicate evidence of natural slope failures within the sub-basins. However, the density of mapped landslides is very low in the proposal vicinity.

3) *Are there slope failures in the sub-basin(s) associated with timber harvest activities or roads?*

- No Yes, *type of failures (shallow vs. deep-seated) and failure site characteristics:*

Associated management activity:

As noted above, the mapped landslide density in the proposal vicinity is very low. It is possible that some landslides within the sub-basins are associated with the timber harvest activities or roads, particularly where the mapped landslide density is higher to the south and the east. However we are unaware of any such landslides in the proposal vicinity. It is possible that poor management/road construction and maintenance of the past could have contributed to landslides, but the DNRs management policies and practices of today reduce the likelihood of future management-related landslides.

4) *Is the proposed site similar to sites where slope failures have occurred previously in the sub-basin(s)?*

- No Yes, *describe similarities between the conditions and activities on these sites:*

5) *Describe any slope stability protection measures (including sale boundary location, road, and harvest system decisions) incorporated into this proposal.*

All potentially unstable slopes and landforms have been excluded from the proposal area. There is an inner gorge landform excluded from Unit 1 in the RMZ to the northeast of the unit. Tagged leave tree groups exclude one bedrock hollow landform in the northeast of Unit 1.

- e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Approx. acreage new roads: 1.1 Approx. acreage new landings: 2.5 Fill Source: Esker Rock Pit

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

There is always some potential that erosion could occur as a result of timber harvesting, yarding and hauling. Erosion will be minimized by restricting yarding and hauling during wet conditions, unless authorization is granted from the Contract Administrator. Regular road maintenance will help limit erosion. Culverts and ditches have been constructed to control the water flow and redistribute water onto the forest floor. The residual leave trees and vegetation following harvest will prevent erosion related to runoff.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? *Approximate percent of proposal in permanent road running surface (includes gravel roads):*

Around 1 percent will be covered in gravel roads.

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: *(Include protection measures for minimizing compaction or rutting.)*

Falling, yarding, timber haul, road construction and rock haul will not be permitted from November 1 to April 30, unless authority to do so is granted, in writing, by the Contract Administrator. If permission is granted to operate between November 1 and April 30, the Purchaser may be required to provide a "Winter Operating Plan" to include further protection of water, soil, roads and other forest assets. Falling, yarding and timber haul will be suspended during periods of wet weather, if in the opinion of the Contract Administrator the operation poses a threat to public resources. The proposal is located on stable ground and will have little or no effect on water quality due to seasonal restrictions and harvest equipment restrictions and limitations. Also equipment operating will be limited to track mounted machines to reduce compaction.

Roads remaining active after the forest practice will be on a regular maintenance schedule including but not limited to reshaping and culvert and ditch maintenance to insure proper water flow and redistribution to the forest floor. When installing culverts at live stream locations water bypasses will be established that pump clean water at established catch basins around the work site and back into stream. Water

containing sediment will be pumped away from site and onto forest floor a minimum of 100 feet from live streams.

2. Air

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Insignificant amounts of engine exhaust from logging equipment and dust on roads from log truck traffic will be generated.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None.

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

None.

3. Water

- a. Surface Water:

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. (see timber sale map available at DNR region office, or forest practice application base maps.)

- a. *Downstream water bodies:*

Streams adjacent or within the units will either flow into Echo Lake, Lake Creek, or the Raging River. Echo Lake is the headwaters for Lake Creek, which then flows into the Raging River. The Raging River meets with the Snoqualmie River near Fall City.

- b. *Complete the following riparian & wetland management zone table:*

| Wetland, Stream, Lake, Pond, or Saltwater Name (if any) | Water Type | Number (how many?) | Avg RMZ/WMZ Width in feet (per side for streams) |
|---|------------|--------------------|--|
| Stream | 4 | 3 | 100 foot no-cut RMZ |
| Stream | 5 | 2 | 30 foot Equipment Limitation Zone (ELZ) |

- c. *List RMZ/WMZ protection measures including silvicultural prescriptions, road-related RMZ/WMZ protection measures, and wind buffers.*

The streams within the vicinity of the proposal were identified during the initial field reconnaissance. Stream typing was determined based on physical criteria per the Trust Forest Land HCP Water Typing System and Forest Practices. Once the type was determined, appropriate buffers were applied. In addition, see question B-3-a-1-b.

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No Yes (See RMZ/WMZ table above and timber sale map available at DNR region office.)

Description (include culverts):

There are two lengths of optional-construction roads that will cross typed streams. If constructed, the Esker Pit Extension Rd will cross a Type 5 stream, where a 24 inch by 40 foot culvert will be installed, and the PL1 Rd will cross a Type 4 stream, where a 36 inch by 40 foot culvert will be installed. Timber harvest will take place within 200 feet of all above mentioned streams; Type 4 streams will have a 100 foot no-cut buffer; however timber will be cut within the RMZs where road Right-of-Ways are marked. Type 5 streams will have a 30 foot equipment limitation zone (ELZ); if crossings of Type 5 streams occur during yarding, culverts, log puncheons or slash mats will be laid out prior to crossing and removed upon closure of the crossing trail. Stream buffers and limitations zones are compliant with the State's Habitat Conservation Plan (HCP).

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None.

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. (Include diversions for fish-passage culvert installation).

No Yes, description:

If actively flowing, water will be diverted to install culverts. Water diversion will minimize sediment build-up and delivery within those streams.

- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No Yes, describe location:

Some of the road work will take place within the 100-year floodplain of the above mentioned streams.

- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No Yes, type and volume:

- 7) Does the sub-basin contain soils or terrain susceptible to surface erosion and/or mass wasting? What is the potential for eroded material to enter surface water?

Sub-basins 2 and 3 of the Raging River WAU have some soils susceptible to mass-wasting, these areas are typically along the Raging River corridor, and not within the vicinity of this proposal. Unit 1 of this proposal contains medium erosion potential soils, concentrated on the steep slopes. Equipment restrictions according to slopes are in place to minimize operational impacts to the soil. All other soils within and in the vicinity of this proposal are classified as low erosion potential. This proposal has a low potential for eroded material to enter surface water due to adequate stream buffers and cross-drains that will disperse water onto the forest floor and filter any sediment before reaching streams or wetlands. ELZs along Type 5 streams minimize disturbed soils adjacent to these channels.

- 8) Is there evidence of changes to the channels in the WAU and sub-basin(s) due to surface erosion or mass wasting (accelerated aggradations, erosion, decrease in large organic debris (LOD), change in channel dimensions)?

No Yes, describe changes and possible causes:

Storm events have caused increased aggradations and scouring in some of the stream channels within the Raging River WAU. Streams on this site naturally carry high sediment loads during flooding, primarily because the area is geologically young and the streams are still actively cutting (eroding) their channels. This is especially true during peak flood events. Some erosion and sedimentation is attributed to past logging practices, but more specifically to poor road location, construction and maintenance.

- 9) Could this proposal affect water quality based on the answers to the questions 1-8 above?

No Yes, explain:

- 10) What are the approximate road miles per square mile in the WAU and sub-basin(s)? Are you aware of areas where forest roads or road ditches intercept sub-surface flow and deliver surface water to streams, rather than back to the forest floor?

No Yes, describe:

There are approximately 4.9 miles of road per square mile within the Raging River WAU.

11) Is the proposal within a significant rain-on-snow (ROS) zone? If not, **STOP HERE** and go to question B-3-a-13 below. Use the WAU or sub-basin(s) for the ROS percentage questions below.

No Yes, approximate percent of sub-basin(s) in significant ROS zone:

Or, approximate percent of WAU:

12) If the proposal is within the significant ROS zone, what is the approximate percentage of the WAU or sub-basin(s) within the significant ROS zone (all ownerships) that is (are) rated as hydrologically mature?

13) Is there evidence of changes to channels associated with peak flows in the WAU and sub-basin(s)?

No Yes, describe observations in the WAU and in the sub-basin(s):

There is evidence of debris flows in some of the stream channels within the Raging River WAU, which were probably initiated during times of peak flow. Evidence includes but is not limited to small channel volumes still being eroded and formed, which are unable to support the amount of water during these times. Streams on this site naturally carry high sediment loads during flooding, primarily because the area is geologically young and the streams are still actively cutting (eroding) their channels. Some erosion and sedimentation is attributed to past logging practices, but more specifically to poor road location, construction and maintenance.

14) Based on your answers to questions B-3-a-10 through B-3-a-13 above, describe whether and how this proposal, in combination with other past, current, or reasonably foreseeable proposals in the WAU and sub-basin(s), may contribute to a peak flow impact.

The foreseeable likelihood of this proposal contributing to peak flow impacts as viewed in conjunction with past, present and future proposals is minimal. The activities associated with the proposed harvest and resulting timber stand following the timber harvest should not result in any significant contribution to peak flows.

Past sales within the Raging River WAU on DNR managed lands have totaled less than 200 acres annually. There is no indication that this trend will change. This and limiting DNR sales to less than 100 contiguous acres will help reduce the potential of peak flow occurrences. Forest practice green-up rules restricting adjacency of sales adds to the protection. Harvesting activities on privately owned lands within the watershed seem to be consistent with historic averages. Few adverse effects have been witnessed in conjunction with these activities and there is little reason to believe there will be adverse effects in the future.

- 15) *Is there water resource (public, domestic, agricultural, hatchery, etc.), or area of slope instability, downstream or downslope of the proposed activity that could be affected by changes in surface water amounts, quality, or movements as a result of this proposal?*

No Yes, possible impacts:

- 16) *Based on your answers to questions B-3-a-10 through B-3-a-15 above, note any protection measures addressing possible peak flow/flooding impacts.*

The current proposal, along with landscape level practices to maintain mature forest components will not significantly contribute to peak water runoff beyond historic levels. We do not anticipate that this proposal will contribute to peak water runoff problems. This proposal is located on stable soils and includes adequate protection of the streams near the units. Logging slash will be left onsite and distributed throughout the unit to lessen the effects of water runoff. The current guidelines for HCP implementation include several prescriptions that address the potential for peak flow impacts. This proposal has adequate cross drains on the haul route. These structures will ensure ditch water is deposited onto the forest floor and not allowed to flow directly into typed water.

b. Ground Water:

- 1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No.

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Does not apply.

- 3) *Is there a water resource use (public, domestic, agricultural, hatchery, etc.), or area of slope instability, downstream or down slope of the proposed activity that could be affected by changes in groundwater amounts, timing, or movements as a result this proposal?*

No Yes, describe:

a. *Note protection measures, if any.*

None.

c. **Water runoff (including stormwater):**

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The source of runoff is rainfall and snow melt. Runoff will be collected by ditches, ditch outs and cross drains and diverted to stable forest floor material. Culverts are placed in adequate frequency and proper locations so as to prevent direct flow of these waters into live streams. Upon completion of harvest operations, water bars, if needed, will be constructed on the skid trails to control runoff.

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

No Yes, describe:

Minor amounts of motor oil, grease, and hydraulic fluids may leak from equipment or be washed off equipment by rainwater.

a. *Note protection measures, if any.*

Proper materials for spill cleanup as a result of equipment operation will be required to be on site if an accidental discharge should occur. No lubricants or chemicals will be disposed of on site. In addition, RMZ buffers will add protection to surface waters.

Upon completion of harvest operations, water bars, if needed, will be constructed on the skid trails to control runoff. The remaining trees, vegetation, and topography will prevent surface water runoff. Water will be absorbed through the forest floor. The proposal will also be reforested with native conifer seedlings which will lessen impacts of excessive runoff into streams and wetlands.

- d. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No, prudent culvert installation, ditch construction, ditch-outs, waterbars and other hydrologic structures will minimize the changes to natural hydrological patterns.

Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The hauling of forest products and road use will be carefully monitored under this proposal to protect road conditions and public resources. The haul roads have been designed to a standard that will support logging operations. The use of haul roads is limited by their capability to handle heavy haul traffic during periods of wet weather. The following measures will be taken, when in the opinion of the Contract Administrator, there is a need to prevent road damage and/or sedimentation of surface waters through runoff from haul roads:

- The number of loads hauled may be limited during periods of inclement weather during the normal operating season.
- Erosion control structures, such as straw bales, silt fencing, installation of cross drains, or other methods to prevent delivery of sediment to streams may be required during harvest operations.
- Roads may be temporarily closed during periods of heavy precipitation.
- Equipment will be limited to track mounted machines to reduce soil compaction.

(See surface water, ground water, and water runoff sections above, questions B-3-a-1-c, B-3-a-16, B-3-b-3-a, and B-3-c-2-a.)

4. Plants

a. Check the types of vegetation found on the site:

deciduous tree:

alder, maple, aspen, cottonwood, western larch, birch,
other: **Bitter cherry**

evergreen tree:

Douglas fir, grand fir, Pacific silver fir, ponderosa pine, lodgepole pine, western hemlock, mountain hemlock, Englemann spruce, Sitka spruce, red cedar, yellow cedar, other:

shrubs:

huckleberry, salmonberry, salal, other: **Sword fern, Oregon grape**

grass

pasture

crop or grain

wet soil plants:

cattail, buttercup, bullrush, skunk cabbage, devil's club,
other:

water plants:

water lily, eelgrass, milfoil, other:

other types of vegetation:

plant communities of concern:

b. What kind and amount of vegetation will be removed or altered? (See answers to questions A-11-a, A-11-b, B-3-a-1-b and B-3-a-1-c. The following sub-questions merely supplement those answers.)

1) Describe the species, age, and structural diversity of the timber types immediately adjacent to the removal area. (See color landscape/WAU and adjacency maps on the DNR website:

<http://www.dnr.wa.gov/sepa>

(Click on the DNR region under the Topic "Current SEPA Project Actions - Timber Sales.")

To the east of Units 1 and 2 is a non-forested powerline Right-of-Way.
To the east of Unit 3 is a mixed-conifer plantation that is 20 years old.

To the north of Units 1 and 2 are the RMZs of Type 4 streams, which contain second-growth, naturally-regenerated mixed-conifer around 70-75 years old.
To the north of Unit 3 is a mixed-conifer plantation that is 20 years old.

To the west of Unit 1 is private land.

To the west of Unit 2 is a mixed-conifer plantation that is 15 years old.

To the west of Unit 3 is a mixed-conifer plantation that is 15 years old.

To the south of Unit 1 is an RMZ of a Type 4 stream, which contains second-growth, naturally-regenerated mixed-conifer that is around 70-75 years old.

To the south of Unit 2 is a mixed conifer plantation that is 15 years old.

To the south of Unit 3 is private land.

2) Retention tree plan:

The retention tree prescription for the proposal includes retaining approximately 8 leave trees per acre in Units 1, 2 and 3, according to the Habitat Conservation Plan and forest practices regulations, while meeting stand objectives to maintain site productivity and ecological function. There are approximately 559 trees that have been marked either individually or grouped within Units 1, 2, and 3. Leave tree clumps were selected to protect areas that hold unique ecological values and also provide an accurate representation of pre-harvest stand conditions. There are also individually marked trees spread throughout the proposal area. These trees were selected from the largest diameter class and dominant crown class as well as for wind firmness, good form, species diversity, wildlife value and protection of existing snags.

c. List threatened and endangered *plant* species known to be on or near the site.

| TSU Number | FMU_ID | Common Name | Federal Listing Status | WA State Listing Status |
|-------------------------------|--------|-------------|------------------------|-------------------------|
| None Found In Database Search | | | | |

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: **Proposal area will be replanted using native tree species.**

e. List all noxious weeds and invasive species known to be on or near the site.

Himalayan blackberry, and holly were observed onsite during timber sale layout. For a complete list of noxious weeds in King County please visit the website below.

<http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/laws/list.aspx>

5. Animals

a. List any birds and other animals or unique habitats which have been observed on or near the site or are known to be on or near the site. Examples include:

birds: hawk, heron, eagle, songbirds, pigeon, other: woodpeckers, geese, ducks

mammals: deer, bear, elk, beaver, other: cougar, bobcat, coyote

fish: bass, salmon, trout, herring, shellfish, other:

unique habitats: talus slopes, caves, cliffs, oak woodlands, balds, mineral springs

b. List any threatened and endangered species known to be on or near the site (include federal- and state-listed species).

| TSU Number | FMU_ID | Common Name | Federal Listing Status | WA State Listing Status |
|------------|--------|--|------------------------|-------------------------|
| 3 | 95255 | SPOTTED OWL: Site:982- RATTLESNAK E MOUNTAIN NORTH | THREATENED | ENDANGERED |

c. Is the site part of a migration route? If so, explain.

Pacific flyway Other migration route: Explain if any boxes checked:

This proposal lies within the Pacific flyway and may be used by various migratory waterfowl. Ducks and geese have been observed on Echo Lake but none have been witnessed onsite.

d. Proposed measures to preserve or enhance wildlife, if any:

- 1) *Note existing or proposed protection measures, if any, for the complete proposal described in question A-11.*

This timber sale proposal conforms to commitments under the 1997 DNR Habitat Conservation Plan (HCP). The HCP includes a number of strategies to enhance and preserve wildlife over time. Specific to this proposal is the riparian strategy to conserve and protect habitat for species that are dependent on aquatic and riparian habitat and quality leave tree retention, which may provide critical elements for upland species and preserve long term site productivity through the maintenance of forest processes. Leave trees retained are wind firm and well-formed dominant and co-dominant trees representing the original diversity of species.

In addition, individual species and tree types known to have high wildlife use have been retained. Trees with unique characteristics such as forked or damaged tops have been incorporated within many of the leave tree groups and individually selected throughout the proposal to provide current and future habitat for a variety of wildlife species including woodpeckers, sapsuckers and cavity dwellers. Large hard and soft snags with high evident use and cavities will also be retained where possible.

No eagle nests were found within the proposal area.

Species /Habitat: Elk

Protection Measures: The proposal is located within the Green/Cedar River Winter Elk Range. Harvest of this stand will enhance winter elk forage.

Species /Habitat: Northern Spotted Owl

Protection Measures: This proposal is not located in a Spotted Owl Management Unit (SOMU), neither is it located within any Stat 1R owl circles PR 14-004-120. This proposal is available for the full range of DNR silvicultural activities permitted under the Habitat Conservation Plan in compliance with PR 14-004-120 Northern Spotted Owl Management (Westside).

The Spotted Owl Site referenced in 5.b. above (982 Rattlesnake Mountain North) adjacent to Unit 3 is for two separate sightings of single spotted owls in section 12 in 1993. These are status 3 sightings for single adults and do not trigger any HCP protection.

Species /Habitat: Marbled Murrelet

Protection Measures: The proposal lies within the North Puget Planning Unit. This proposal is not within or near any reclassified habitat polygons nor does

it contain potential suitable or newly identified suitable habitat. This proposal is compliant with the HCP interim Marbled Murrelet strategy.

- e. List any invasive animal species known to be on or near the site.

Barred Owl. Also with water bodies such as Echo Lake and Lake Creek being in the vicinity of this proposal, the American Bullfrog is a possibility, but none have been seen on-site.

6. Energy and natural resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

None.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None.

7. Environmental health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

- 1) Describe any known or possible contamination at the site from present or past uses.

None known.

- 2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None known.

- 3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

None.

- 4) Describe special emergency services that might be required.

Emergency response may be required from Department of Natural Resources and private and rural fire suppression resources for wildfire, emergency medical by air or ambulance for personnel injuries, hazardous material spills may require Department of Ecology and/or King County assistance.

- 5) Proposed measures to reduce or control environmental health hazards, if any:

Fire protection equipment will be required onsite during the closed fire season from April 15 to October 15 if operations are active. Operations will cease if relative humidity falls below 30 percent, for spills see question B-3-c-2-a.

b. Noise

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

None.

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

This proposal is within the vicinity of private residences; cable harvesting typically requires high-level noise for communication such as “Talkie-Tooters”. To reduce disturbance to adjacent residences, hand-falling and cable yarding will be restricted before 7:00 a.m. Other operational noise will be created by logging, road construction and forest products hauling operations during normal industry operating hours (4 a.m. – 6 p.m.). This will occur during the project only; upon completion of the project, infrequent low-level noise associated with regular administration and forest management activities may occur.

- 3) Proposed measures to reduce or control noise impacts, if any:

Hand-falling and cable yarding will be restricted before 7:00 a.m. and on weekends or state recognized holidays unless approved in writing by the Contract Administrator.

8. Land and shoreline use

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. (*Site includes the complete proposal, e.g. rock pits and access roads.*)

Timber production/forest management (Forestry) in the Forest Production Zone of King County and incidental recreation use. Directly adjacent to the proposal area there are powerlines and some adjacent property use is also residential.

- b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

- 1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No.

- c. Describe any structures on the site.

None on-site; private residences are within the vicinity of this proposal.

- d. Will any structures be demolished? If so, what?

No.

- e. What is the current zoning classification of the site?

Forest.

- f. What is the current comprehensive plan designation of the site?

Forest Production and Recreation.

- g. If applicable, what is the current shoreline master program designation of the site?

Does not apply.

- h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

No.

- i. Approximately how many people would reside or work in the completed project?

None.

- j. Approximately how many people would the completed project displace?

None.

- k. Proposed measures to avoid or reduce displacement impacts, if any:

Does not apply.

- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

None.

- m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

Native conifers will be replanted and managed as forestlands.

9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

- c. Proposed measures to reduce or control housing impacts, if any:

Does not apply.

10. Aesthetics

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No new structures will be constructed.

- b. What views in the immediate vicinity would be altered or obstructed?

- 1) *Is this proposal visible from a residential area, town, city, developed recreation site, or a scenic vista?*

No Yes, viewing location:

Proposal can be seen from the private residences around Echo Lake. Farther view-points may be limited angles from the cities of North Bend, Snoqualmie, and Preston.

- 2) *Is this proposal visible from a major transportation or designated scenic corridor (county road, state or interstate highway, US route, river, or Columbia Gorge*

SMA)?

No Yes, scenic corridor name:

Interstate 90 and State Route 18.

3) *How will this proposal affect any views described in 1) or 2) above?*

This proposal will change a fully stocked stand of trees into a harvested stand with leave trees visible in the middle-ground views from Interstate 90 and State Route 18 and nearby residences. Leave trees and riparian areas will serve to break up the view of the harvested area.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Riparian management zones adjacent to streams and placement of leave tree areas assist in minimizing visual and aesthetic impacts created by harvest activities that are within view sheds of the Interstate 90 and State Route 18 corridors, and surrounding communities to reduce negative aesthetic impacts. Reforestation will occur on the site within two years following harvest completion.

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

Does not apply.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Informal recreation in the area includes hiking, mountain bike riding, fishing, hunting, mushroom picking, kayaking and horseback riding.

b. Would the proposed project displace any existing recreational uses? If so, describe.

This project will temporarily displace mushroom pickers, who seek to forage within the proposal boundaries.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None.

13. Historic and cultural preservation

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

None observed onsite or found in a database search.

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

None known.

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

GIS data, historical maps, and field surveys were methods used to assess potential impacts to cultural resources on or near the proposal.

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

If historic or prehistoric archaeological sites or resources, or human skeletal remains are found within the proposal area during operations they will not be intentionally disturbed or moved from the site and Department of Natural Resources guidelines for inadvertent discovery of cultural resources will be followed.

14. Transportation

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

- 1) *Is it likely that this proposal will contribute to an existing safety, noise, dust, maintenance, or other transportation impact problem(s)?*

Log trucks entering and exiting at Highway 18 will contribute minimally to existing safety, noise, dust, maintenance and other transportation impact

problems.

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

No, the nearest transit stop is located in North Bend approximately 8 miles from the proposal.

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Does not apply.

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

No.

- 1) *How does this proposal impact the overall transportation system/circulation in the surrounding area, if at all?*

No measurable increase should be made to Highway 18 with the additional 15-20 vehicular trips per day that this proposal will generate during active timber harvest.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Approximately 15-20 additional vehicle round trips per day may be expected during peak operations while the project is active. The completed project will require no regular vehicular trips.

- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No.

- h. Proposed measures to reduce or control transportation impacts, if any:

None.

15. Public services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

This proposal will not result in an increased need for public services although during the proposal, wildfire would require a response from DNR and King County fire protection districts. An injury accident may require an emergency medical response. A hazardous spill may require a response from Washington Department of Ecology and/or King County.

- b. Proposed measures to reduce or control direct impacts on public services, if any.

None.

16. Utilities

a. Check utilities currently available at the site:

- electricity natural gas water refuse service telephone sanitary sewer
 septic system other: **BPA powerlines run adjacent to Units 1 and 2 of the proposal, but will not be used during proposal activity.**

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

None.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Scott L. Sargent

Name of signee Scott L. Sargent

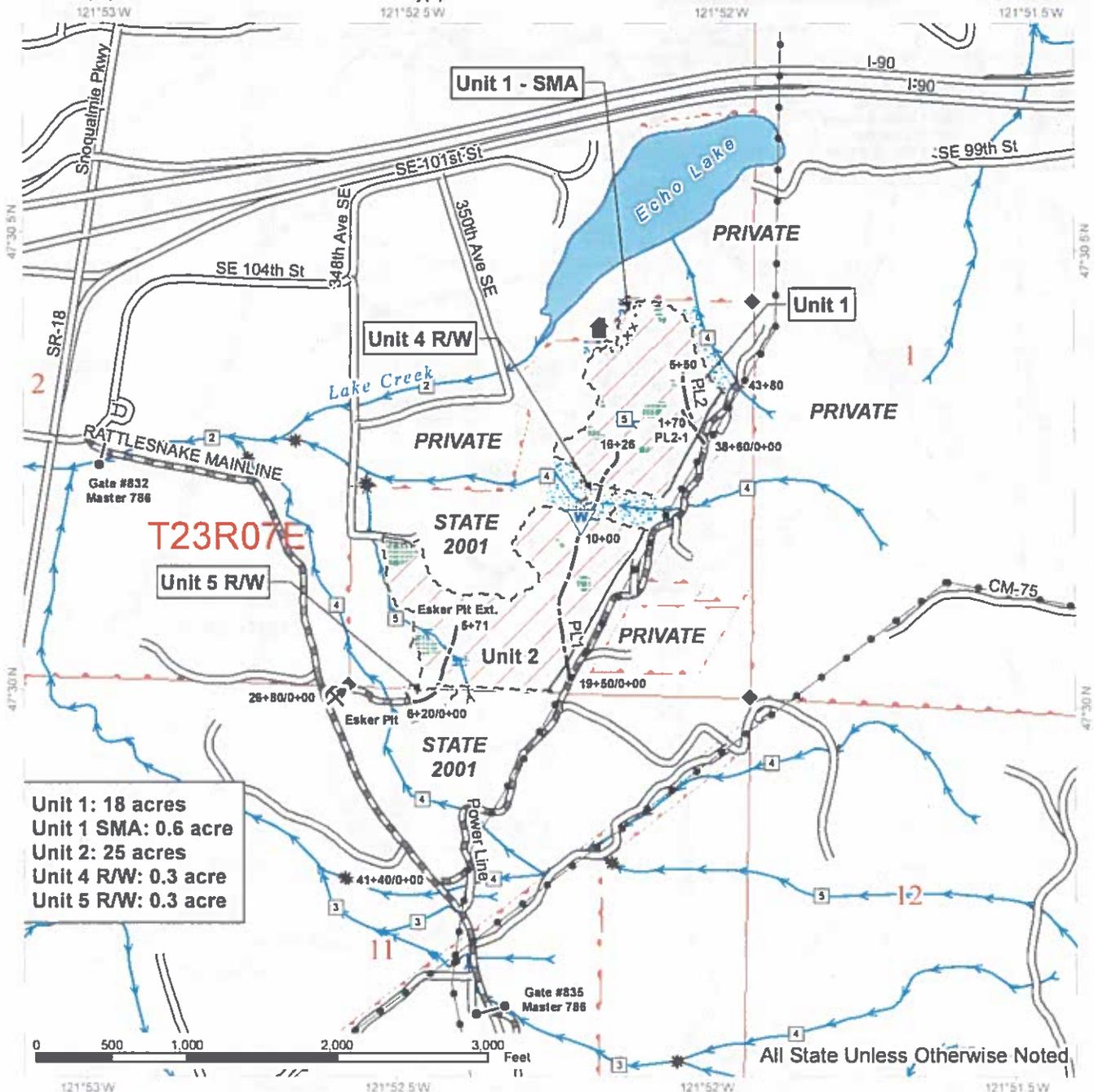
Position and Agency/Organization State Lands Assistant Region Manager

Date Submitted: 9/16/2016

TIMBER SALE MAP

SALE NAME: ECHO LAKE
AGREEMENT #: 93069
TOWNSHIP(S): T23R07E
TRUST(S): Common School and Indemnity(3)

REGION: South Puget Sound Region
COUNTY(S): KING
ELEVATION RGE: 896-1192



Unit 1: 18 acres
Unit 1 SMA: 0.6 acre
Unit 2: 25 acres
Unit 4 RW: 0.3 acre
Unit 5 RW: 0.3 acre

All State Unless Otherwise Noted

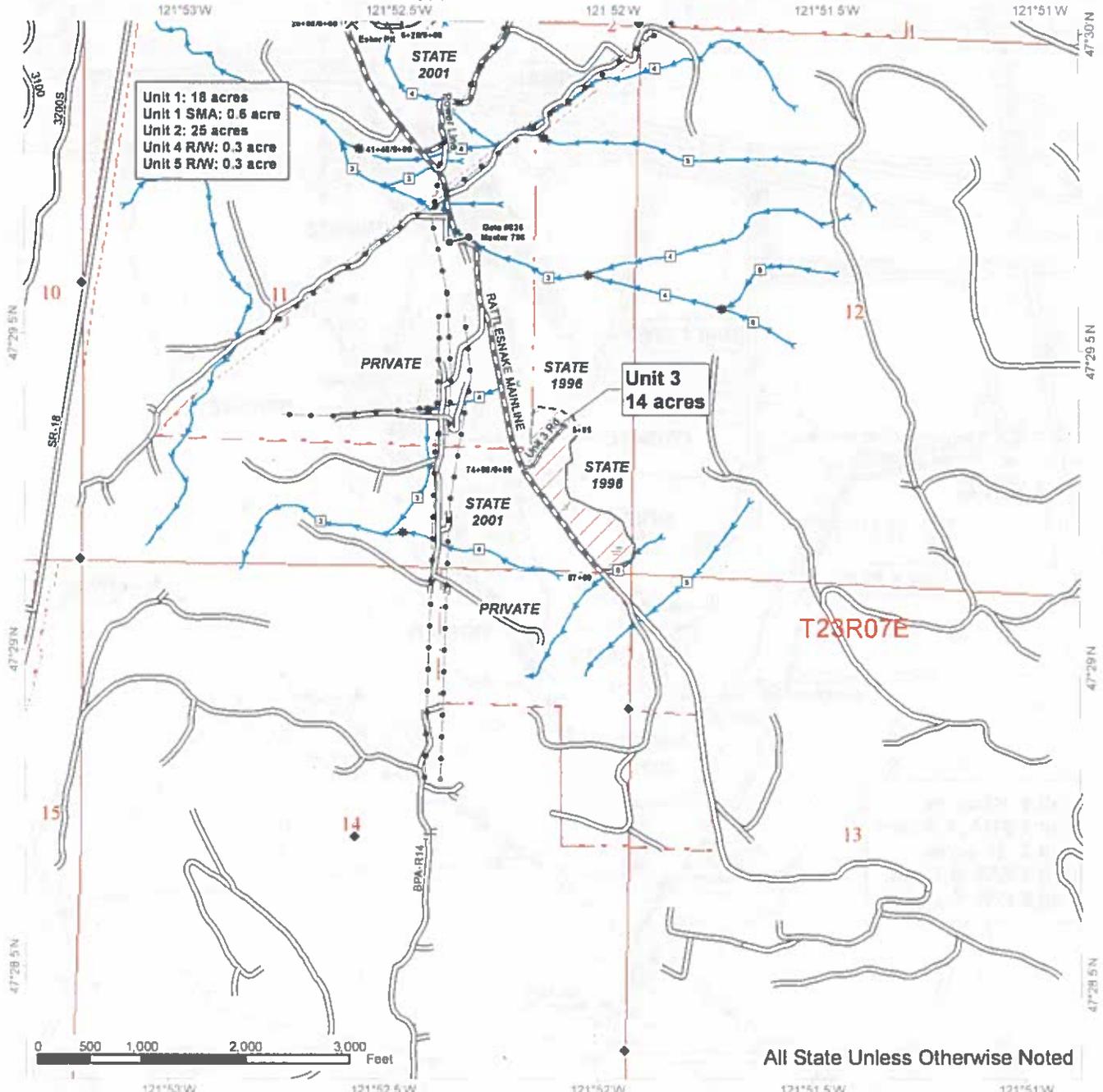
| | | | | | |
|--|----------------------------|--|-------------------------------|--|--------------------|
| | Variable Retention Harvest | | Sale Boundary Tags | | Waste Area |
| | Special Mgt Area | | Special Mgmt Area | | Structure |
| | Leave Tree Area | | Right of Way Tags | | Gate (Master 786) |
| | Riparian Mgt Zone | | Timber Type Change | | Existing Rock Pit |
| | Extreme Hazard Abatement | | Existing Roads | | Streams |
| | Open Water | | Optional Construction | | Stream Type |
| | | | Required Pre-Haul Maintenance | | Stream Type Break |
| | | | Power Lines | | Monumented Corners |



TIMBER SALE MAP

SALE NAME: ECHO LAKE
AGREEMENT #: 93069
TOWNSHIP(S): T23R07E
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All State Unless Otherwise Noted

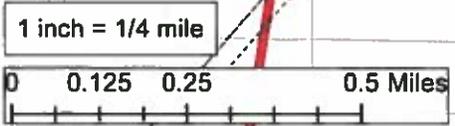
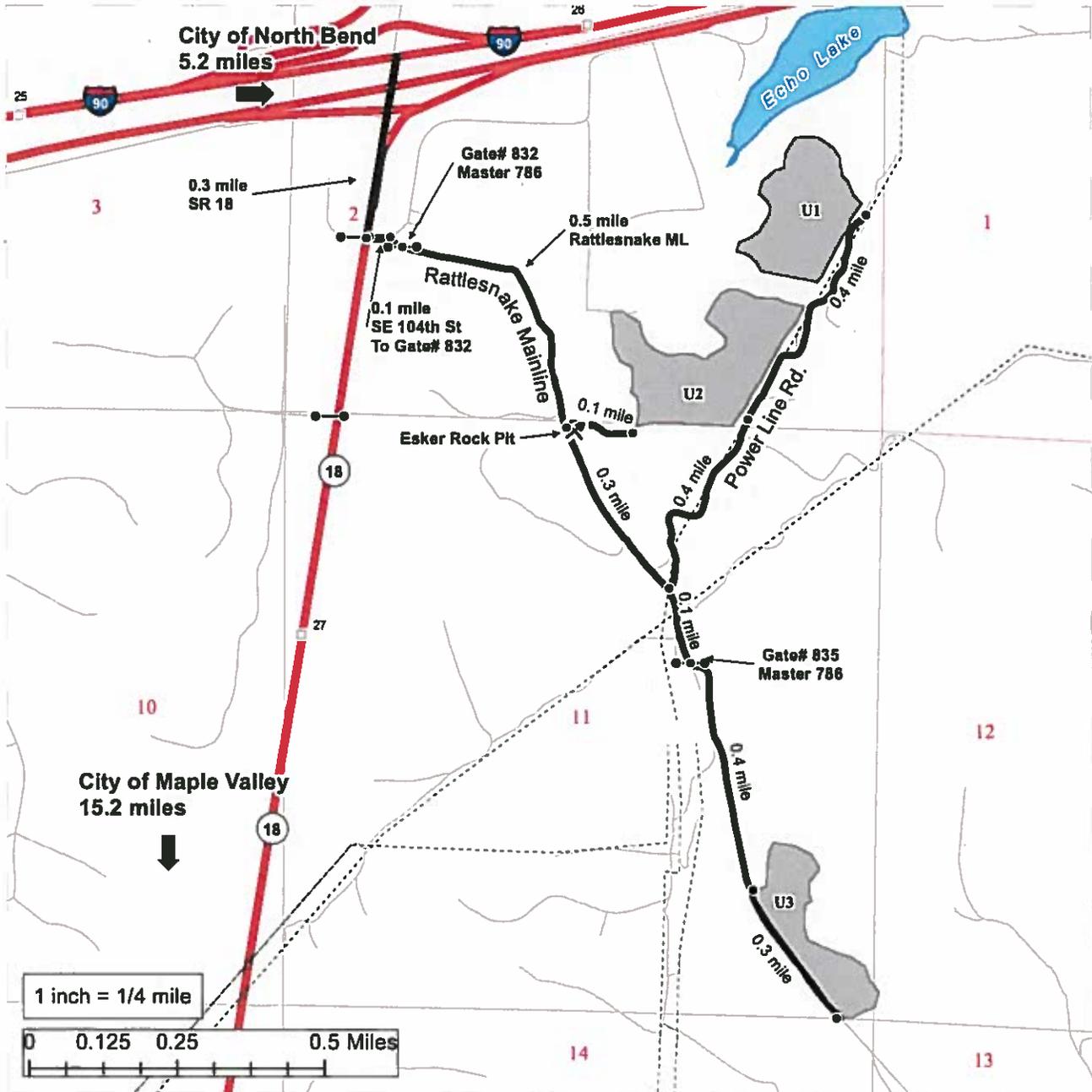
| | | | | | |
|--|----------------------------|--|-------------------------------|--|--------------------|
| | Variable Retention Harvest | | Sale Boundary Tags | | Gate (Master 786) |
| | Leave Tree Area | | Pink Flaggging | | Existing Rock Pit |
| | | | Right of Way Tags | | Streams |
| | | | Timber Type Change | | Stream Type |
| | | | Existing Roads | | Stream Type Break |
| | | | Optional Construction | | Monumented Corners |
| | | | Required Pre-Haul Maintenance | | |
| | | | Required Reconstruction | | |
| | | | Power Lines | | |



DRIVING MAP

SALE NAME: ECHO LAKE
 AGREEMENT#: 93069
 TOWNSHIP(S): T23R07E
 TRUST(S): Common School and Indemnity(3)

REGION: South Puget Sound Region
 COUNTY(S): KING
 ELEVATION RGE: 896-1192



- Timber Sale Unit
- Highways
- Haul Route
- Distance Markers
- BPA Transmission Lines
- Gate (Master 786)
- Public Land Survey Sections

DRIVING DIRECTIONS:

From Maple Valley: Take WA-18 E towards North Bend for approximately 15.2 miles. Take the last right turn onto SE 104th St before the exit for I-90. Keep right onto Rattlesnake Mainline until reaching gate #832. After 0.5 miles, turn left onto the Esker Pit Rd. This will access Esker Rock Pit and U2. For U2, follow the Mainline for 0.3 miles after the rock pit, then turn left on the Power Line Rd. U2 can also be accessed at 0.4 miles past the start of the Power Line Rd, and U1 0.4 miles further. For U3, keep on the Rattlesnake Mainline for another 0.4 miles after the Power Line Rd.

