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/state-environmental-policy-act-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: **TWAYBLADE SWT** *Agreement #* **30-094599**

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

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

Northwest Region
919 N. Township St.
Sedro-Woolley, WA 98284

Contact Person: Laurie Bergvall
Telephone: (360) 856-3500

4. Date checklist prepared: **09/28/2016**

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

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

a. *Auction Date:* **02/22/2017**
b. *Planned contract end date (but may be extended):* **09/30/2018**
c. *Phasing:* **Does not apply.**

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:*
None.

b. *Regeneration Method:*
Does not apply.

c. *Vegetation Management:*
This site will be assessed for a variable retention harvest (VRH) in 10-15 years.

d. *Thinning:*
No additional site-wide thinning treatments are expected prior to the future VRH. Portions of the RMZs may be thinned again at that time.

Roads:
The CC-ML CC-14, CC-1414, CC-1418, and the CT-ML will continue to be used for future timber sales and forest management activities. Required routine road maintenance on the haul route will be conducted at periodic intervals.

Rock Pits and/or Sale:
The Christie Hard Rock Pit will continue to be used for future timber sale road construction and road maintenance activities. Onsite rock may be used for road construction, if rock sources are discovered along haul routes or within the sale area.

Other:
Firewood from piled material, if available, may be sold following the completion of harvest activities.

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):*
South Fork of the Nooksack River, Todd Creek, Sygitowicz Creek, and Hardscrabble Creek
☐ *Landscape plan:*
☒ *Watershed analysis:* **Acme Watershed Analysis, May 1999.**
☐ *Interdisciplinary team (ID Team) report:*
☒ *Road design plan:* **See the Twayblade SWT Road Plan.**
☒ *Wildlife report:* **See Biologist's Review, dated 09/08/2016.**
☐ *Geotechnical report:*

☒ *Other specialist report(s):* **See Geologist Memo, dated 10/17/16.**
☐ *Memorandum of understanding (sportsmen's groups, neighborhood associations, tribes, etc.):*
☒ *Rock pit plan:* **See the Twayblade SWT Road Plan.**
☒ *Other:* **State Soil Survey, 1992; Policy for Sustainable Forests, December 2006; Final Habitat Conservation Plan (HCP) & Environmental Impact Statement, September 1997; Riparian Forest Restoration Strategy, 2006.**

All documents are available upon request at Northwest Region office.

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 #* ☐ *FHPA* ☐ *Burning permit* ☐ *Shoreline permit* ☐ *Incidental take permit* ☐ *Existing HPA* ☐ *Other:*

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 following acres are all approximate: 190 acres were evaluated for harvest with this proposal. 20.8 acres will remain unharvested in wetland and riparian management zones. 8.1 acres of the evaluated areas is currently existing road. The remaining 161.1 net acres will treated with a Small Wood Thinning (SWT) prescription designed to increase the commercial timber volume production of the site.

b. *Timber stand description pre-harvest (include major timber species and origin date), type of harvest, overall unit objectives.*
According to the agency's Forest Resource Inventory System, the stand was originated in 1987 although aerial photography suggests that the origin year may be 1989-1990. Timber cruise data collected for this proposal indicates that this stand currently has a basal area of 188 square feet, 232 trees per acre and an average diameter of 12.2 inches. By basal area, the stand is 69% Douglas-fir, 26% western hemlock, 4% red alder, %1 black cottonwood, and less than 1% western redcedar. This unit will be harvested with a SWT prescription that will retain approximately 160 trees per acre from the largest diameter classes.

Objectives for this sale include:

1. **Generate current revenue and increase the stand's future commercial value for state trusts.**
2. **Maintain biological productivity of the site.**
3. **Retain short and long term forest structural diversity.**
4. **Protect and maintain water quality.**
5. **Meet or exceed internal procedures derived from the Forest Practices Rules, Policy for Sustainable Forests, Riparian Forest Restoration Strategy, and the HCP.**
6. **Identify and protect historic and archaeological sites consistent with state/ federal law.**

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		-	-	-
Reconstruction		-		-
Abandonment		-	-	-
Pre-haul Maintenance		**26,154**	**9.61**	-
Bridge Install/Replace	-			-
Culvert Install/Replace (fish)	-			-
Culvert Install/Replace (no fish)	-			

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. *(See site plan and topographic maps on DNR website: http://www.dnr.wa.gov/state-environmental-policy-act-sepa Click on the DNR region under "Current SEPA Actions – Timber Sales.")*

a. *Legal description:* :
Harvest Units (and Pre-haul Road Maintenance):
Township 37 North, Range 04 East, Sections 12, 13
Township 37 North, Range 05 East. Sections 7, 18

Rock Pit:
Township 37 North, Range 05 East, Sections 34

Pre-haul Road Maintenance:
Township 37 North, Range 04 East, Sections 12, 13
Township 37 North, Range 05 East. Sections 7, 18, 19

b. *Distance and direction from nearest town (include road names):*
This proposal lies approximately 1 mile southwest of Acme, WA.

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

WAU Name	WAU Acres
ACME	**24,267**

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/state-environmental-policy-act-sepa for a broader landscape perspective.)

No cumulative change in the environment is expected from the combination of past and future activities with this proposal. This proposal as well as past and future activities either meet or surpass Forest Practices Rules by complying with the commitments of the HCP and as such protect water quality and mitigate environmental impacts.

Data in the table below was compiled from information reported in the Department's GIS database on August 31, 2016 and estimates from available GIS information on August 31, 2016.

Name of WAU	Acres	DNR Managed Acres	Federal Managed Acres	Private Managed Acres	Percent DNR Managed Land	Percent Federal Managed Land	Percent Private Managed Land
Acme WAU	**24,267**	**6,268**	**--**	**17,999**	**25.8%**	**-**	**74.2%**

Past Activities in WAU

The following table reports Forest Practices approved applications for harvest activities in the Acme WAU within the past seven years on both DNR managed lands and non-DNR lands. The data was reported in the Department's GIS database on August 31, 2016.

Name of WAU	DNR Acres Even-aged Harvested in Last 7 years	DNR Acres Uneven-aged Harvested in Last 7 Years	DNR Expected Harvest Acres Within Next 7 Years*	Private Acres Even-Aged Harvested in Last 7 Years	Private Acres Uneven-aged Harvested in Last 7 Years
Acme WAU	**197**	**0**	**1,151**	**1,319**	**167**

NOTE: This information is derived from activity locations collected by varying methods ranging from hand drawn maps to precise GPS collection. No verification of map accuracy or activity completion is conducted. Totals may not be the sum of all harvest types due to overlapping activities. The same land may be counted more than once if, in the past seven years, more than one Forest Practice application has been approved for different harvests (salvage and even-age for example). Future harvest acres for non-DNR lands are difficult to determine and are not represented in the table.
NOTE: 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.

*NOTE: * Acres include even-aged, uneven-aged and salvage. Reported harvest acres are gross acres and include multiple proposals that may not be feasible harvest areas but are simply scheduled for review and reconnaissance. No screening for slope stability, wildlife habitat, stream impacts, or other issues has been completed for these reported acres.*

Future forest management activities in this WAU will include road building, rock pit expansion, silvicultural work and timber harvesting. Activities occurring on DNR managed land will follow Forest Practices Rules, Habitat Conservation Plan (HCP) guidelines, and the Policy for Sustainable Forests – policies designed to minimize environmental impacts. Future forest management activities on privately managed, non-DNR lands will be subject to Forest Practices Rules.

The Department's Habitat Conservation Plan (HCP) outlines strategies to protect federally listed threatened and endangered species, and species that are in danger of being listed in the future, as well as uncommon habitat types found on forest lands in western Washington. HCP riparian buffers were applied to this proposal with the intent of protecting salmon and trout habitat, and will be applied to all future sales in the vicinity.

Under the Interim Strategy for the marbled murrelet in the North Puget Planning Unit, under the Department's HCP, several stands in this WAU have been deferred from timber harvest to provide habitat. The Interim Strategy also requires Department field staff to search for and delineate any "newly identified" marbled murrelet habitat in the vicinity of any proposed timber sales. These stands may be deferred from timber harvest throughout the remainder of the Interim Strategy (with occasional exceptions made to allow road and/or yarding access into non-habitat areas), and may be considered to be removed from harvest rotation for a longer period of time under the Department's yet-to-be-developed Long-Term Strategy for marbled murrelets.

No newly identified marbled murrelet habitat was found during layout activities for this proposal. The proposal is within ¼ mile of a previously delineated newly identified habitat block and a modeled potential habitat block. The habitat blocks are currently unverified. Portions of the proposal within 0.25 mile of these areas will be subject to timing restrictions during the critical nesting season. The proposal meets all requirements of the HCP's Interim Strategy.

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 South Fork Nooksack River valley, the eastern slopes of Stewart Mountain and the western slopes of the Van Zandt Dike define the Acme WAU. It is comprised of forested slopes that drain into the lower part of the South Fork Nooksack River. The elevation ranges from 216 to 3,079 feet. The climate is typical of the western slopes of the Cascade Range, with influences from Mount Baker and the Fraser River Valley. The yearly precipitation is 50 to 60 inches throughout the WAU with a 10-year, 24-hour storm event of 3 inches. The forest vegetation zone is the westside western hemlock zone with the major timber type being Douglas-fir and western redcedar with western hemlock as sub-species. A hardwood component of bigleaf maple, red alder, birch, with cottonwood present at lower elevations.

2) *Identify any difference between the proposal location and the general description of the WAU or sub-basin(s).*
None known.

b. What is the steepest slope on the site (approximate percent slope)?
70%

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.

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
4791	MONTBORNE-RINKER-COMPLEX	30-60	No Data	No Data
7506	V.COBBLY LOAM	30-60	MEDIUM	MEDIUM
8723	V.GRAVELLY LOAM	15-30	INSIGNIFIC'T	LOW
2453	SILT LOAM	3-30	INSIGNIFIC'T	LOW

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

1) Surface indications:

Inner gorge slopes are immediately adjacent to the site. The area is underlain by a very large mountain-side-scale landslide process.

Screening tools utilized during the office review include LiDAR topographic maps, orthophotographs and a review of the Forest Practices Landslide Inventory (LSI) via GIS. This landslide database is maintained by the Washington Department of Natural Resources, Forest Practices Division. The LSI includes landslides mapped during many different projects including large-scale geologic mapping, watershed analyses, landscape planning, and landslide hazard zonation, in addition to other case studies and mapping efforts. A large majority of landslides identified by these projects are mapped by remote review with minimal field verification. In addition, dormant and ancient deep-seated landslides are mapped in many projects included in the LSI. A large number of the remotely identified landslides and deep-seated features have been mapped with a questionable, probable, or unknown certainty. As a result, the LSI database is meant to be used as a screening tool and field verification is a necessary step in confirming the absence, presence, and extent of mapped features, as well as their actual level of activity/instability.

The LSI does not indicate the presence of any landslide within or immediately adjacent to the harvest area.

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:*

Shallow failures related to peak flow events along stream channels are present in both sub-basins. Sub-basin 2 contains dormant and active, deep-seated landslides along Jones Creek.

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:*

The Acme Watershed Analysis indicates a majority of the failures were shallow, rapid events usually associated with bedrock hollows and inner gorge slopes.

Associated management activity:

The past management activities include road building, clear cuts, and potentially partial cuts. Some of these failures were associated with road building and clear cut logging.

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:*

The proposal is underlain by a very large mountain-side-scale landslide process. Several inner gorges are present along streams associated with the proposal.

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

This proposal has been subject to an office and field review (09/19/2016) by a licensed engineering geologist (Forest Practices "qualified expert").

Inner gorges were excluded from the proposal. The sale area excludes any sustained steep hillslopes. The harvest unit was designed for low-pressure, ground-based equipment and operations will only occur during the driest portions of the year. No road construction is proposed. The harvest will retain a full canopy and maintain the hydrologic maturity of the stand which will result in a potential increase in ground water that is so minor, it is very unlikely to have an impact on the mountain-side-scale landslide process. Further, given that the landslide is 2 miles long and 2 miles wide and hundreds of feet thick, it is not judged to be sensitive to timber harvest. See Geologist Memo, dated October 17, 2016.

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: **0 ac** *Approx. acreage new landings:* **2.25 ac**
Fill Source: **Christie Hard Rock Pit or rock found on site.**

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

Minor erosion may occur from freshly exposed soils around landings.

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):*
Less than 2% of the site is currently in covered in permanent rocked (gravel) rock. No new or temporary road construction will occur with this proposal.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
(Include protection measures for minimizing compaction or rutting.)
The following timing and access restrictions will be applied to the project:
- **No road work or timber or rock haul occur between November 1 and May 31 or during times of heavy precipitation and/or soil saturation unless the operator formulates an adequate plan to prevent erosion from entering surface waters.**
- **No ground-based yarding operations will occur from November 1 to May 31 unless the operator formulates an adequate plan to prevent erosion from entering surface waters.**
-

The following strategies will be applied to the proposed timber harvest:
- **Riparian (RMZ) buffers as described in B.3.a.1.b. and B.3.a.1.c., will be retained.**
- **The leading end of logs will be suspended when being yarded to reduce soil disturbance.**
- **Only low-pressure ground-based equipment will be used.**
- **Ground-based equipment will be restricted to operating on sustained slopes of 40% or less.**
- **Equipment trails will be water-barred as necessary.**
- **Any potential soil erosion will be covered with straw or logging slash.**

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.

Minor amounts of road dust and equipment exhaust are expected as a result of harvest and timber hauling activities.

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

None known.

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:
Jones Creek and the South Fork of the Nooksack.

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)
Unnamed Stream	**4**	**7**	**100'**
Unnamed Stream	**5**	**8**	**0'**
Unnamed Wetland (greater than 1 acre in size)	**Forested**	**1**	**175'**

c. *List RMZ/WMZ protection measures including silvicultural prescriptions, road-related RMZ/WMZ protection measures, and wind buffers.*
Any harvest occurring in the RMZs will be related to riparian restoration activities. All existing roads through RMZs will be monitored during hauling to ensure ditchwater and road runoff will not enter or otherwise adversely affect water quality or RMZ function. Corrective action such as straw bales, silt fencing, rock-lined ditches, and sediment traps will be installed/constructed as necessary.

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):
Timber will be felled within and immediately adjacent to the WMZs and RMZs as described in the table in B.3.a.1.b. With the exception of riparian forest restoration activities related to downed wood recruitment in the RMZs, timber will be felled away from streams and wetlands where safely possible to avoid damage to residual trees, the inner zones, and to protect stream bank and wetland edge integrity. Timber will be felled and yarded away from type 5 streams where safely possible. All timber will have the leading end of the logs elevated during yarding to reduce soil disturbance near these features. Logs or other crossing structures will be utilized where skids trails will need to cross typed water. Stream crossings will only be utilized when the stream channels are dry. There are 30-foot equipment limitation zones on all typed waters within the proposal.

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.
Does not apply.

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:*
Typed waters may be temporarily diverted if culvert replacement is deemed necessary through the course of operations on typed water crossings on existing roads.

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

☒*No* ☐*Yes, describe location:*

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?*
The following tables were generated on August 29, 2016 by the Department's GIS database. Data is not available for the individual sub-basins.

Erosion Potential	Acres	% in WAU
High	5626.2	23.2
Medium	2577.4	10.6
Low	12512.4	51.6
Variable	347.3	1.4
No Data	0.0	0.0
N/A	2957.0	12.2

Mass Wasting Potential	Acres	% in WAU
High	5626.2	23.2
Medium	2202.7	9.1
Low	838.5	3.5
Insignificant	15001.6	61.8
No Data	0.0	0.0

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:*

There is evidence of minor changes and aggradation to the channels of some streams and rivers. These changes can most likely be attributed to past mass wasting and peak flow events. Debris flows or torrents have scoured some channels down to bedrock and have historically resulted in small course changes in some low gradient channel segments.

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

☐*No* ☒*Yes, explain:*
This proposal includes ground-based timber harvest. Logging equipment could cause ruts to form on heavily used skid trails which may intercept and redirect overland flow. RMZ buffers (see B.3.a.1.b) and other activities control measures (see B.1.h) ensure that any overland flow from disturbed soil areas will filter through substantial amounts of forest-floor vegetation before entering any perennial stream channels.

10) *What are the approximate road miles per square mile in the WAU and sub-basin(s)?*
The following tables were generated on August 31, 2016 by the Department's GIS database. Data is not available for the individual sub-basins.

Land Owner	Miles of Road	Miles per Square Mile
Non-DNR	102.4	2.7
DNR	56.0	1.5
Total	158.4	4.2

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:*

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.*
The following answers to SROS questions are answered using GIS data collected on August 31, 2016.

☐*No* ☒*Yes, approximate percent of sub-basin(s) in significant ROS zone:*
Acme WAU, Sub-basin 1: 12.8%
Acme WAU, Sub-basin 2: 64.6%
See B.3a.12 below for percentage of sub-basin(s) is in significant ROS zone.

Or*, approximate percent of WAU:*

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?
Hydrological maturity is not known for privately owned lands. Based on a GIS report generated in August 31, 2016:

WAU or sub-basin(s)	ROS acres:	% sub-basin in significant ROS zone	DNR hcp-managed forest land acres in ROS:	% DNR hcp-managed forest lands in ROS:	% DNR managed lands rated hydrologically mature
Acme Sub-basin 1	**356**	**12.84%**	**338**	**94.91%**	**13.72%**
Acme Sub-basin 2	**1206**	**64.55%**	**494**	**40.98%**	**46.46%**

12) *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):*
Shallow failures on steep slopes and inner-gorges have occurred along larger stream channels throughout the sub-basins. These events were likely the result of peak flow events that followed extensive clear-cut logging in the 1970's and 1980's.

13) *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.*
This proposal is not expected to cause a detrimental increase in peak flows because this harvest will retain a stand in a hydrologically mature condition.

14) 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:*

Several active deep-seated landslides have been identified in the Jones Creek drainage. Increased surface water flows could impact these landslides and accelerate/re-initiate slope movement processes.

15) *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.*
See B.3.a.2, B.3.a.1.c., and B.1.h.

As stated in B.3.a.14, this proposal is not expected to cause a damaging increase in peak flows. Culverts and ditches will be maintained so that they remain functional. Storm patrols will be conducted as necessary on existing and newly constructed roads to identify and address potential erosion problems.

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.
Groundwater will not be withdrawn.

Channelized water through ditches and culverts emptying out onto the forest floor will increase surface saturation in localized areas, but is not expected to affect ground water.

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.
Minor amounts of oil and lubricants could be inadvertently spilled as a result of heavy equipment use. None of these substances will be disposed of on site.

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:*
Deep-seated landslides may be present downslope of this proposal.

a. *Note protection measures, if any.*

See B.3.a.16. Retention of the tree canopy and maintaining a hydrologically mature stand during and after harvest will dramatically decrease any potential increase in groundwater flows.

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.
Storm water runoff from landings and road surfaces will be collected by ditches and diverted through cross drain culverts onto the forest floor. Culverts have been placed to minimize the amount of ditch water entering existing streams.

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

☐*No* ☒*Yes, describe:*
Erosion and mass wasting are unlikely, provided appropriate forest practices outlined in the timber sale contract are used during road construction and timber harvesting near all waters. Some logging slash may enter type 5 streams. Minor spills of petroleum products resulting from logging operations may occur on roads or landings but it is unlikely that any waste material could enter any surface or ground water.

a. *Note protection measures, if any.*
Existing regulations and contract requirements regarding spill prevention and waste cleanup will be followed.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
Skid trails may change surface flow drainage patterns on a very small scale.

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

Constructed ditches and cross-drain culverts will be maintained along existing roads. Drain dips and water bars will be used to control skid-trail related runoff. Straw, grass seeding, or other appropriate methods may be used on any soil exposed during the course of this proposal in order to prevent sediment movement. Roads and landings will be crowned to avoid water accumulation. Falling and yarding away from all seasonal streams will be applied where feasible. All activities associated with this proposal will meet or exceed Forest Practices standards and will follow the Habitat Conservation Plan. See also B.1.d.5 and B.1.h.

4. Plants

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

☒deciduous tree:
☒alder, ☐maple, ☐aspen, ☒*cottonwood,* ☐*western larch,* ☐*birch,* ☐other:

☒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**

☐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.)*
See A.11. Third growth conifer and hardwood forest will be thinned to 160 trees per acre with a cutting prescription that targets smaller diameter trees for harvest. Some immature trees or snags may be left unless they need to be felled for safety or operational reasons. Understory vegetation will be disturbed by logging activities.

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/state-environmental-policy-act-sepa*
(Click on the DNR region under the Topic"Current SEPA Project Actions - Timber Sales.")
The entire harvest area is surrounded by 25-75 year old conifer stands.

2) *Retention tree plan:*
An average of 160 of the dominate trees per acre will be retained across the proposal site.

c. List threatened and endangered *plant* species known to be on or near the site.
None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
None.

e. List all noxious weeds and invasive species known to be on or near the site.
None.

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: **marbled murrelet**

mammals: ☒deer, ☒bear, ☐elk, ☐beaver, ☐other:

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

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

Marbled murrelet:
One previously identified suitable habitat block has been delineated within 0.25 mile of this proposal. Another block, modeled as "potential habitat" also lies within 0.25 mile of the

proposal and has not been verified. These two habitat blocks are being treated as high quality (i.e. Criteria 3) habitat until further delineation and verification can occur. Marbled murrelet surveys of suitable habitat in this area were performed between 2004 and 2006. A single marbled murrelet was detected 0.3 miles east of the proposal, but this is not indicative of an occupied site.

b. List any threatened and endangered species known to be on or near the site *include federal- and state-listed species).*
DNR TRAX does not indicate any known threatened, endangered, or special concern species on or near the sale area.

c. Is the site part of a migration route? If so, explain.
☒ *Pacific flyway* ☐*Other migration route:* *Explain if any boxes checked:*
All of Washington State is considered part of the Pacific Flyway. No impacts are anticipated as a result of this proposal.

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

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

Species /Habitat: **Fish Habitat**
Protection Measures: **Stream protection measures listed in B.3.a.1.b. and c., B.3.a.2.; soil protection measures in B.1.h.; slope stability protection in B.1.d.5; and peak flows protection in B.3.a.16.**

Species /Habitat: **Mature Forest Components**
Protection Measures: **Retention tree plan described in B.4.b.2.**

Species/Habitat: **Marbled Murrelet**
Protection Measures: **In the areas listed in B.5.a., timing restrictions will apply to operations during the nesting season (April 1 to August 31). This restriction will prohibit operations one hour before official sunrise to two hours after official sunrise and one hour before official sunset to one hour after official sunset.**

e. List any invasive animal species known to be on or near the site.
None known.

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.
Does not apply.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
Does not apply.

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:
Does not apply.

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.
The timber sale contract contains language that addresses hazardous materials spill prevention; hazardous material spill containment, control and cleanup; and hazardous material release reporting. If any toxic or hazardous chemical spill occurs, or if past contamination is discovered, the Department of Ecology will be notified. There is minimal hazard due to heavy equipment operations. There is a potential fire hazard if operating in moderate fire weather conditions during the summer.

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.

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.
Petroleum products such as gasoline, diesel, grease, and hydraulic fluid may be used and stored during the operating life of this project.

4) Describe special emergency services that might be required.
During harvest operations there may be a short term need for the Department of Ecology approved contract Haz-Mat cleanup crews, rural fire district crews, DNR forest fire response crews and rural fire district EMTs and paramedics for responding to accidents or forest fires.

5) Proposed measures to reduce or control environmental health hazards, if any:
Compliance with state laws. Fire suppression equipment will be required on site during fire season and operations will cease if relative humidity falls below 30%. Public access may be restricted during times of high fire danger.

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.
Noise from logging equipment and log/dump trucks will increase noise levels during periods of operation on a short-term basis. Noise from harvest activity will be present in the immediate vicinity of this proposal during operations. Noise from log hauling will be present along the haul routes during operations.

3) Proposed measures to reduce or control noise impacts, if any:
Noise associated with harvest and road construction activity will be minimal anywhere but in the immediate vicinity of the proposal. Harvest activity and log hauling are historic activities in the area and noise should not be present above customary levels. Also see timing restriction as listed in B.5.d.1.

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.)*
Current use of the site and adjacent properties is commercial timber production. The proposal will not affect any current land uses.

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?
Yes, this area has been historically used for timber production. No conversion is planned.

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.

d. Will any structures be demolished? If so, what?
No.

e. What is the current zoning classification of the site?
Industrial Forestry.

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

Industrial Forestry.

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:
None.

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:
None.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
Does not apply.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
Does not apply.

c. Proposed measures to reduce or control housing impacts, if any:
None.

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?
Does not apply.

b. What views in the immediate vicinity would be altered or obstructed?
This activity will result in an evenly spaced plantation with skid trails. It is unlikely that any view will be significantly altered.

1) *Is this proposal visible from a residential area, town, city, developed recreation site, or a scenic vista?*
☐*No* ☒*Yes, viewing location:*
This site is visible from Acme, WA.

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:*
This site is visible from southbound State Route 9.

3) *How will this proposal affect any views described in 1) or 2) above?*
This proposal is not expected to alter the views listed above.

c. Proposed measures to reduce or control aesthetic impacts, if any:
None.

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Does not apply.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
Does not apply.

c. What existing off-site sources of light or glare may affect your proposal?
Does not apply.

d. Proposed measures to reduce or control light and glare impacts, if any:
None.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?
This area is used for unsanctioned ORV riding.

b. Would the proposed project displace any existing recreational uses? If so, describe.
Temporary displacement of recreational activities could occur during periods of active harvest operations.

a. 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 known. The 1921 USGS map shows a trail and two structures in the harvest area but there was no evidence of these sites found during field review. Neither the trail nor structures appear on the 1884-1885 GLO maps. They also don't appear on the 1951 edition of the USGS map.

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.
Measures include reviewing DNR TRAX reports, consulting affected tribes, reviewing historical GLO maps, USGS maps and aerial photos. The Nooksack tribe and Lummi Nation were notified of this proposal on April 28, 2016. No concerns have been raised.

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.
Should archaeological materials or cultural items be discovered during the course of operations, all work in the vicinity will be stopped and associated tribes and Department of Archaeological and Historic Preservation (DAHP) will be contacted.

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.
See A.12.b. Also see WAU and adjacency maps on the DNR website under 'SEPA CENTER".

1) *Is it likely that this proposal will contribute to an existing safety, noise, dust, maintenance, or other transportation impact problem(s)?*
No.

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?
Does not apply.

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).
Existing forest roads will be improved. See question A.11.c.

1) *How does this proposal impact the overall transportation system/circulation in the surrounding area, if at all?*
Apart from log and rock hauling traffic during the course of operations, this proposal will have minimal impact on the overall transportation system in the surrounding area.

f. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
No.

g. 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?
It is estimated that an average of 3-4 log trucks trips per day would occur during harvest and road building activities. Once the logging has been completed, no new vehicle trips are anticipated except for periodic road maintenance and stand assessments/maintenance.

h. 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.
The proposal will locally increase log and/or rock truck traffic during harvest activities.

i. 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.
No.

b. Proposed measures to reduce or control direct impacts on public services, if any.
None.

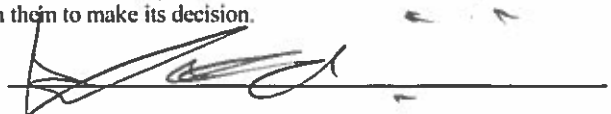
16. **Utilities**

a. Check utilities currently available at the site:
☐electricity ☐natural gas ☐water ☐ refuse service ☐telephone ☐sanitary sewer
☐septic system ☐other:

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: 

Name of signee: **Kyle Galloway**

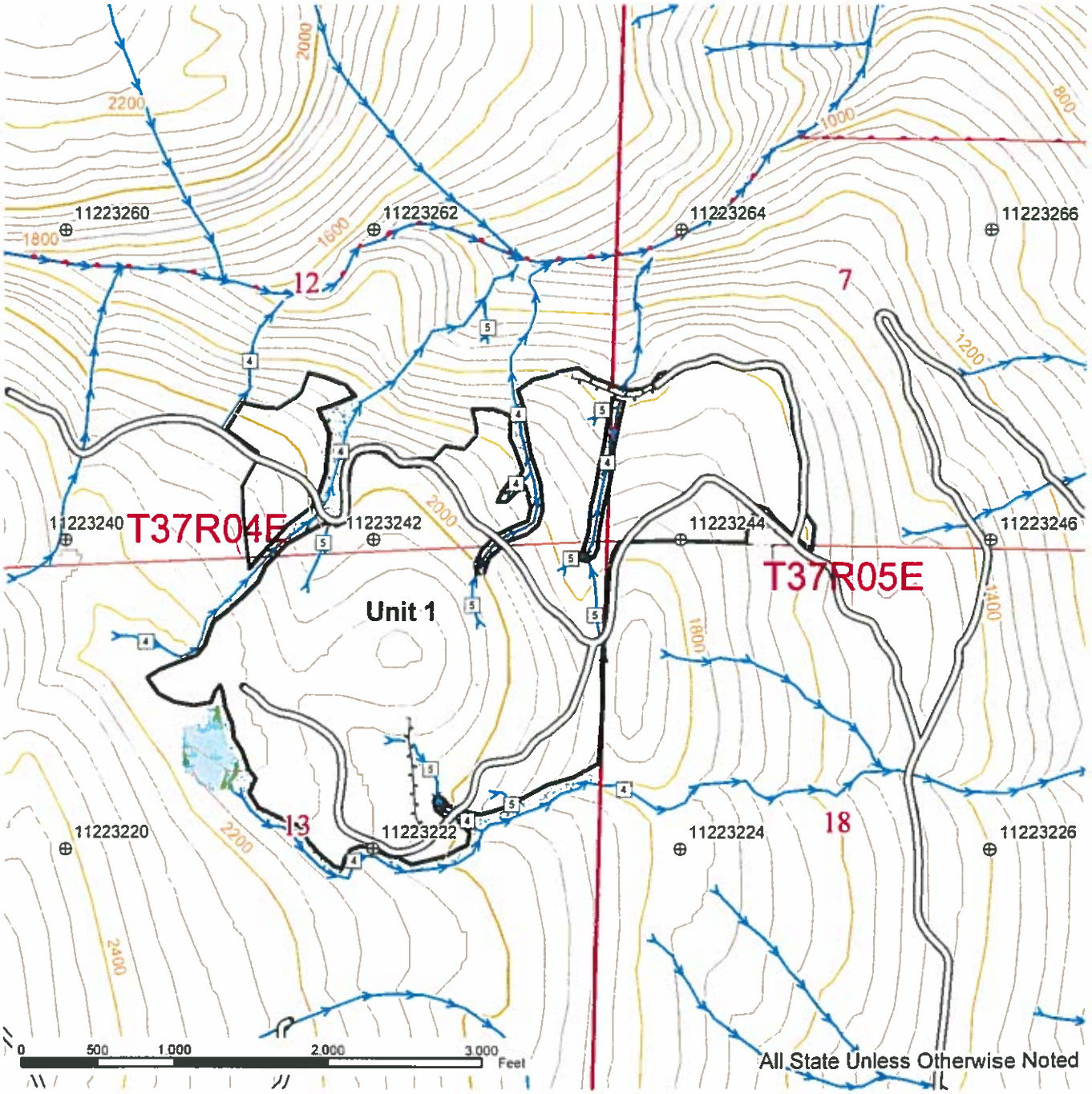
Position and Agency/Organization: **Deming Unit Forester / Washington State Department of Natural Resources**

Date Submitted: 11/14/16

FOREST PRACTICES ACTIVITY MAP

SALE NAME: TWAYBLADE SWT
APPLICATION #: None

COUNTY(S): WHATCOM
TOWNSHIP(S): T37R04E, T37R05E



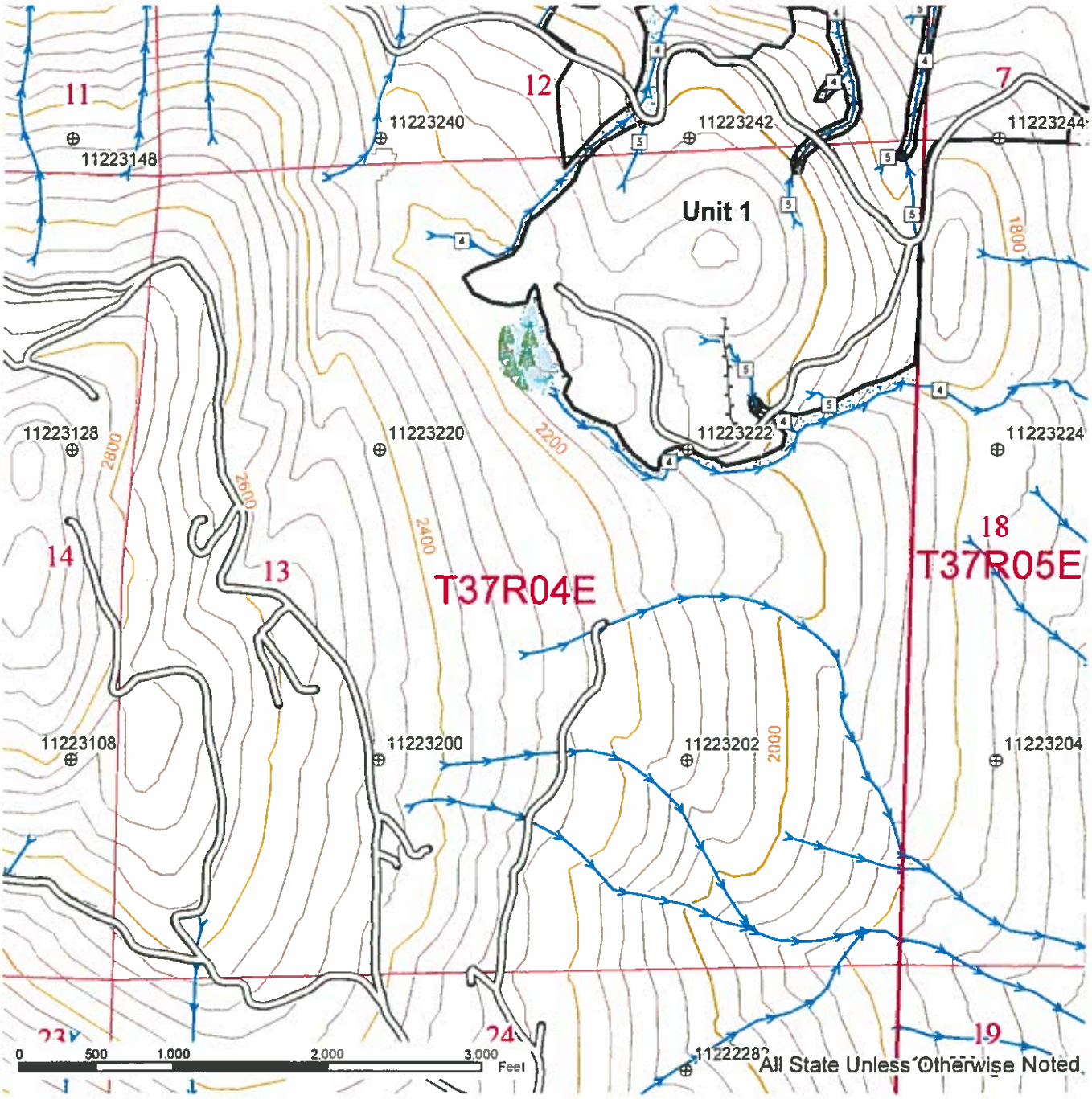
Prepared By: kgal490 08/25/2016

Modification Date: 9/28/2016

FOREST PRACTICES ACTIVITY MAP

SALE NAME: TWAYBLADE SWT
APPLICATION #: None

COUNTY(S): WHATCOM
TOWNSHIP(S): T37R04E



Harvest Unit
Forested Wetland
No-cut RMZ/WMZ
Existing Roads
Designated Skid Trail
Streams
Stream Type
Stream Type Break

N

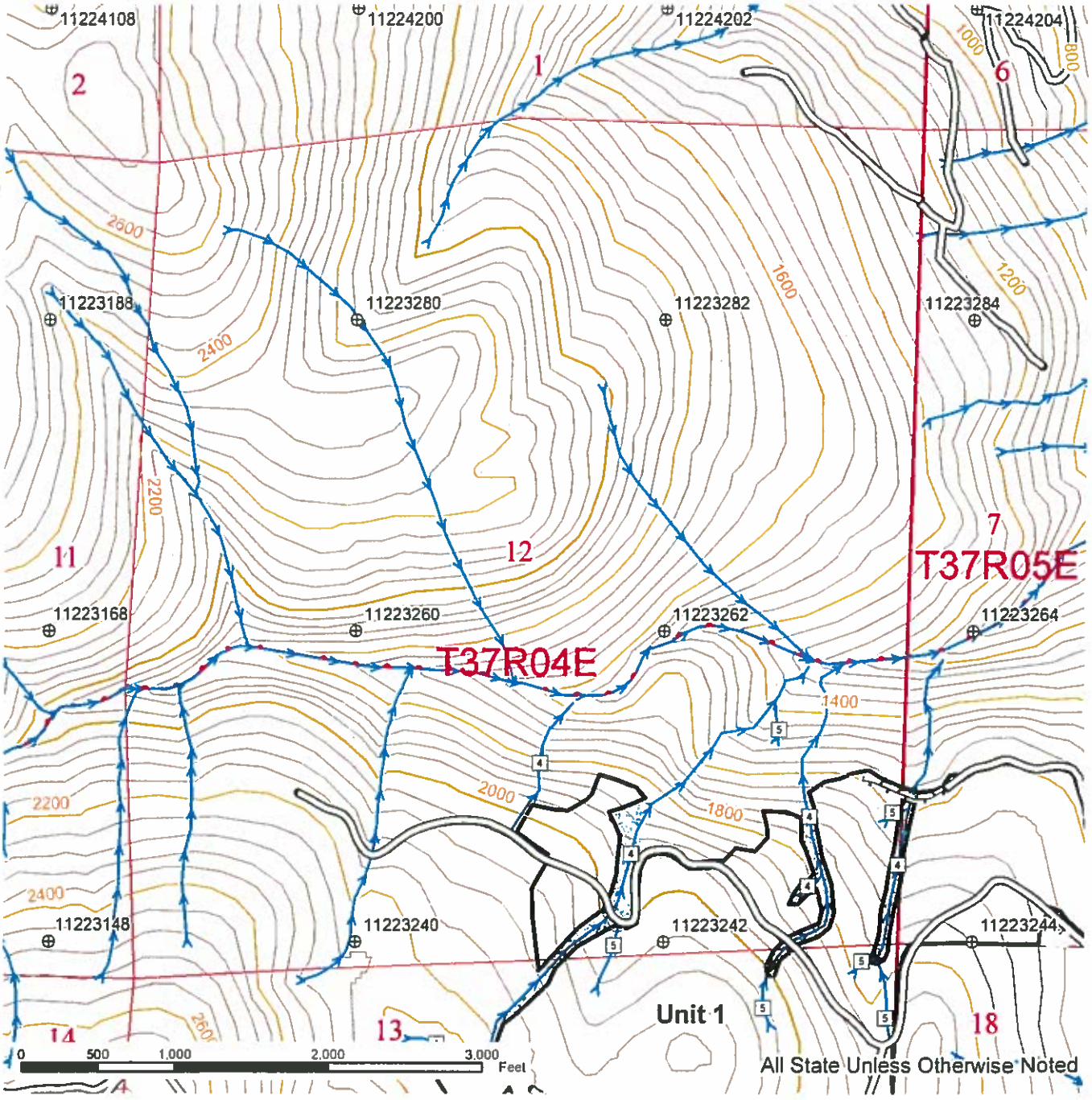
Prepared By: anss490 08/25/2016

Modification Date: 9/28/2016

FOREST PRACTICES ACTIVITY MAP

SALE NAME: TWAYBLADE SWT
APPLICATION #: None

COUNTY(S): WHATCOM
TOWNSHIP(S): T37R04E



Harvest Unit
No-cut RMZ/WMZ
Existing Roads
Designated Skid Trail
Streams
Stream Type
Stream Type Break

N

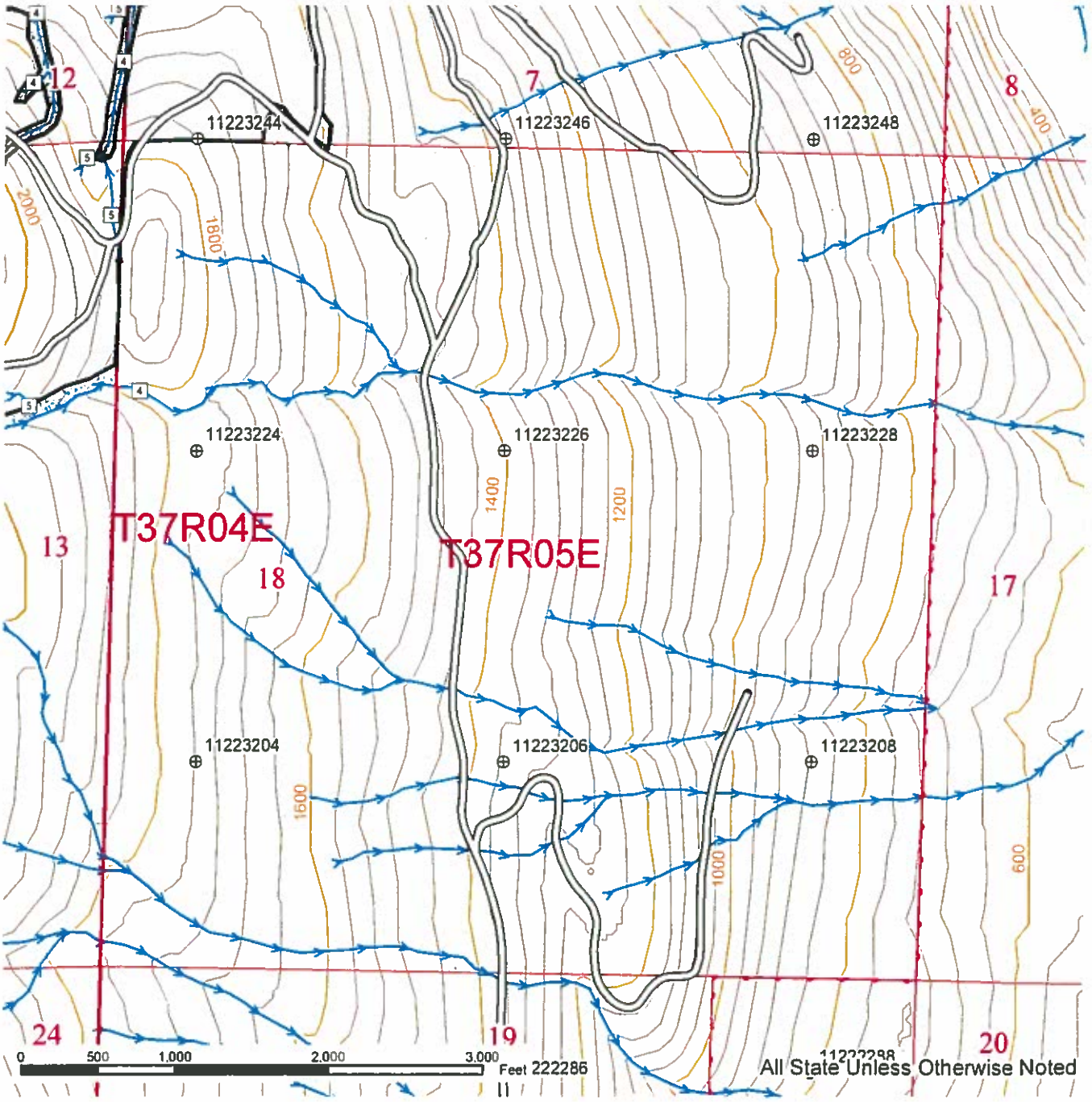
Prepared By: anss490 08/25/2016

Modification Date: 9/28/2016

FOREST PRACTICES ACTIVITY MAP

SALE NAME: TWAYBLADE SWT
APPLICATION #: None

COUNTY(S): WHATCOM
TOWNSHIP(S): T37R05E



Harvest Unit
No-cut RMZ/WMZ
Existing Roads
Streams
Stream Type
Stream Type Break

N

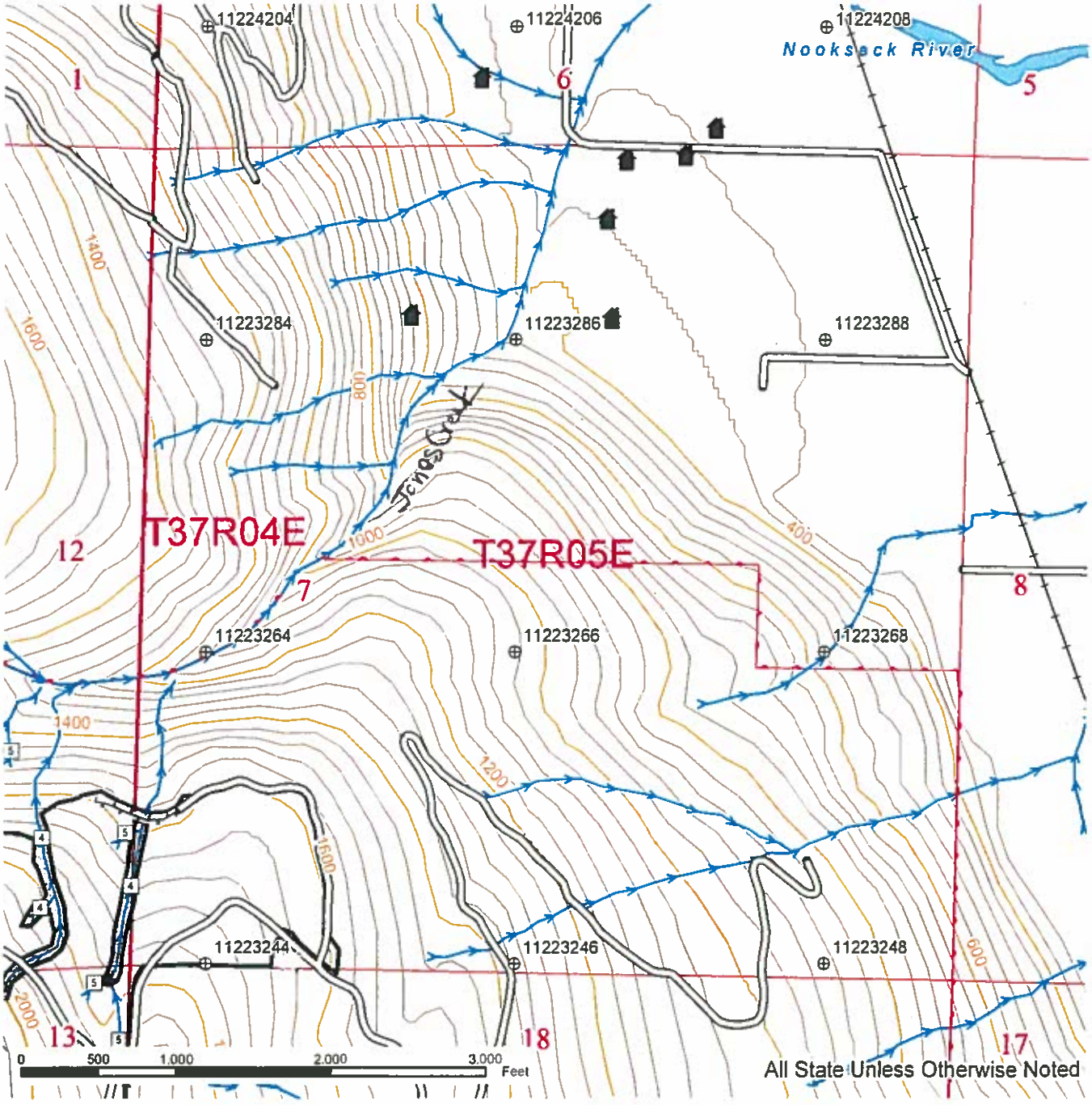
Prepared By: anss490 08/25/2016

Modification Date: 9/28/2016

FOREST PRACTICES ACTIVITY MAP

SALE NAME: TWAYBLADE SWT
APPLICATION #: None

COUNTY(S): WHATCOM
TOWNSHIP(S): T37R05E



Harvest Unit
No-cut RMZ/WMZ
Existing Roads
Designated Skid Trail
Streams
Stream Type
Stream Type Break
Structure

N

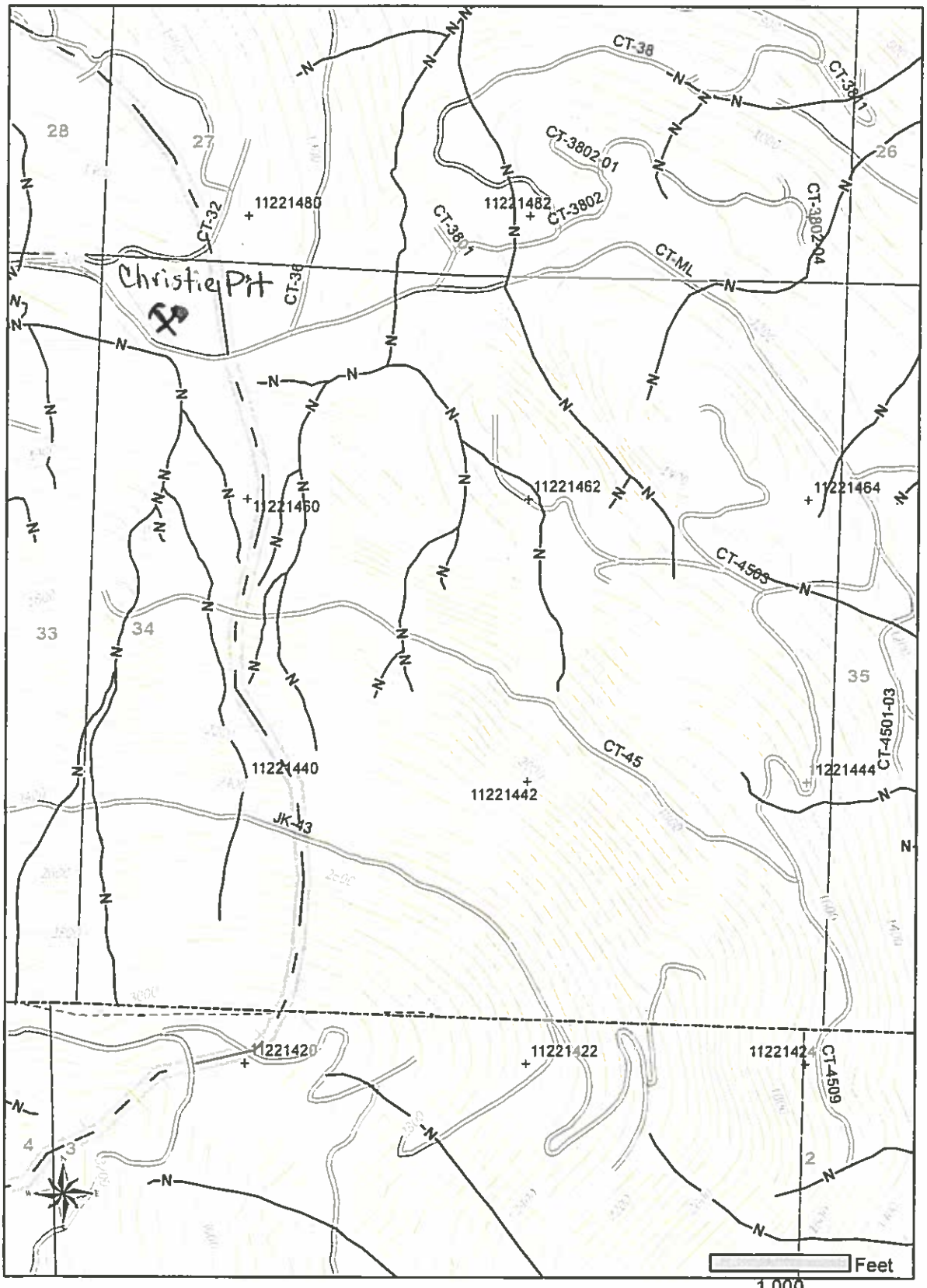
Prepared By: anss490 08/25/2016

Modification Date: 9/28/2016

FOREST PRACTICE ACTIVITY MAP

TOWNSHIP 37 NORTH HALF 0, RANGE 05 EAST (W M) HALF 0, SECTION 34

Application #: _____



Please use the legend from the FPA Instruction or provide a list of symbols used

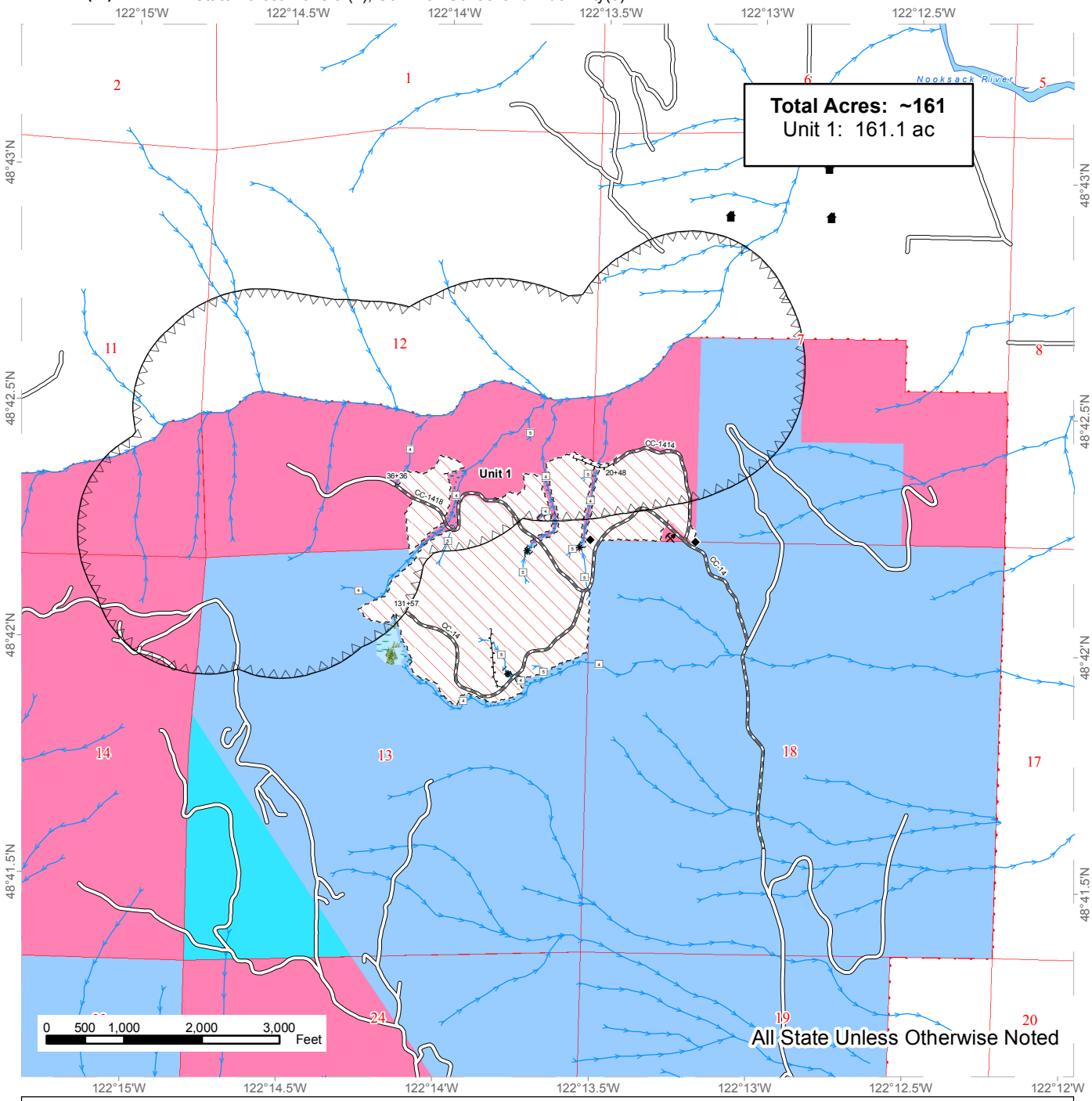
Rock pit

Date: 10/25/2016 Time: 2:36:34 PM
NAD 83
Contour Interval: 40 Feet

TIMBER SALE MAP

SALE NAME: TWAYBLADE SWT
AGREEMENT #: None
TOWNSHIP(S): T37R04E, T37R05E
TRUST(S): State Forest Transfer(1), Common School and Indemnity(3)

REGION: Northwest Region
COUNTY(S): WHATCOM
ELEVATION RGE: 1230-2201



- Small Wood Thinning
- No-cut RMZ
- Forested Wetland
- Timing Restriction
- Existing Roads
- Required Pre-Haul Maintenance
- Designated Skid Trail
- Sale Boundary Tags
- Streams
- Stream Type
- Stream Type Break
- Monumented Corners
- Structure
- Existing Rock Pit

N

Prepared By: anss490 08/25/2016

Modification Date: 9/21/2016