



TIMBER NOTICE OF SALE

SALE NAME: *TWAYBLADE Thin VRH*

AGREEMENT NO: 30-94599

AUCTION: July 26, 2023 starting at 10:00 a.m., **COUNTY:** Whatcom
Northwest Region Office, Sedro Woolley, WA

SALE LOCATION: Sale located approximately 1 miles southwest of Acme, WA.

PRODUCTS SOLD AND SALE AREA: All timber as described for removal in Schedule B bounded by white timber sale boundary tags, blue special management tags, and existing roads (CC-1414 and CC-1418 roads) in Unit #1.

All timber bounded by adjacent young stands located beyond the blue special management tags (up to the adjacent young stands edge), except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags within Unit #2.

All timber bounded by orange right-of-way tags, except that title to the timber within the right-of-way associated with areas of road construction is not conveyed to the Purchaser unless the road segment is actually constructed.

All forest products above located on part(s) of Sections 7 and 18 all in Township 37 North, Range 5 East, Sections 12 and 13 all in Township 37 North, Range 4 East, W.M., containing 178 acres, more or less.

CERTIFICATION: This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: PwC-SFIFM-513)

ESTIMATED SALE VOLUMES AND QUALITY:

Species	Avg Ring DBH	Ring Count	Total MBF	Total Tons	Price \$/Ton	MBF by Grade								
						1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	14.3	5	1,086	8,673	\$10.80				9		46	806	200	25
Hemlock	13.5		497	4,370	\$4.00						47	355	87	8
Redcedar	16.1		31	260	\$88.00							28	3	
Red alder	11		26	227	\$2.00							1	21	4
Sale Total			1,640	13,530										

MINIMUM BID: \$10.8/ton (est. value \$134,000.00) **BID METHOD:** Sealed Bids

PERFORMANCE SECURITY: \$26,800.00 **SALE TYPE:** Tonnage Scale

EXPIRATION DATE: March 31, 2026 **ALLOCATION:** Export Restricted

BIDDABLE SPECIES: Douglas fir

BID DEPOSIT: \$13,400.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.



TIMBER NOTICE OF SALE

HARVEST METHOD: Shovel (Unit #2 only), tracked forwarder, tracked skidder; also, a feller-buncher or processor may be utilized (See below for restrictions).

Purchaser must obtain prior written approval from the Contract Administrator for areas as to where to utilize feller-buncher or processor equipment prior to use in Unit #1. Equipment size must be operable within the corridor width limitations as defined in H-015 Skid Trail Requirements. If the equipment is causing excessive damage to resources, as determined by the Contract Administrator, the equipment will no longer be authorized for use. Falling and Yarding will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator (THIS PERTAINS TO GROUND-BASED EQUIPMENT ONLY) to reduce soil damage and erosion.

ROADS: 9.15 stations of required construction. 442.00 stations of required prehaul maintenance. 9.15 stations of abandonment.

Rock may be obtained from the following source(s) on State land at no charge to the Purchaser: Christie Pit at station 181+35 of the CT-ML Road.

Development of an existing rock source will involve drilling, shooting, and processing rock to generate riprap, 2-inch minus crushed rock, and 3-inch-minus ballast rock.

An estimated total quantity of rock needed for this proposal: 65 cubic yards of riprap, 2,525 cubic yards of 2-inch minus crushed rock, and 485 cubic yards of 3-inch-minus ballast rock.

Additional restrictions apply, see Remarks section below.

Road work and the hauling of rock will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation. The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation.

ACREAGE DETERMINATION

CRUISE METHOD: Acres determined by GPS traverse for units and length x width calculation for right-of-way. Cruise was conducted via variable plot sample type. Cruise acres are based on FMA (Forest Management Activity) acres including leave tree areas. Leave tree volume is not included in the cruise. See Cruise Narrative for further details. Shapefiles of units are available upon request, and on the DNR website after the BNR meeting in which the sale is presented.

FEES: \$27,880.00 is due on day of sale. \$1.08 per ton is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS:

1. The thinning portion of this timber sale was designed for cut to length harvest systems. Harvest and yarding equipment that cannot comply with the skid trail width specified in the contract will not be approved to operate in the thinning areas.
2. 100% ground-based yarding is anticipated.
3. Outer boundary of harvest area in VRH area is demarcated with blue special management tags within the sale area.
4. HQ DF noted within Unit 2. See cruise for further details.

Twayblade Schedule B
Agreement# 30-094599
Prepared by Kyle Galloway

Harvesting from the smallest diameter class first, achieve a residual stand with approximately 100 evenly spaced trees (21' x 21') per acre in Compartment A and 130 evenly spaced trees (19' x 19') per acre in Compartment B. See Schedule B Addendum Map for compartment locations.

In order of preference, take tree species should be prioritized as 1) red alder, 2) western hemlock, and 3) Douglas-fir. Trees with broken tops and little canopy, well developed spike knots, and highly sinuous forms should be prioritized for take.

Other requirements:

When operating along RMZs, the department is required to place a specific number of the largest designated take trees towards the buffered creek to serve as downed woody debris (DWD) recruitment. Requirements are as follows:

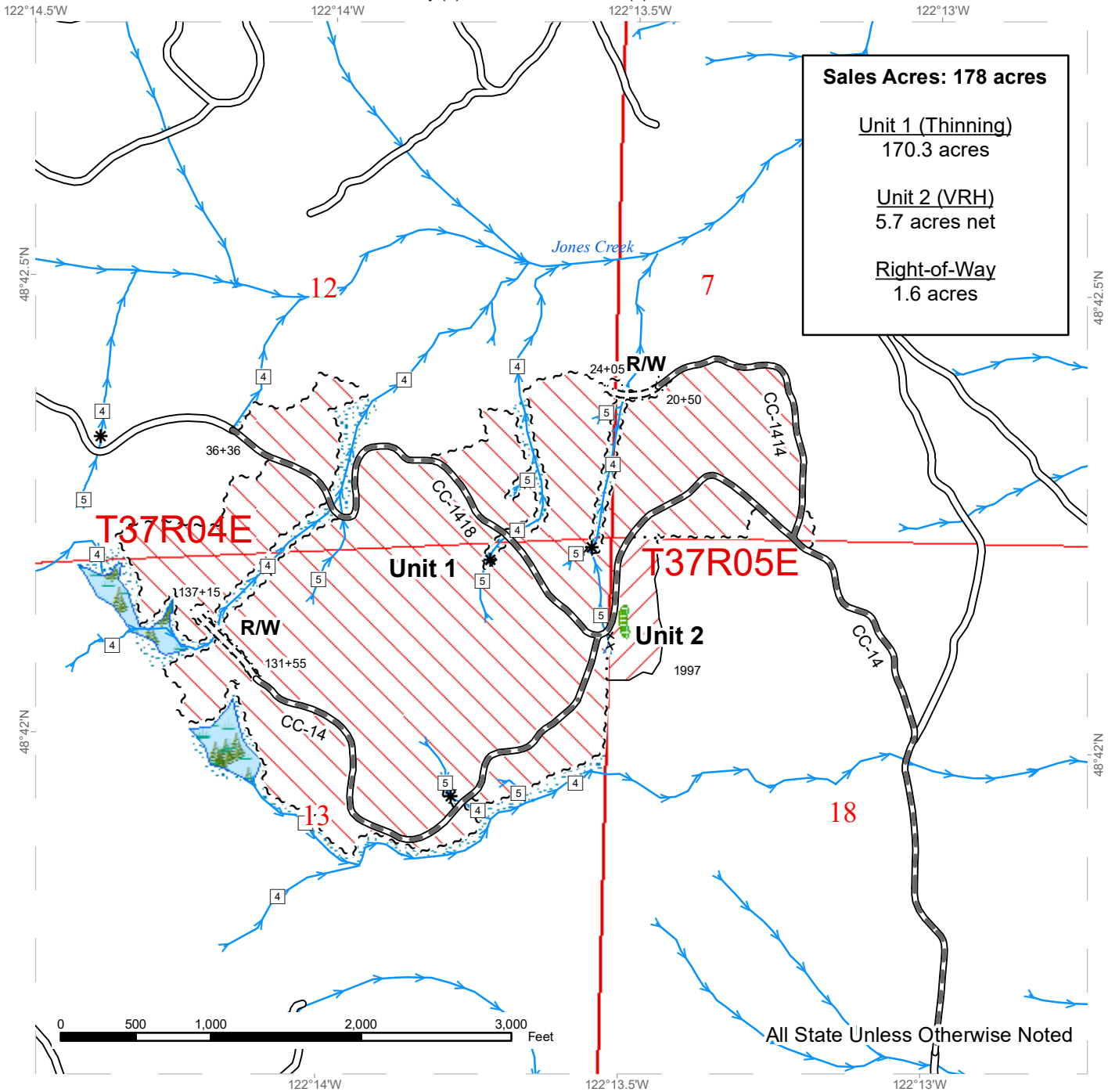
- Operator shall select one tree every 100-130 feet to be felled into the creek for DWD.
- Selected trees shall be from the largest diameter class of the designated take trees.
- DWD recruit trees shall be selected from within 25' of the timber sale boundary tags.
- The DWD recruit trees shall be marked with orange (or other bright color as agreed to by the CA) paint on the butt and paint shall be visible from the interior of the sale.

See the attached "Schedule B Addendum Map" for specific locations for the DWD recruitment areas and total number of DWD recruits required for each section of stream.

TIMBER SALE MAP

SALE NAME: TWAYBLADE
AGREEMENT #: 30-094599
TOWNSHIP(S): T37R4E, T37R5E
TRUST(S): Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Whatcom
ELEVATION RGE: 1564-2199



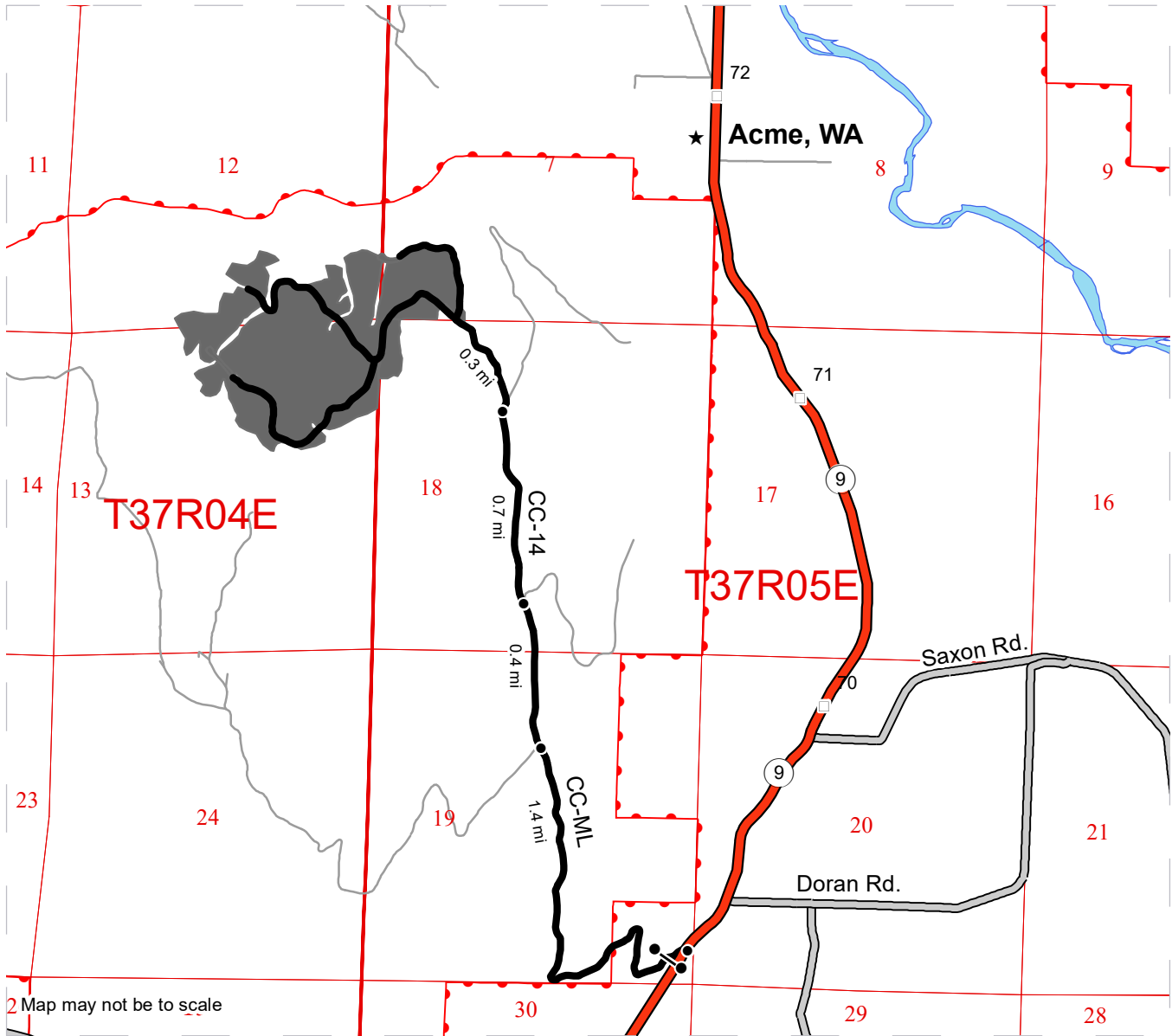
Sales Acres: 178 acres
Unit 1 (Thinning)
 170.3 acres
Unit 2 (VRH)
 5.7 acres net
Right-of-Way
 1.6 acres

- | | | |
|----------------------------|-------------------------------|-------------------|
| Variable Retention Harvest | Sale Boundary Tags | Streams |
| Thinning | Timber Type Change | Stream Type |
| Leave Tree Area | Special Mgmt Area | Stream Type Break |
| Riparian Mgt Zone | Right of Way Tags - Single | |
| Forested Wetland | Existing Roads | |
| | Required Pre-Haul Maintenance | |
| | Required Construction | |

DRIVING MAP

SALE NAME: TWAYBLADE THIN VRH
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2 Map may not be to scale

- Timber Sale Unit
- Haul Route
- Other Road
- County Road
- Highway
- Milepost Markers
- State Land
- Distance Indicator
- Gate (F1-3)
- Town

DRIVING DIRECTIONS:

To Harvest Unit:

From the intersection of Park Rd. and SR-9, head north on SR-9 for 1.2 miles and turn west onto the CC-ML. Go through the gate (accessible with an F1-3 key) and continue for 1.4 miles. At the intersection continue north (straight). The road now becomes the CC-14. Continue north on the CC-14 for 1.4 miles until you reach the harvest unit.

To Christie Hard Rock Pit: (not mapped)

From the intersection of Park Rd. and SR9, head north on SR-9 for 1.4 miles and turn east onto Doran Rd. Continue for 0.25 miles and turn south onto Innis Creek Rd. Travel 0.7 miles and turn east onto the CT-ML. Proceed through the gate (accessible with an F1-3) and continue on the CT-ML for 3.5 miles to the rock pit.



**STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES**

**BILL OF SALE AND CONTRACT FOR
FOREST PRODUCTS**

Export Restricted Tonnage Scale AGREEMENT NO. 30-094599

SALE NAME: TWAYBLADE Thin VRH

**THE STATE OF WASHINGTON DEPARTMENT OF NATURAL
RESOURCES, HEREINAFTER ACTING SOLELY, IN ITS PROPRIETARY
CAPACITY, STATE, AND PURCHASER, AGREE AS FOLLOWS:**

Section G: General Terms

G-001 Definitions

The following definitions apply throughout this contract;

Bill of Sale and Contract for Forest Products: Contract between the Purchaser and the State, which sets forth the procedures and obligations of the Purchaser in exchange for the right to remove forest products from the sale area. The Bill of Sale and Contract for Forest Products may include a Road Plan for any road construction or reconstruction, where applicable.

Contract Administrator: Region Manager's designee responsible for assuring that the contractual obligations of the Purchaser are met.

Forest Product: Any material derived from the forest for commercial use.

Purchaser: The company or individual that has entered into a Bill of Sale and Contract for Forest Products with the State for the right to harvest and remove forest products from the timber sale area.

Road Construction: Includes building new and maintaining existing forest roads and associated work that may be optional or required as described in the Road Plan.

State: The Washington State Department of Natural Resources, landowner and seller of Forest Products from the timber sale area. The State is represented by the Region Manager as designated on the contract signature page. Contractual obligations to the State are enforced by the Region Manager or the designated Contract Administrator.

Subcontractor: Individual or company employed by the Purchaser to perform a portion or all of the services required by The Bill of Sale and Contract for Forest Products. The Purchaser is responsible for independently negotiating, procuring and paying for all subcontracted services rendered.

G-010 Products Sold and Sale Area

Purchaser was the successful bidder on July 26, 2023 and the sale was confirmed on _____. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase, cut, and remove the following forest products: All timber as described for removal in Schedule B bounded by white timber sale boundary tags, blue special management tags, and existing roads (CC-1414 and CC-1418 roads) in Unit #1.

All timber bounded by adjacent young stands located beyond the blue special management tags (up to the adjacent young stands edge), except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags within Unit #2.

All timber bounded by orange right-of-way tags, except that title to the timber within the right-of-way associated with areas of road construction is not conveyed to the Purchaser unless the road segment is actually constructed., located on approximately 178 acres on part(s) of Sections 7, and 18 all in Township 37 North, Range 5 East, Sections 12, and 13 all in Township 37 North, Range 4 East W.M. in Whatcom County(s) as shown on the attached timber sale map and as designated on the sale area.

All forest products described above from the bole of the tree that meet or exceed 2 inches diameter inside bark on the small end are eligible for removal. Above ground components of a tree that remain as by-products after the manufacture of logs, including but not limited to tree tops, branches, limbs, needles, leaves, stumps, are not eligible for removal under the terms of this contract.

Forest products purchased under a contract that is designated as export restricted shall not be exported until processed. Forest products purchased under a contract that is designated as exportable may be exported prior to processing.

G-020 Inspection By Purchaser

Purchaser hereby warrants to the State that they have had an opportunity to fully inspect the sale area and the forest products being sold. Purchaser further warrants to the State that they enter this contract based solely upon their own judgment of the value of the forest products, formed after their own examination and inspection of both the timber sale area and the forest products being sold. Purchaser also warrants to the State that they enter this contract without any reliance upon the volume estimates, acreage estimates, appraisals, pre-bid documentation, or any other representations by the State Department of Natural Resources.

G-025 Schedules

The following attached schedules are hereby incorporated by reference:

Schedule	Title
B	Thinning Prescription
D	Schedule D Map

G-030 Contract Term

Purchaser shall remove the forest products conveyed and complete all work required by this contract prior to March 31, 2026.

G-040 Contract Term Adjustment - No Payment

Purchaser may request an adjustment in the contract term. A claim must be submitted in writing and received by the State within 30 days after the start of interruption or delay. The claim must also indicate the actual or anticipated length of interruption or delay. The State may grant an adjustment without charge only if the cause for contract term adjustment is beyond Purchaser's control. The cause must be one of the following and the adjustment may be granted only if operations or planned operations under this contract are actually interrupted or delayed:

- a. Road and bridge failures which deny access.
- b. Access road closures imposed by road owner.
- c. Excessive suspensions as provided in clause G-220.
- d. Regulatory actions not arising from Purchaser's failure to comply with this contract which will prevent timber harvest for a period less than 6 months.

G-050 Contract Term Extension - Payment

Extensions of this contract term may be granted only if, in the judgment of the State, Purchaser is acting in good faith and is endeavoring to remove the forest products conveyed. The term of this contract may be extended for a reasonable time by the State if all of the following conditions are satisfied:

- a. A written request for extension of the contract term must be received prior to the expiration date of the contract.

- b. Completion of all required roads and compliance with all contract and regulatory requirements.
- c. For the first extension, not to exceed 1 year, payment of at least 25 percent of the contract value based on the contract payment rate and advertised volume.

For the second extension, not to exceed 1 year, payment of at least 90 percent of the contract value based on the contract payment rate base and advertised volume.

The payments shall not include the initial deposit which shall be held according to the provisions of RCW 79.15.100.

- d. Payment of an amount based on 12 percent interest per annum on the unpaid portion of the timber value of the contract.

To determine the unpaid portion of the contract, multiply the contract payment rate for each item by the remaining volume for each item based on the volumes from the Timber Notice of Sale. In addition, all cash deposits that can be used for timber payments, except the initial deposit, will be deducted from the unpaid portion of the contract.

- e. Payment of \$3.00 per acre per annum for the acres on which an operating release has not been issued in Thinning areas (Unit 1). Payment of \$16.00 per acre per annum for the acres on which an operating release has not been issued in Variable Retention Harvest (VRH) areas (Unit 2).
- f. In no event will the extension charge be less than \$200.00.
- g. Extension payments are non-refundable.

G-053 Surveys - Sensitive, Threatened, Endangered Species

Whenever the State determines that a survey for sensitive, threatened, or endangered species is prudent, or when Purchaser determines a survey is prudent and the State agrees, Purchaser shall perform such surveys at Purchaser's expense and to the standards required by the State. The survey information shall be supplied to the State.

G-060 Exclusion of Warranties

The PARTIES AGREE that the IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE and ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ARE EXCLUDED from this transaction and shall not apply to the goods sold. For example, THE FOLLOWING SPECIFIC MATTERS ARE NOT WARRANTED, and are EXCLUDED from this transaction:

- a. The MERCHANTABILITY of the forest products. The use of the term "merchantable" in any document is not intended to vary the foregoing.

- b. The **CONDITION** of the forest products. The forest products will be conveyed "AS IS."
- c. The **ACREAGE** contained within any sale area. Any acreage descriptions appearing in the timber notice of sale, timber sale contract, or other documents are estimates only, provided solely for administrative and identification purposes.
- d. The **VOLUME, QUALITY, OR GRADE** of the forest products. The State neither warrants nor limits the amount of timber to be harvested. The descriptions of the forest products to be conveyed are estimates only, made solely for administrative and identification purposes.
- e. The **CORRECTNESS OF ANY SOIL OR SURFACE CONDITIONS, PRE-SALE CONSTRUCTION APPRAISALS, INVESTIGATIONS, AND ALL OTHER PRE-BID DOCUMENTS PREPARED BY OR FOR THE STATE.** These documents have been prepared for the State's appraisal purposes only.
- f. **THAT THE SALE AREA IS FREE FROM THREATENED OR ENDANGERED SPECIES** or their habitat. The State is not responsible for any interference with forestry operations that result from the presence of any threatened or endangered species, or the presence of their habitat, within the sale area.
- g. **THAT THE FORESTRY OPERATIONS** to be performed under this contract **WILL BE FREE FROM REGULATORY ACTIONS** by governmental agencies. The State is not responsible for actions to enforce regulatory laws, such as the Washington Forest Practices Act (chapter 76.09 RCW), taken by the Department of Natural Resources or any other agency that may affect the operability of this timber sale.
- h. Items contained in any other documents prepared for or by the State.

G-061 Inadvertent Discovery of Cultural Resources

Purchaser acknowledges that cultural resources as defined in WAC 222-16-010 may exist within the timber sale area and that the existence and location of such resources may be unknown at the time this contract is executed. Purchaser has a duty to exercise due care in its operations and in the event any human skeletal remains are discovered by the Purchaser or the State during the course of operations Purchaser shall immediately halt operations and notify local law enforcement in the most expeditious manner possible then notifying the Contract Administrator. In the event cultural resources are discovered by the Purchaser or the State during the course of operations Purchaser shall immediately halt operations and notify the Contract Administrator. Any potential resources shall not be removed or disturbed. Purchaser shall resume operations as directed in writing by the Contract Administrator.

G-062 Habitat Conservation Plan

The State has entered into a Habitat Conservation Plan (HCP) with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the Services) to address state trust land management issues relating to compliance with the Federal Endangered Species Act. The activities to be carried out under this contract are located within the State's HCP area and are subject to the terms and conditions of the HCP, and the Services' Incidental Take Permit Nos. TE812521-1 and 1168 (collectively referred to as ITP), or as amended hereafter by the Services. The ITP authorizes the incidental take of certain federally listed threatened and endangered species, as specified in the ITP conditions. All HCP materials, including the ITP, are available for review at the State's Regional Offices and the administrative headquarters in Olympia, Washington.

By signing this contract, Purchaser agrees to comply with the terms and conditions of the ITP, and the HCP, which shall become terms of this contract. The State agrees to authorize the lawful activities of the Purchaser carried out pursuant to this contract, PROVIDED the Purchaser remains in compliance with the terms and conditions of both the HCP and ITP. The requirements set forth in this contract are intended to comply with the terms and conditions of the HCP and ITP. Accordingly, non-compliance with the terms and conditions of the HCP and ITP will render the authorization provided in this paragraph void, be deemed a breach of the contract and may subject Purchaser to liability for violation of the Endangered Species Act.

Any modifications to the contract shall be proposed in writing by Purchaser, shall continue to meet the terms and conditions of the HCP and ITP, and shall require the prior written approval of the Region Manager before taking effect.

G-063 Incidental Take Permit Notification Requirements

- a. Purchaser shall immediately notify the Contract Administrator of new locations of permit species covered by the Incidental Take Permits (ITP) that are discovered within the area covered by the State's Habitat Conservation Plan (HCP), including, but not limited to: locations of occupied murrelet habitat; spotted owl nest sites; wolves; grizzly bears; nests, communal roosts, or feeding concentrations of bald eagles; peregrine falcon nests; Columbian white-tailed deer; Aleutian Canada geese; Oregon silverspot butterflies; and additional stream reaches found to contain bull trout. Purchaser is required to notify the Contract Administrator upon discovery of any fish species found in streams or bodies of water classified as non-fish bearing. In all circumstances, notification must occur within a 24 hour time period.
- b. Upon locating any live, dead, injured, or sick specimens of any permit species covered by the ITP, Purchaser shall immediately notify the Contract Administrator. Purchaser shall notify the Contract Administrator if there is any doubt as to the identification of a discovered permit species. Purchaser may be required to take certain actions to help the Contract Administrator safeguard the well-being of any live, injured or sick specimens of any permit species discovered, until the proper disposition of such specimens can be

determined by the Contract Administrator. Any such requirements will be explained to Purchaser by the Contract Administrator during the Pre-Work Conference. In all circumstances, notification must occur within a 24 hour time period.

- c. Purchaser shall refer to a specific ITP number, ITP TE812521-1 or ITP 1168 (copies which are located in the region office) in all correspondence and reports concerning permit activities.
- d. Provisions and requirements of the ITP shall be clearly presented and explained to Purchaser by Contract Administrator during the Pre-Work Conference as per contract clause G-330. All applicable provisions of the ITP and this schedule must be presented and clearly explained by Purchaser to all authorized officers, employees, contractors, or agents of Purchaser conducting authorized activities in the timber sale area. Any questions Purchaser may have about the ITP should be directed to the Contract Administrator.

G-064 Permits

Purchaser is responsible for obtaining any permits not already obtained by the State that relate to Purchaser's operation. Forest Practice Application / Hydraulic Project Approval permits obtained by the State shall be transferred to Purchaser. Purchaser is responsible for all permits, amendments and renewals.

G-065 Regulatory Disclaimer

The State disclaims any responsibility for, or liability relating to, regulatory actions by any government agency, including actions pursuant to the Forest Practices Act, Ch. 76.09 RCW that may affect the operability of the timber sale.

G-066 Governmental Regulatory Actions

a. Risk

Purchaser shall be responsible for any increased operational costs arising from any applicable foreign or domestic governmental regulation or order that does not cause contract performance to become commercially impracticable or that does not substantially frustrate the purpose of the contract. If impracticability or frustration results from Purchaser's failure to comply with this contract, Purchaser shall remain responsible for payment of the total contract price notwithstanding the impracticability or frustration.

b. Sale Area

When portions of the sale area become subject to a foreign or domestic governmental regulation or order that will likely prevent timber harvest for a period that will exceed the expiration date of this contract, and Purchaser has complied with this contract, the following shall apply:

- i. RCW 79.15.140 shall govern all adjustments to the contract area.

c. Adjustment of Price

The State shall adjust the total contract price by subtracting from the total contract price an amount determined in the following manner: The State shall cause the timber sale area subject to governmental regulation or order to be measured. The State shall calculate the percentage of the total sale area subject to the governmental regulation or order. The State shall reduce the total contract price by that calculated percentage. However, variations in species, value, costs, or other items pertaining to the affected sale area will be analyzed and included in the adjustment if deemed appropriate by the State. The State will further reduce the total contract price by the reasonable cost of unamortized roads Purchaser constructed but was unable to fully use for removing timber. A reduction in total contract price terminates all of the Purchaser's rights to purchase and remove the timber and all other interest in the affected sale area.

G-070 Limitation on Damage

In the event of a breach of any provision of this contract by the State, the exclusive remedy available to Purchaser will be limited to a return of the initial deposit, unapplied payments, and credit for unamortized improvements made by Purchaser. The State shall not be liable for any damages, whether direct, incidental or consequential.

G-080 Scope of State Advice

No advice by any agent, employee, or representative of the State regarding the method or manner of performing shall constitute a representation or warranty that said method, manner or result thereof will conform to the contract or be suitable for Purchaser's purposes under the contract. Purchaser's reliance on any State advice regarding the method or manner of performance shall not relieve Purchaser of any risk or obligation under the contract. Purchaser retains the final responsibility for its operations under this contract and State shall not be liable for any injuries resulting from Purchaser's reliance on any State advice regarding the method or manner of performance.

G-090 Sale Area Adjustment

The Parties may agree to adjustments in the sale area boundary. The cumulative changes to the sale area during the term of the contract shall not exceed more than four percent of the original sale area. If the sale area is increased, added forest products become a part of this contract and shall be paid for at the same rate and manner as other forest products under this contract.

G-100 Forest Products Not Designated

Any forest products not designated for removal, which must be removed in the course of operations authorized by the State, shall be approved and designated by the Contract Administrator. Added forest products become a part of this contract and shall be paid for at the same rate and manner as other forest products under this contract.

G-110 Title and Risk of Loss

Title to the forest products conveyed passes at confirmation of the sale. Purchaser bears the risk of loss of or damage to and has an insurable interest in the forest products in this contract from the time of confirmation of the sale of forest products. In the event of loss of or damage to the forest products after passage of title, whether the cause is foreseeable or unforeseeable, the forest products shall be paid for by Purchaser. Breach of this contract shall have no effect on this provision. Title to the forest products not removed from the sale area within the period specified in this contract shall revert to the State as provided in RCW 79.15.100.

G-116 Sustainable Forestry Initiative® (SFI) Certification

Forest products purchased under this contract are certified as being in conformance with the Sustainable Forestry Initiative program Standard under certificate number: PwC-SFIFM-513.

Purchaser shall have at least one person regularly on-site during active operations that have completed training according to the requirements outlined within the SFI® program Standard. Purchaser shall designate in writing the name(s) of the individual(s) who will be on-site and provide proof of their successful completion of an approved training program prior to active operations.

G-120 Responsibility for Work

All work, equipment, and materials necessary to perform this contract shall be the responsibility of Purchaser. Any damage to improvements, except as provided in clause G-121 or unless the State issues an operating release pursuant to clause G-280, shall be repaired promptly to the satisfaction of the State and at Purchaser's expense.

G-121 Exceptions

Exceptions to Purchaser's responsibility in clause G-120 shall be limited exclusively to the following. These exceptions shall not apply where road damage occurs due to Purchaser's failure to take reasonable precautions or to exercise sound forest engineering and construction practices.

The State will bear the cost to repair damages caused by a third party. In all other cases, the Purchaser shall bear responsibility for the costs as described below.

Road is defined as the road bed, including but not limited to its component parts, such as cut and fill slopes, subgrade, ditches, culverts, bridges, and cattle guards.

For the purposes of this clause, damage will be identified by the State and is defined as:

1. Failure of (a) required improvements or roads designated in clause C-050, or (b) required or optional construction completed to the point that authorization to haul has been issued;

2. Caused by a single event from forces beyond the control of Purchaser, its employees, agents, or invitees, including independent contractors; and
3. Includes, but is not limited to natural disasters such as earthquakes, volcanic eruptions, landslides, and floods.

The repair work identified by the State shall be promptly completed by Purchaser at an agreed price. The State may elect to accomplish repairs by means of State-provided resources.

For each event, Purchaser shall be solely responsible for the initial \$5,000 in repairs. For repairs in excess of \$5,000, the parties shall share equally the portion of costs between \$5,000 and \$15,000. The State shall be solely responsible for the portion of the cost of repairs that exceed \$15,000.

Nothing contained in clauses G-120 and G-121 shall be construed as relieving Purchaser of responsibility for, or damage resulting from, Purchaser's operations or negligence, nor shall Purchaser be relieved from full responsibility for making good any defective work or materials. Authorization to haul does not warrant that Purchaser built roads are free from material defect and the State may require additional work, at Purchasers expense regardless of cost, to remedy deficiencies at any time.

G-140 Indemnity

To the fullest extent permitted by law, Purchaser shall indemnify, defend and hold harmless State, agencies of State and all officials, agents and employees of State, from and against all claims arising out of or resulting from the performance of the contract. "Claim" as used in this contract means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorneys' fees, attributable for bodily injury, sickness, disease or death, or injury to or destruction of tangible property including loss of use resulting therefrom. Purchasers' obligations to indemnify, defend, and hold harmless includes any claim by Purchasers' agents, employees, representatives, or any subcontractor or its employees. Purchaser expressly agrees to indemnify, defend, and hold harmless State for any claim arising out of or incident to Purchasers' or any subcontractors' performance or failure to perform the contract. Purchasers' obligation to indemnify, defend, and hold harmless State shall not be eliminated or reduced by any actual or alleged concurrent negligence of State or its agents, agencies, employees and officials. Purchaser waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend and hold harmless State and its agencies, officials, agents or employees.

G-150 Insurance

Purchaser shall, at its cost and expense, buy and maintain insurance of the types and amounts listed below. Failure to buy and maintain the required insurance may result in a breach and/or termination of the contract at State's option. State may suspend Purchaser operations until required insurance has been secured.

All insurance and surety bonds should be issued by companies admitted to do business within the State of Washington and have a rating of A-, Class VII or better in the most recently published edition of Best's Reports. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

The State of Washington, Department of Natural Resources region office of sale origin shall be provided written notice before cancellation or non-renewal of any insurance referred to therein, in accord with the following specifications:

1. Insurers subject to Chapter 48.18 RCW (admitted and regulated by the Insurance Commissioner): The insurer shall give the State 45 days advance notice of cancellation or non-renewal. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.
2. Insurers subject to Chapter 48.15 RCW (surplus lines): The State shall be given 20 days advance notice of cancellation. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.

Before starting work, Purchaser shall furnish State of Washington, Department of Natural Resources with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements specified in the contract. Insurance coverage shall be obtained by the Purchaser prior to operations commencing and continually maintained in full force until all contract obligations have been satisfied or an operating release has been signed by the State.

Purchaser shall include all subcontractors as insured under all required insurance policies, or shall furnish separate certificates of insurance and endorsements for each subcontractor. Subcontractor(s) must comply fully with all insurance requirements stated herein. Failure of subcontractor(s) to comply with insurance requirements does not limit Purchaser's liability or responsibility.

The State of Washington, Department of Natural Resources, its elected and appointed officials, agents and employees shall be named as an additional insured via endorsement on all general liability, excess, umbrella, and property insurance policies.

All insurance provided in compliance with this contract shall be primary as to any other insurance or self-insurance programs afforded to or maintained by State. Purchaser waives all rights against State for recovery of damages to the extent these damages are covered by general liability or umbrella insurance maintained pursuant to this contract.

By requiring insurance herein, State does not represent that coverage and limits will be adequate to protect Purchaser and such coverage and limits shall not limit Purchaser's liability under the indemnities and reimbursements granted to State in this contract.

The limits of insurance, which may be increased as deemed necessary by State of Washington, Department of Natural Resources, shall not be less than as follows:

Commercial General Liability (CGL) Insurance. Purchaser shall maintain general liability (CGL) insurance, and, if necessary, commercial umbrella insurance with a limit of not less than \$1,000,000.00 per each occurrence. If such CGL insurance contains aggregate limits, the General Aggregate limit shall be at least twice the "each occurrence" limit. CGL insurance shall have products-completed operations aggregate limit of at least two times the "each occurrence" limit. CGL coverage shall include a Logging and Lumbering Endorsement (i.e. Logger's Broad-Form) to cover the events that include, but are not limited to, fire suppression expenses, accidental timber trespasses, and wildfire property damage with limits of not less than \$2,000,000.00 each occurrence.

CGL insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01 (or a substitute form providing equivalent coverage). All insurance shall cover liability arising out of premises, operations, independent contractors, products completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another party assumed in a business contract), and contain separation of insured (cross liability) condition.

Employer's Liability "Stop Gap" Insurance. Purchaser shall buy employers liability insurance, and, if necessary, commercial umbrella liability insurance with limits not less than \$1,000,000.00 each accident for bodily injury by accident or \$1,000,000.00 each employee for bodily injury by disease.

Workers' Compensation Coverage. Purchaser shall comply with all State of Washington workers' compensation statutes and regulations. Workers' compensation coverage shall be provided for all employees of Purchaser and employees of any subcontractor or sub-subcontractor. Coverage shall include bodily injury (including death) by accident or disease, which exists out of or in connection with the performance of this contract. Except as prohibited by law, Purchaser waives all rights of subrogation against State for recovery of damages to the extent they are covered by workers' compensation, employer's liability, commercial general liability, or commercial umbrella liability insurance.

If Purchaser, subcontractor or sub-subcontractor fails to comply with all State of Washington workers' compensation statutes and regulations and State incurs fines or is required by law to provide benefits to or obtain coverage for such employees, Purchaser shall indemnify State. Indemnity shall include all fines, payment of benefits to Purchaser or subcontractor employees, or their heirs or legal representatives, and the cost of effecting coverage on behalf of such employees.

Business Auto Policy (BAP). Purchaser shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit not less than \$1,000,000.00 per accident. Such insurance shall cover liability arising out of "Any

Auto". Business auto coverage shall be written on ISO form CA 00 01, or substitute liability form providing equivalent coverage. If necessary the policy shall be endorsed to provide contractual liability coverage and cover a "covered pollution cost or expense" as provided in the 1990 or later editions of CA 00 01. Purchaser waives all rights against State for the recovery of damages to the extent they are covered by business auto liability or commercial umbrella liability insurance.

G-160 Agents

The State's rights and duties will be exercised by the Region Manager at Sedro Woolley, Washington. The Region Manager will notify Purchaser in writing who is responsible for administering the contract. The Region Manager has sole authority to waive, modify, or amend the terms of this contract in the manner prescribed in clause G-180. No agent, employee, or representative of the State has any authority to bind the State to any affirmation, representation, or warranty concerning the forest products conveyed beyond the terms of this contract.

Purchaser is required to have a person on site during all operations who is authorized to receive instructions and notices from the State. Purchaser shall inform the State in writing who is authorized to receive instructions and notices from the State, and any limits to this person's authority.

G-170 Assignment and Delegation

No rights or interest in this contract shall be assigned by Purchaser without prior written permission of the State. Any attempted assignment shall be void and ineffective for all purposes unless made in conformity with this paragraph. Purchaser may perform any duty through a delegate, but Purchaser is not thereby relieved of any duty to perform or any liability. Any assignee or delegate shall be bound by the terms of the contract in the same manner as Purchaser.

G-180 Modifications

Waivers, modifications, or amendments of the terms of this contract must be in writing signed by Purchaser and the State.

G-190 Contract Complete

This contract is the final expression of the Parties' agreement. There are no understandings, agreements, or representations, expressed or implied, which are not specified in this contract.

G-200 Notice

Notices required to be given under the following clauses shall be in writing and shall be delivered to Purchaser's authorized agent or sent by certified mail to Purchaser's address of record:

G-210 Violation of Contract

G-220 State Suspends Operations

All other notices required to be given under this contract shall be in writing and delivered to the authorized agent or mailed to the Party's post office address. Purchaser agrees to notify the State of any change of address.

G-210 Violation of Contract

- a. If Purchaser violates any provision of this contract, the Contract Administrator, by written notice, may suspend those operations in violation. If the violation is capable of being remedied, Purchaser has 30 days after receipt of a suspension notice to remedy the violation. If the violation cannot be remedied (such as a violation of WAC 240-15-015) or Purchaser fails to remedy the violation within 30 days after receipt of a suspension notice, the State may terminate the rights of Purchaser under this contract and collect damages.
- b. If the contract expires pursuant to clause G-030 or G-031 without Purchaser having performed all its duties under this contract, Purchaser's right to operate is terminated and Purchaser shall not have the right to remedy the breach. This provision shall not relieve Purchaser of any payment obligations.
- c. The State has the right to remedy the breach in the absence of any indicated attempt by Purchaser or if Purchaser is unable, as determined by the State, to remedy the breach. Any expense incurred by the State shall be charged to Purchaser and shall be paid within 30 days of receipt of billing.
- d. If Purchaser's violation is a result of a failure to make a payment when due, in addition to a. and b. above, interest shall accrue on the unpaid balance at 12 percent per annum, beginning the date payment was due.

G-220 State Suspends Operations

The Contract Administrator may suspend any operation of Purchaser under this contract when the State is suffering, or there is a reasonable expectation the State will suffer environmental, monetary, or other damage if the operation is allowed to continue.

Purchaser shall be in breach of this contract if the operation continues after the suspension notice or if the operation resumes without prior approval and notice from the Contract Administrator.

Purchaser may request a modification of a suspension within 30 days of the start of suspension through the dispute resolution process in clause G-240. If this process results in a finding that the suspension exceeded the time reasonably necessary to stop or prevent damage to the State, Purchaser is entitled to request a contract term adjustment under clause G-040.

If it reasonably appears that the damage that the State is suffering, or can reasonably be expected to suffer if the operation is allowed to continue, will prevent harvest for a period that will exceed 6 months, and Purchaser has complied with this contract, the

provisions of clause G-066 shall govern just as if the harvest was prevented by an applicable foreign or domestic governmental regulation or order.

G-230 Unauthorized Activity

Any cutting, removal, or damage of forest products by Purchaser, its employees, agents, or invitees, including independent contractors, in a manner inconsistent with the terms of this contract or State law, is unauthorized. Such activity may subject Purchaser to liability for triple the value of said forest products under RCW 79.02.320 or RCW 79.02.300 and may result in prosecution under RCW 79.02.330 or other applicable statutes.

G-240 Dispute Resolution

The following procedures apply in the event of a dispute regarding interpretation or administration of this contract and the parties agree that these procedures must be followed before a lawsuit can be initiated.

- a. In the event of a dispute, Purchaser must make a written request to the Region Manager for resolution prior to seeking other relief.
- b. The Region Manager will issue a written decision on Purchaser's request within ten business days.
- c. Within ten business days of receipt of the Region Manager's decision, Purchaser may make a written request for resolution to the Deputy Supervisor - Uplands of the Department of Natural Resources.
- d. Unless otherwise agreed, a conference will be held by the Deputy Supervisor - Uplands within 30 calendar days of the receipt of Purchaser's request for review of the Region Manager's written decision. Purchaser and the Region Manager will have an opportunity to present their positions. The Deputy Supervisor - Uplands will issue a decision within a reasonable time of being presented with both Parties' positions.

G-250 Compliance with All Laws

Purchaser shall comply with all applicable statutes, regulations and laws, including, but not limited to; chapter 27.53 RCW, chapter 68.50 RCW, WAC 240-15 and WAC 296-54. Failure to comply may result in forfeiture of this contract.

G-260 Venue

This contract shall be governed by the laws of the State of Washington. In the event of a lawsuit involving this contract, venue shall be proper only in Thurston County Superior Court.

G-270 Equipment Left on State Land

All equipment owned or in the possession of Purchaser, its employees, agents, or invitees, including independent contractors, shall be removed from the sale area and other State land by the termination date of this contract. Equipment remaining

unclaimed on State land 60 days after the expiration of the contract period is subject to disposition as provided by law. Purchaser shall pay to the State all costs of moving, storing, and disposing of such equipment. The State shall not be responsible for any damages to or loss of the equipment or damage caused by the moving, storing or disposal of the equipment.

G-280 Operating Release

An operating release is a written document, signed by the State and Purchaser, indicating that Purchaser has been relieved of certain rights or responsibilities with regard to the entire or a portion of the timber sales contract. Purchaser and State may agree to an operating release for this sale, or portion of this sale, prior to the contract expiration, when all contract requirements pertaining to the release area have been satisfactorily completed. Upon issuance of a release, Purchaser's right to cut and remove forest products on the released area will terminate.

G-310 Road Use Authorization

Purchaser is authorized to use the following State roads and roads for which the State has acquired easements and road use permits; CC-ML, CC-14, CC-1414, CC-1418, and CT-ML. The State may authorize in writing the use of other roads subject to fees, restrictions, and prior rights.

G-330 Pre-work Conference

Purchaser shall arrange with the Contract Administrator to review this contract and to examine the sale area before beginning any operations. A plan of operations shall be developed and agreed upon by the Contract Administrator and Purchaser before beginning any operations. To the extent that the plan of operations is inconsistent with the contract, the terms of the contract shall prevail. State's acceptance and approval of Purchaser's plan of operations shall not be construed as any statement or warranty that the plan of operations is adequate for Purchaser's purposes or complies with applicable laws.

G-340 Preservation of Markers

Any legal land subdivision survey corners and witness objects are to be preserved. If such are destroyed or disturbed, the Purchaser shall, at the Purchaser's own expense, re-establish them through a licensed land surveyor in accordance with U.S. General Land Office standards. Corners and/or witness objects that must be disturbed or destroyed in the process of road construction or logging shall be adequately referenced and/or replaced in accordance with RCW 58.24.040(8). Such references must be approved by the Contract Administrator prior to removal of said corners and/or witness objects.

G-360 Road Use Reservation

The State shall have the right to use, without charge, all existing roads and any road constructed or reconstructed on State lands by Purchaser under this contract. The State may extend such rights to others. If the State grants such rights to others, the State shall require performance or payment, as directed by the State, for their proportionate share of maintenance based on their use.

G-370 Blocking Roads

Purchaser shall not block the CC-ML or CT-ML, unless authority is granted in writing by the Contract Administrator.

G-380 Road Easement and Road Use Permit Requirements

Purchaser agrees to comply with the terms and conditions of the attached:

Easements:

Robert W. DeHoff and Dorothy M. DeHoff, dated February 8, 1967; and US Federal Housing Commissioner, dated August 29, 1967; #55-000247.

Scott Paper Company; #55-000834; dated February 7, 1973.

A.M. Simmers and Sally Simmers; #55-001456; dated February 23, 1978.

Georgia Pacific Corporation, #55-002385, dated December 4, 1990.

Between John Hancock Mutual Life Insurance Company and Rayonier; #55-076122; dated July 24, 1997.

G-430 Open Fires

Purchaser shall not set, or allow to be set by Purchaser's employees, agents, invitees and independent contractors, any open fire at any time of the year without first obtaining permission, in writing, from the Contract Administrator.

G-450 Encumbrances

This contract and Purchaser's activities are subject to the following:

DATA MISSING

Section P: Payments and Securities

P-010 Initial Deposit

Purchaser paid DATA MISSING initial deposit, which will be maintained pursuant to RCW 79.15.100(3). If the operating authority on this contract expires without Purchaser's payment of the full amount specified in the 'Payment for Forest Products' clause, the initial deposit will be immediately forfeited to the State, and will be offset against Purchaser's remaining balance due. Any excess initial deposit funds not needed to ensure full payment of the contract price, or not needed to complete any remaining obligations of the Purchaser existing after contract expiration, will be refunded to the Purchaser.

P-024 Payment for Forest Products

Purchaser agrees to weigh all loads and pay the following rate per ton for forest products conveyed plus \$27,880.00 on day of sale and \$1.08 per ton upon removal in

fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause.

DATA MISSING

Species that are conveyed but are not listed in the table above shall be paid for at a rate to be determined by the State.

P-027 Payment for Removal of Optional Forest Products

Purchaser agrees to weigh all loads and pay the rate of \$2.00 per ton for forest products approved for removal from the sale area under clause H-157.

P-040 Weighing and Scaling Costs

Purchaser agrees to pay for all scaling and weighing costs for logs and other products sold under this contract. Purchaser also agrees to pay for all costs associated with the transmission and reporting of scale or weight data.

P-045 Guarantee of Payment

Purchaser will pay for forest products prior to cutting or will guarantee payment by posting an approved payment security. The amount of cash or payment security shall be determined by the State and shall equal or exceed the value of the cutting proposed by Purchaser.

P-052 Payment Procedure

If a third party Log and Load Reporting Service (LLRS) is required by this contract the State will compute and forward to the Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the Northwest region office on or before the date shown on the billing statement.

If a third party LLRS is not required by this contract, Purchaser shall pay for forest products removed on a monthly basis. Payments will be submitted to the office listed above on or before the fourteenth of the month following the month in which the timber was removed or, according to an alternate payment schedule as approved by the State with at least one payment each month for timber removed. The alternate payment schedule, once approved by the State, shall become part of this contract and may be changed only with written approval of the State.

Payment will be based on the contract rate multiplied by the tons (tonnage contracts) or volume (mbf contracts) removed during the month or payment period. Included with the payment will be a summary report along with all related load tickets and the corresponding certified weight tickets for the payment period. The summary report will be generated using a computer spreadsheet and list the load tickets in ascending numerical order with the corresponding ticket number and weight or volume for each load.

P-070 Payment for Products: Damage, Theft, Loss, or Mismatch

Forest products included in this agreement which are destroyed, damaged, stolen, lost, or mismatched shall be paid for by Purchaser on demand of the State. The rates contained in clause P-024 shall apply.

P-080 Payment Account Refund

Advance payments made under P-045 or P-045.2 remaining on account above the value for the charges shall be returned to Purchaser within 30 days following the final report of charges. Refunds not made within the 30 day period will accrue interest at the interest rate, as established by WAC 332-100-030, computed on a daily basis until paid.

P-090 Performance Security

Purchaser agrees to furnish, within 30 days of the confirmation date, security acceptable to the State in the amount of \$26,800.00. The Security provided shall guarantee performance of all provisions of this contract and payment of any damages caused by operations under this contract or resulting from Purchaser's noncompliance with any rule or law. Acceptable performance security may be in the form of a performance bond, irrevocable letter of credit, cash, savings or certificate of deposit account assignments, and must name the State as the obligee or beneficiary. A letter of credit must comply with Title 62A RCW, Article 5. Performance security must remain in full force over the duration of the contract length. Surety bonds issued shall conform to the issuance and rating requirements in clause G-150. The State shall retain the performance security pursuant to RCW 79.15.100. Purchaser shall not operate unless the performance security has been accepted by the State. If at any time the State decides that the security document or amount has become unsatisfactory, Purchaser agrees to suspend operations and, within 30 days of notification, to replace the security with one acceptable to the State or to supplement the amount of the existing security.

P-100 Performance Security Reduction

The State may reduce the performance security after an operating release has been issued if the State determines that adequate security exists for any remaining obligations of Purchaser.

Section L: Log Definitions and Accountability

L-060 Load Tickets

Purchaser shall complete and use load tickets as directed by the Contract Administrator and, if required, use other identification as directed by the State to ensure accounting of forest products removed from the sale area. A load ticket must be fixed, as designated by the Contract Administrator, to each truck and trailer load prior to leaving the landing.

Purchaser shall account for all load tickets issued by the Contract Administrator and return unused tickets at termination of the contract, or as otherwise required by the Contract Administrator. Unused tickets not returned shall be subject to liquidated damages per clause D-030.

The State may also treat load tickets either not accounted for or not returned as lost forest products per clause P-070. All costs associated with computing the billings for lost forest products shall be borne by Purchaser

L-071 Log and Load Reporting Service

This contract requires the use of a State approved third party Log and Load Reporting Service (LLRS). Purchaser shall ensure log volume measurement data and/or load and weight data is received by the LLRS within 1 business day of logs being measured or weighed. Purchaser agrees to pay the LLRS for log and load data supplied to the State.

If during the term of this contract, the State discontinues use of the LLRS, the State will notify the Purchaser in writing and the Purchaser will then be responsible to send log scale and/or weight information to the State.

L-110 State Approval of Log Scaling and Weighing Locations

Forest Product measurement and weighing facilities required by this contract must be approved by the State. Forest products sold under the contract which require log scaling shall be scaled, measured, or counted by a State approved third party log scaling organization. Forest products sold under the contract which require weighing shall be weighed at a location that meets Washington State Department of Agriculture approval.

Prior to forest products being hauled, the Contract Administrator must authorize in writing the use of State approved measurement and/or weighing facilities that are at or enroute to final destinations. Forest products from this sale shall be measured or weighed at facilities, which are currently approved for use by the State and are currently authorized for this sale. The State reserves the right to verify load volume and weights with State employees or contractors at the State's own expense. The State reserves the right to revoke the authorization of previously approved measurement locations.

Section H: Harvesting Operations

H-010 Cutting and Yarding Schedule

Falling and Yarding will not be permitted from November 1 to March 31 BY GROUND-BASED EQUIPMENT unless authorized in writing by the Contract Administrator.

H-011 Certification of Fallers and Yarder Operators

All persons engaged in the felling and yarding of timber must receive certification in writing from the Contract Administrator. Certification may be revoked when the Contract Administrator determines that non-compliance of leave tree selection criteria or cut tree selection criteria is occurring, or excessive damage to leave trees or skid trails is occurring.

Excessive damage for leave trees is defined in clause H-012.
Excessive damage for reserve trees is defined in clause H-013.

Excessive skid trail damage is defined in clause H-015 or H-016.

When leave tree damage exceeds the limits set forth in clause H-012, Purchaser shall be subject to liquidated damages (clause D-040).
When reserve tree damage exceeds the limits set forth in clause H-013, Purchaser shall be subject to liquidated damages (clause D-041).

H-012 Leave Tree Damage Definition

Leave trees are trees required for retention within the sale boundary. Purchaser shall protect leave trees from being cut, damaged, or removed during operations.

Leave tree damage exists when more than 5 percent of the leave trees are damaged in a unit and when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A leave tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 20 square inches.
- b. A leave tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A leave tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

If the Contract Administrator determines that a leave tree has been cut or damaged, the Purchaser may be required to pay liquidated damages for Excessive Leave Tree Damage as detailed in clause D-040.

H-013 Reserve Tree Damage Definition

Reserve trees are trees required and designated for retention within the sale boundary. Purchaser shall protect reserve trees from being cut, damaged, or removed during operations.

Reserve tree damage exists when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A reserve tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 200 square inches.
- b. A reserve tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A reserve tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

If the Contract Administrator determines that a reserve tree has been cut or damaged, the Purchaser shall provide a replacement reserve tree of like condition, size, and species within the sale unit containing the damaged leave tree, as approved by the

Contract Administrator. Purchaser may be required to pay liquidated damages for Excessive Reserve Tree Damage as detailed in clause D-041.

Removal of designated reserve trees from the sale area is unauthorized, and may invoke the use of the G-230 'Unauthorized Activity' clause. Purchaser is required to leave all cut or damaged reserve trees on site.

H-016 Skid Trail Requirements

A skid trail is defined as an area that is used for more than three passes by any equipment.

Purchaser shall comply with the following during the yarding operation:

- a. A skid trail will not exceed 12 feet in width, including rub trees.
- b. Skid trails shall not cover more than 15 percent of the total acreage on one unit.
- c. Location of the skid trails must be marked by Purchaser and approved by the Contract Administrator.
- d. Except for rub trees, skid trails shall be felled and yarded prior to the felling of adjacent timber.
- e. Rub trees shall be left standing until all timber tributary to the skid trail has been removed.
- f. Excessive soil damage is not permitted. Excessive soil damage is described in clause H-017.
- g. Purchaser will not have more than two skid trails open to active skidding at any one time. All other skid trails used for skidding timber will be closed.
- h. Once a skid trail is closed, Purchaser will not reopen a skid trail unless approved in writing by the Contract Administrator.
- i. Skid trails will be water barred at the time of completion of yarding, if required by the Contract Administrator.

Purchaser shall not deviate from the requirements set forth in this clause without prior written approval from the Contract Administrator.

H-017 Preventing Excessive Soil Disturbance

Operations may be suspended when soil rutting exceeds 8 inches as measured from the natural ground line. To reduce soil damage, the Contract Administrator may require

water bars to be constructed, grass seed to be placed on exposed soils, or other mitigation measures. Suspended operations shall not resume unless approval to do so has been given, in writing, by the Contract Administrator.

H-025 Timing Requirements for Timber Removal

All timber must be removed within 4 weeks of being felled.

H-030 Timber Falling

Trees shall be felled and logs shall be bucked to obtain the greatest practicable utilization of forest products and other valuable materials conveyed.

H-040 Purchaser Harvest Plan

Purchaser shall, as part of the plan of operations, prepare an acceptable harvest plan for sale area. The plan shall address the falling, yarding and hauling, (which shall include a formulated plan to keep slash on skid trails if a cut-to-length harvester is not used), which are part(s) of this contract. The harvest plan shall be approved by the Contract Administrator prior to beginning the harvest operation. Purchaser shall not deviate from the harvest plan without prior written approval by the Contract Administrator.

H-050 Rub Trees

Trees designated for cutting along skid trails and cable corridors shall be left standing as rub trees until all timber that is tributary to the skid trail or cable corridor has been removed.

H-052 Branding and Painting

Forest products shall be branded with a brand furnished by the State prior to removal from the landing. All purchased timber shall be branded in a manner that meets the requirements of WAC 240-15-030(2)(a)(i). All timber purchased under a contract designated as export restricted shall also be painted in a manner that meets the requirements of WAC 240-15-030(2)(a)(ii).

For pulp loads purchased under a contract designated as export restricted, Purchaser shall brand at least 3 logs with legible brands at one end. Also, 10 logs shall be painted at one end with durable red paint.

H-060 Skid Trail Locations

Locations of skid trails must be marked by Purchaser and approved by the Contract Administrator prior to the felling of timber.

H-110 Stump Height

Trees shall be cut as close to the ground as practicable. Stump height shall not exceed 12 inches in height measured on the uphill side, or 2 inches above the root collar, whichever is higher.

H-120 Harvesting Equipment

Forest products sold under this contract shall be harvested and removed using shovel (Unit #2 only), tracked forwarder, tracked skidder; also, a feller-buncher or processor may be utilized (See H-141 for restrictions). Authority to use other equipment or to

operate outside the equipment specifications detailed above must be approved in writing by the State.

H-125 Log Suspension Requirements

Lead-end suspension is required for all yarding activities.

H-130 Hauling Schedule

The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator.

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

A. The following types of equipment are considered ground-based equipment:

SHOVEL is defined as a low ground pressure track-mounted machine with hydraulic boom and grapple capable of picking up one end of the largest log 25 feet from the center of the machine.

LOG PROCESSOR/DE-LIMBER is defined as a mobile machine with a hydraulic boom capable of simultaneously bucking, delimiting and/or debarking and chipping whole trees while sitting stationary at the landing.

FELLER-BUNCHER/HARVESTER is defined as a track mounted machine with hydraulic boom and cutter head capable of felling, bucking, limbing, and decking logs in one operation.

FORWARDER is defined as a track or rubber tire machine used for transporting logs to a landing by use of a bunk with self loading boom in which logs are carried free of the ground.

TRACKED SKIDDER is defined as any tracked tractor or skidder, fixed or articulated, used to drag logs to landings. Logs are generally pulled in groups of six or less, with one end on the ground.

B. Equipment shall remain at least 30 feet from all water courses or areas of wet/soft soils, except as necessary to cross at approved locations. Temporary crossing structures that protect stream bank integrity are required for typed water crossings during harvesting and yarding operations and must be approved in writing by the Contract Administrator. Structures shall be limited to crossing points approved in writing by the Contract Administrator. Streambeds and banks shall be protected by the use of log puncheon, culvert or other approved structures at these crossing points and removed upon the completion of yarding activities.

C. When yarding and loading operations are occurring simultaneously, an additional shovel shall be required for loading to avoid extra trips to the landing. Shovel yarding

shall not be allowed to create ruts or soil puddling. Shovel routes should be dispersed to prevent creation of definable trails.

D. An on-site pre-work meeting that includes the Contract Administrator and Purchaser will be required after operations have been disrupted (leading to a cessation of operations) or operations moved off site for a period of more than two weeks before any activities resume on site.

E. Yarding equipment must operate on a mat of slash.

F. Exposed mineral soils created by falling or yarding operations with the potential to deliver sediment to any watercourse must be mulched, water-barred and/or grass seeded prior to October 1 or concurrent with operations between October 1 and March 31.

G. Purchaser shall construct additional water bars on the CC-1414 beyond the constructed portion as designated by the Contract Administrator.

Permission to do otherwise must be granted in writing by the Contract Administrator.

H-141 Additional Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

A. A timber sale prospectus map, copy of the FPA and contract must be present on site while harvest activities are occurring.

B. Purchaser must obtain prior written approval from the Contract Administrator for areas as to where to utilize feller-buncher or processor equipment prior to use in Unit 1. Equipment size must be operable within the corridor width limitations as defined in H-015 Skid Trail Requirements. If the equipment is causing excessive damage to resources, as determined by the Contract Administrator, the equipment will no longer be authorized for use.

Permission to do otherwise must be granted in writing by the State.

H-150 Required Removal of Forest Products

Purchaser shall remove from the sale area and present for scaling or weighing all forest products conveyed in the G-010 clause that meet the following minimum dimensions:

Species	Net bd ft	Log length (ft)	Log dib
All species	20	12	5

The State may treat failure to remove forest products left on the sale area that meet the above specifications as a breach of this contract. At the State's option, forest products

that meet the above specifications and are left on the sale area may be scaled for volume or measured and converted to weight by the State or a third party scaling organization and billed to Purchaser at the contract payment rate. All costs associated with scaling, measuring and computing the billing will be borne by the Purchaser.

H-160 Mismanufacture

Mismanufacture is defined as forest products remaining on the sale area that would have met the specifications in clause H-150 if bucking lengths had been varied to include such products.

The State may treat mismanufacture as a breach of this contract. At the State's option, forest products that are left on the sale area may be scaled for volume by the State or a third party scaling organization and billed to Purchaser at the contract payment rate. All costs associated with scaling and computing the billing will be borne by Purchaser.

H-180 Removal of Specialized Forest Products or Firewood

Prior to the removal of conveyed specialized forest products or firewood from the sale area, Purchaser and the State shall agree in writing to the method of accounting for/and removal of such products.

H-190 Completion of Settings

Operations begun on any setting of the sale area shall be completed before any operation begins on subsequent settings unless authorized in writing by the Contract Administrator.

H-220 Protection of Residual or Adjacent Trees

Unless otherwise specified by this contract, the Contract Administrator shall identify damaged adjacent or leave trees that shall be paid for according to clause G-230.

Section C: Construction and Maintenance

C-040 Road Plan

Road construction and associated work provisions of the Road Plan for this sale, dated 11/23/2022 are hereby made a part of this contract.

C-050 Purchaser Road Maintenance and Repair

Purchaser shall perform work at their own expense on CC-ML, CC-14, CC-1414, CC-1418, and CT-ML. All work shall be completed to the specifications detailed in the Road Plan.

C-140 Water Bars

Purchaser shall, as directed by the Contract Administrator, construct water bars across haul roads, skid trails and fire trails as necessary to control soil erosion and water pollution.

Section S: Site Preparation and Protection

S-001 Emergency Response Plan

An Emergency Response Plan (ERP) shall be provided to the Contract Administrator containing but not limited to, valid contact numbers and procedures for medical emergencies, fire, hazardous spills, forest practice violations and any unauthorized or unlawful activity on or in the vicinity of the sale area. The Contract Administrator and the State shall be promptly notified whenever an incident occurs requiring an emergency response.

The ERP must be presented for inspection at the prework meeting and kept readily available to all personnel, including subcontractors, on site during active operations.

S-010 Fire Hazardous Conditions

Purchaser acknowledges that operations under this Contract may increase the risk of fire. Purchaser shall conduct all operations under this agreement following the requirements of WAC 332-24-005 and WAC 332-24-405 and further agrees to use the highest degree of care to prevent uncontrolled fires from starting.

In the event of an uncontrolled fire, Purchaser agrees to provide equipment and personnel working at the site to safely and effectively engage in first response fire suppression activity.

Purchaser's failure to effectively engage in fire-safe operations is considered a breach and may result in suspension of operations.

S-030 Landing Debris Clean Up

Landing debris shall be disposed of in a manner approved in writing by the Contract Administrator.

S-035 Logging Debris Clean Up

Slash and debris created from harvest activities shall be treated in a manner approved in writing by the Contract Administrator.

S-050 Cessation of Operations for Low Humidity

When the humidity is 30 percent or lower on the sale area, all operations must cease unless authority to continue is granted by the State in writing.

S-060 Pump Truck or Pump Trailer

Purchaser shall provide a fully functional pump truck or pump trailer equipped to meet the specifications of WAC 332-24-005 and WAC 332-24-405 during the "closed season" or as extended by the State and shall provide trained personnel to operate this equipment on the sale area during all operating periods.

S-130 Hazardous Materials

a. Hazardous Materials and Waste - Regulatory Compliance

Purchaser is responsible for understanding and complying with all applicable local, state, and federal hazardous material/waste laws and regulations for operations conducted under this contract. Such regulations pertain to, but may not be limited to, hazardous material storage, handling and transport, personnel protection, release notification and emergency response, cleanup, and waste disposal.

Purchaser shall be responsible for restoring the site in the event of a spill or other releases of hazardous material/waste during operations conducted under this contract.

b. Hazardous Materials Spill Prevention

All operations shall be conducted in a manner that avoids the release of hazardous materials, including petroleum products, into the environment (water, air or land).

c. Hazardous Materials Spill Containment, Control and Cleanup

If safe to do so, Purchaser shall take immediate action to contain and control all hazardous material spills. Purchaser shall ensure that enough quick response spill kits capable of absorbing 10 gallons of oil, coolant, solvent or contaminated water are available on site to quickly address potential spills from any piece of equipment at all times throughout active operations. If large quantities of bulk fuel/other hazardous materials are stored on site, Purchaser must be able to effectively control a container leak and contain & recover a hazmat spill equal to the largest single on site storage container volume. (HAZWOPER reg. 29CFR 1910.120 (j) (1) (vii)).

d. Hazardous Material Release Reporting

Releases of oil or hazardous materials to the environment must be reported according to the State Department of Ecology (ECY). It is the responsibility of the Purchaser to have all emergency contact information readily available and a means of remote communication for purposes of quick notification. In the event of a spill covered in part a., the Purchaser is responsible for immediately notifying all the following:

- Department of Emergency Management at 1-800-258-5990
- National Response Center at 1-800-424-8802
- Appropriate Department of Ecology (ECY) at 1-800-645-7911
- DNR Contract Administrator

S-131 Refuse Disposal

As required by RCW 70.93, All Purchaser generated refuse shall be removed from state lands for proper disposal prior to termination of this contract. No refuse shall be burned, buried or abandoned on state forest lands. All refuse shall be transported in a manner such that it is in compliance with RCW 70.93 and all loads or loose materials shall be covered/secured such that these waste materials are properly contained during transport.

Section D: Damages

D-010 Liquidated Damages

The clauses in the DAMAGES section of this contract provide for payments by Purchaser to the State for certain breaches of the terms of this contract. These payments are agreed to as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State caused by Purchaser's breach. These liquidated damages provisions are agreed to by the State and Purchaser with the understanding of the difficulty of proving loss and the inconvenience or infeasibility of obtaining an adequate remedy. These liquidated damages provisions provide greater certainty for the Purchaser by allowing the Purchaser to better assess its responsibilities under the contract.

D-021 Failure to Remove Forest Products

Purchaser's failure to remove all or part of the forest products sold in this agreement prior to the expiration of the contract term results in substantial injury to the State. The value of the forest products sold at the time of breach is not readily ascertainable. Purchaser's failure to perform disrupts the State's management plans, the actual cost of which is difficult to assess. A resale involves additional time and expense and is not an adequate remedy. Therefore, Purchaser agrees to pay the State as liquidated damages a sum calculated using the following formula:

$$LD = .35V-ID-P+C+A$$

Where:

LD = Liquidated Damage value.

V = The unremoved value at the date of breach of contract. The value is determined by subtracting the removal tonnage to date from the cruised tonnage multiplied by the contract bid rates.

ID = Initial Deposit paid at date of contract that has not been applied to timber payments.

P = Advance payments received but not yet applied to specific contract requirements.

C = Charges assessed for contract requirements completed prior to breach of contract but not paid for.

A = Administrative Fee = \$2,500.00.

The above formula reflects the Purchaser's forfeiture of the initial deposit in accordance with clause P-010 by deducting the initial deposit from the amount owed. In no event shall the liquidated damages be less than zero. Interest on the liquidated damage is owed from the date of breach until final payment, calculated using the following formula: $\text{Interest} = r \times \text{LD} \times N$.

Where:

r = daily equivalent of an annual interest at current interest rate as established by WAC 332-100-030.

LD = Liquidated damage value.

N = Number of days from date of breach to date payment is received.

D-030 Inadequate Log Accountability

Removal of forest products from the sale area without adequate branding and/or valid load tickets attached to the load and scaling forest products in a location other than the facility approved by the State can result in substantial injury to the State. Failure to properly account for loads and scaling and/or weighing information can result in loss to the State. The potential loss from not having proper branding, ticketing, scaling and/or weighing location and accountability is not readily ascertainable. Purchaser's failure to perform results in a loss of log weight and scale accountability, increases the potential for unauthorized removal of forest products, and increases the State's administration costs, the actual costs of which are difficult to assess.

Enforcement actions for unauthorized removal of forest products for each improperly branded load, improperly ticketed load, lost or unaccounted for tickets, or use of a facility not authorized for this sale or improper submission of scaling data are impractical, expensive, time consuming and are not an adequate remedy. Therefore, Purchaser agrees to pay the State, as liquidated damages, a sum of \$100 each time a load of logs does not have branding as required in the contract, \$250 each time a load of logs does not have a load ticket as required by the contract, \$250 each time a load ticket has not been filled out as required by the plan of operations, \$250 each time a load is weighed or scaled at a location not approved as required under this contract, \$250 each time a log ticket summary report is not submitted properly, and if a third party Log and Load Reporting Service is required, \$250 each time scaling or weight data is not properly submitted to the Log and Load Reporting Service per clause L-071, and \$250 each unused ticket that is not returned to the State, for any reason.

D-040 Leave Tree Excessive Damage

When Purchaser's operations exceed the damage limits set forth in clause H-012, Leave Tree Damage Definition, the trees damaged result in substantial injury to the State. The value of the damaged leave trees at the time of the breach is not readily ascertainable.

Therefore, Purchaser agrees to pay the State as liquidated damages at the rate of \$250.00 per tree for all damaged trees in the Variable Density Thinning areas.

D-041 Reserve Tree Excessive Damage

When Purchaser’s operations exceed the damage limits set forth in clause H-013, Reserve Tree Damage Definition, and when the Contract Administrator determines that a suitable replacement for a damaged reserve tree is not possible, the damaged trees result in substantial injury to the State. The value of the damaged reserve trees at the time of the breach is not readily ascertainable. Therefore, the Purchaser agrees to pay the State as liquidated damages at the rate of \$1,000.00 per tree for all damaged reserve trees that are not replaced in the Variable Retention Harvest areas.

SIGNATURES

This agreement may be executed in any number of counterparts (including by electronic mail in portable document format (.pdf), or by facsimile) each of which shall be deemed an original but all of which, when taken together, shall constitute one and the same Agreement binding on all parties.

IN WITNESS WHEREOF, the Parties hereto have entered into this contract.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Purchaser

Jay Guthrie

Print Name

Northwest Region Manager

Date: _____

Date: _____

Address:

CORPORATE ACKNOWLEDGEMENT
(Required for both LLC and Inc. Entities)

STATE OF _____)

COUNTY OF _____)

On this _____ day of _____, 20____, before me personally appeared _____

_____ to me known to be the _____ of the corporation that executed the within and foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned, and on oath stated that (he/she was) (they were) authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Notary Public in and for the State of

My appointment expires _____

Schedule B
Thinning Prescription

Harvesting from the smallest diameter class first, achieve a residual stand with approximately 100 evenly spaced trees (21' x 21') per acre in Compartment A and 130 evenly spaced trees (19' x 19') per acre in Compartment B. See Schedule D Map for compartment locations.

In order of preference, take tree species should be prioritized as 1) red alder, 2) western hemlock, and 3) Douglas-fir. Trees with broken tops and little canopy, well developed spike knots, and highly sinuous forms should be prioritized for take.

OTHER REQUIREMENTS

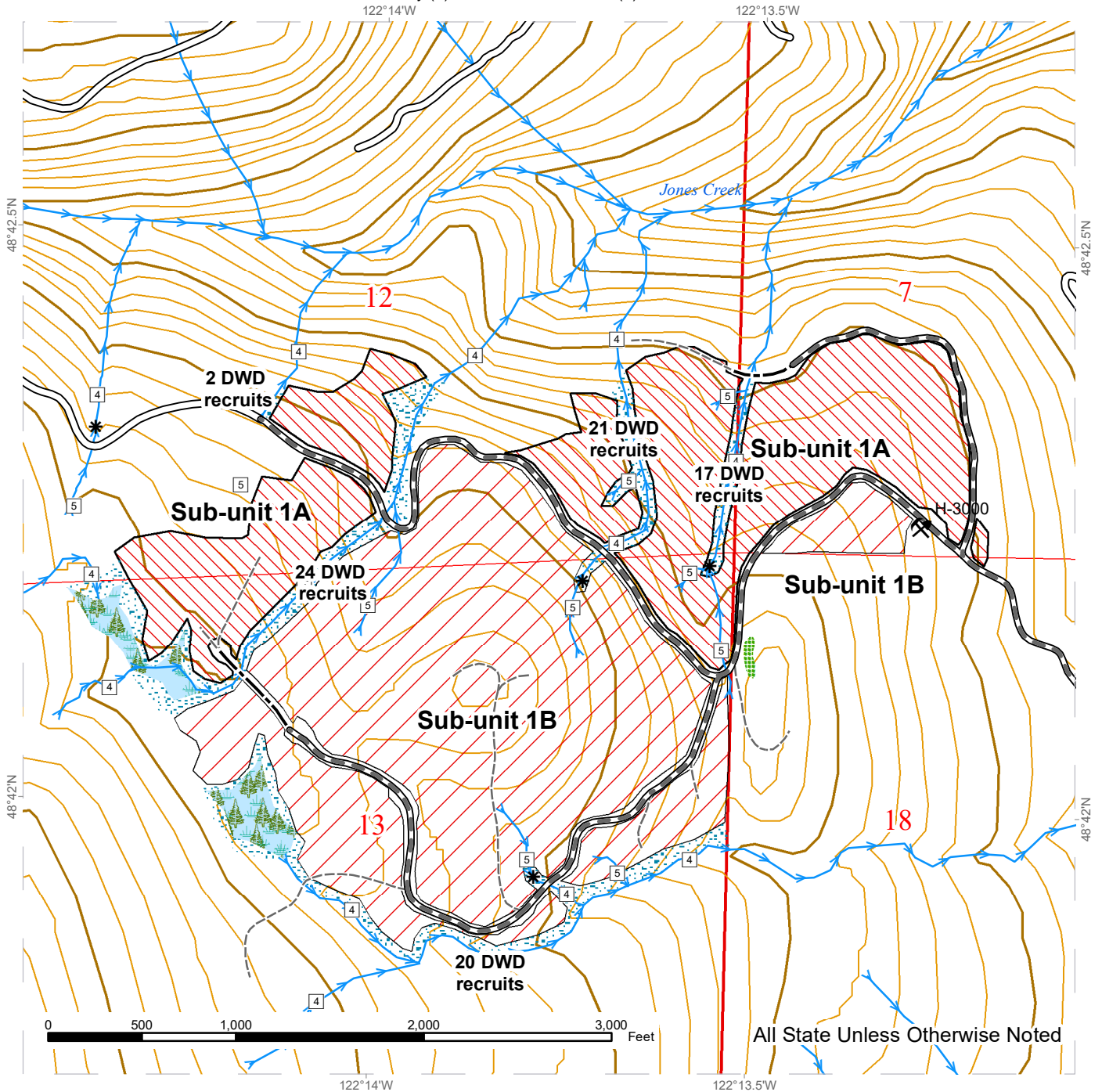
When operating along RMZs, the Department is required to place a specific number of the largest designated take trees towards the buffered creek to serve as downed woody debris (DWD) recruitment. Requirements are as follows:

- Operator shall select one tree every 100-130 feet to be felled into the creek for DWD.
- Selected trees shall be from the largest diameter class of the designated take trees.
- DWD recruit trees shall be selected from within 25 feet of the timber sale boundary tags.
- The DWD recruit trees shall be marked with orange (or other bright color as agreed to by the CA) paint on the butt and paint shall be visible from the interior of the sale. See the attached "Schedule D Map" for specific locations for the DWD recruitment areas and total number of DWD recruits required for each section of stream.

SCHEDULE D MAP

SALE NAME: TWAYBLADE
AGREEMENT #: 30-094599
TOWNSHIP(S): T37R4E, T37R5E
TRUST(S): Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Whatcom
ELEVATION RGE: 1564-2199



All State Unless Otherwise Noted

Sub-unit A	Sale Boundary Tags	Streams
Sub-unit B	Special Mgmt Area	Stream Type
Leave Tree Area	Right of Way Tags - Single	Stream Type Break
Riparian Mgt Zone	Existing Roads	
Forested Wetland	Required Pre-Haul Maintenance	
	Optional Construction	
	Abandoned Road	





WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES
FOREST EXCISE TAX ROAD SUMMARY SHEET

Region:

Timber Sale Name:

Application Number:

EXCISE TAX APPLICABLE ACTIVITIES

Construction: **linear feet**
Road to be constructed (optional and required) but not abandoned

Reconstruction: **linear feet**
Road to be reconstructed (optional and required) but not abandoned

Abandonment: **linear feet**
Abandonment of existing roads not reconstructed under the contract

Decommission: **linear feet**
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: **linear feet**
Existing road to receive maintenance work (optional and required) prior to haul

EXCISE TAX EXEMPT ACTIVITIES

Temporary Construction: **linear feet**
Roads to be constructed (optional and required) and then abandoned

Temporary Reconstruction: **linear feet**
Roads to be reconstructed (optional and required) and then abandoned

All parties must make their own assessment of the taxable or non-taxable status of any work performed under the timber sale contract. The Department of Revenue bears responsibility for determining forest road excise taxes. The Department of Natural Resources developed this form to help estimate the impact of forest excise taxes. However, the information provided may not precisely calculate the actual amount of taxes due. The Department of Revenue is available for consultation by calling 1.800.548.8829.

(Revised 9/18)

PRE-CRUISE NARRATIVE

Sale Name: Twayblade	Region: Northwest
Agreement #: 30-094599	District: Baker
Contact Forester: Kyle Galloway Phone / Location: (360) 319-6720 / Deming	County(s): Whatcom
Alternate Contact: Chris Hankey Phone / Location: (360) 854-8310 / Sedro-Woolley	Other information: Click here to enter text.

Type of Sale: Not known at this time	See Logging Plan map for Harvest System Details
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UNIT ACREAGES AND METHOD OF DETERMINATION:

Unit # Harvest R/W or RMZ WMZ	Legal Description (Enter only one legal for each unit) Sec/Twp/Rng	Grant or Trust	Gross Proposal Acres	Deductions from Gross Acres (No harvest acres)				Net Harvest Acres	Acreage Determination (List method and error of closure if applicable)
				RMZ/WMZ Acres	Leave Tree Acres	Existing Road Acres	Other Acres (describe)		
1	Sect 13 of T37 R04E	01 & 03	170.3	-	-	-	-	170.3	GPS (Garmin)
2	Sect 18 of T37 R05E	01	5.9	-	0.2	-	-	5.7	GPS (Avenza)
R/W	Sec 13 of T37 R04E	01	1.6	-	-	-	-	1.6	Estimate (LxW)
TOTAL ACRES			177.8	-	0.2	-		177.6	

HARVEST PLAN AND SPECIAL CONDITIONS:

Unit #	Harvest Prescription: (Leave, take, paint color, tags, flagging etc.)	Special Management areas:	Other conditions (# leave trees, etc.)
1	Harvest all timber described for take in the Schedule B that's bounded by timber sale boundary tags, special management boundary tags, and existing roads	The thinning area is broken up into two compartments with different residual TPA targets. Refer to Schedule B.	Stream adjacent harvest areas require downed wood recruitment as described in the Schedule B.
2	Harvest all timber on or beyond the special management boundary tags bounded by young plantation; except forest products bounded by leave tree area tags or trees marked with blue paint on the bole.	n/a	45 leave trees have been retained in one leave tree area. Two additional painted leave trees are marked adjacent to the leave tree area.

R/W	Harvest all timber bounded by right-of-way tags.	For road reconstruction at the end of the CC-14 and CC-1414 roads.	
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OTHER PRE-CRUISE INFORMATION:

Unit #	Primary,secondary Species / Estimated Volume (MBF)	Access information (Gates, locks, etc.)	Photos, traverse maps required
1	DF, WH / 1025 mbf	All units are located on the Cub Creek road system accessible with an F1-3 key.	See attached Traverse Map, Driving Map, and Schedule B Map.
2	DF, WH / 180 mbf		
3	DF, WH / 3 mbf		
TOTAL MBF	1208 mbf		

REMARKS:

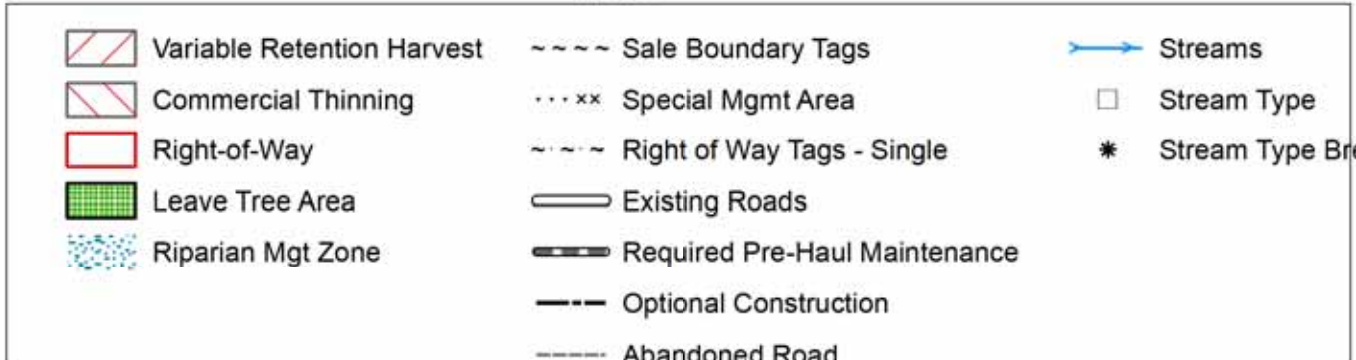
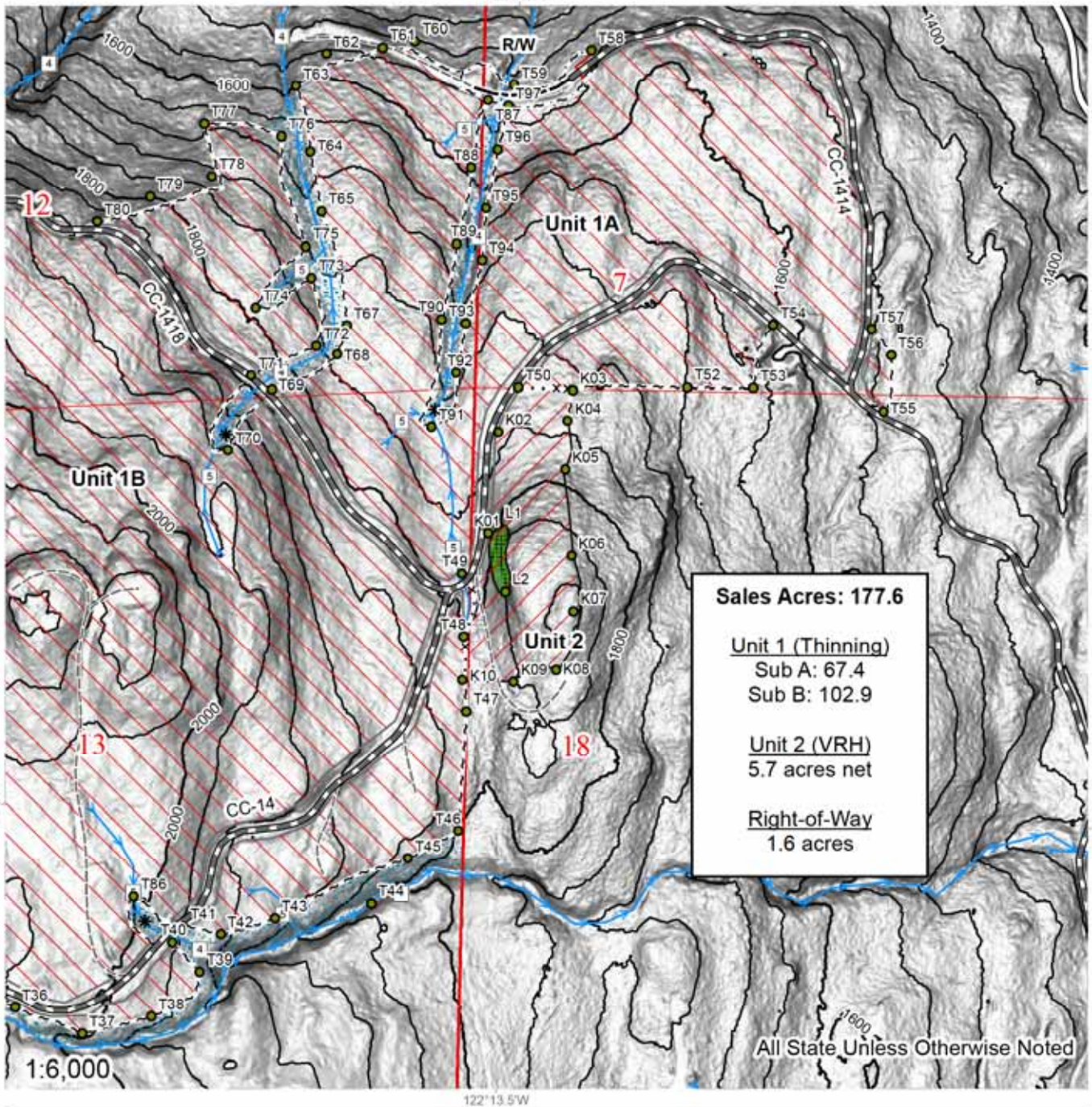
<p>This site contains high potential for cedar salvage.</p> <p>Traverse points are marked with red and blue ribbon.</p> <p>Thinning: The thinning area is occurring in 31-35 year old conifer stands dominated by DF and WH. The attached Schedule B map indicates the residual thinning TPAs per compartment.</p> <p>VRH: This area appears to be ~90 years old and dominated by WH and DF with a fair amount of western redcedar. The area directly east of the leave tree area contains a large blowdown patch that may still be salvageable.</p>
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Prepared By: Kyle Galloway Date: 1/23/2023	Title: Deming Unit Forester	CC:
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TRAVERSE MAP

SALE NAME: TWAYBLADE
AGREEMENT #: 30-094599
TOWNSHIP(S): T37R4E, T37R5E
TRUST(S): Common School and Indemnity (3), State Forest Transfer (1)

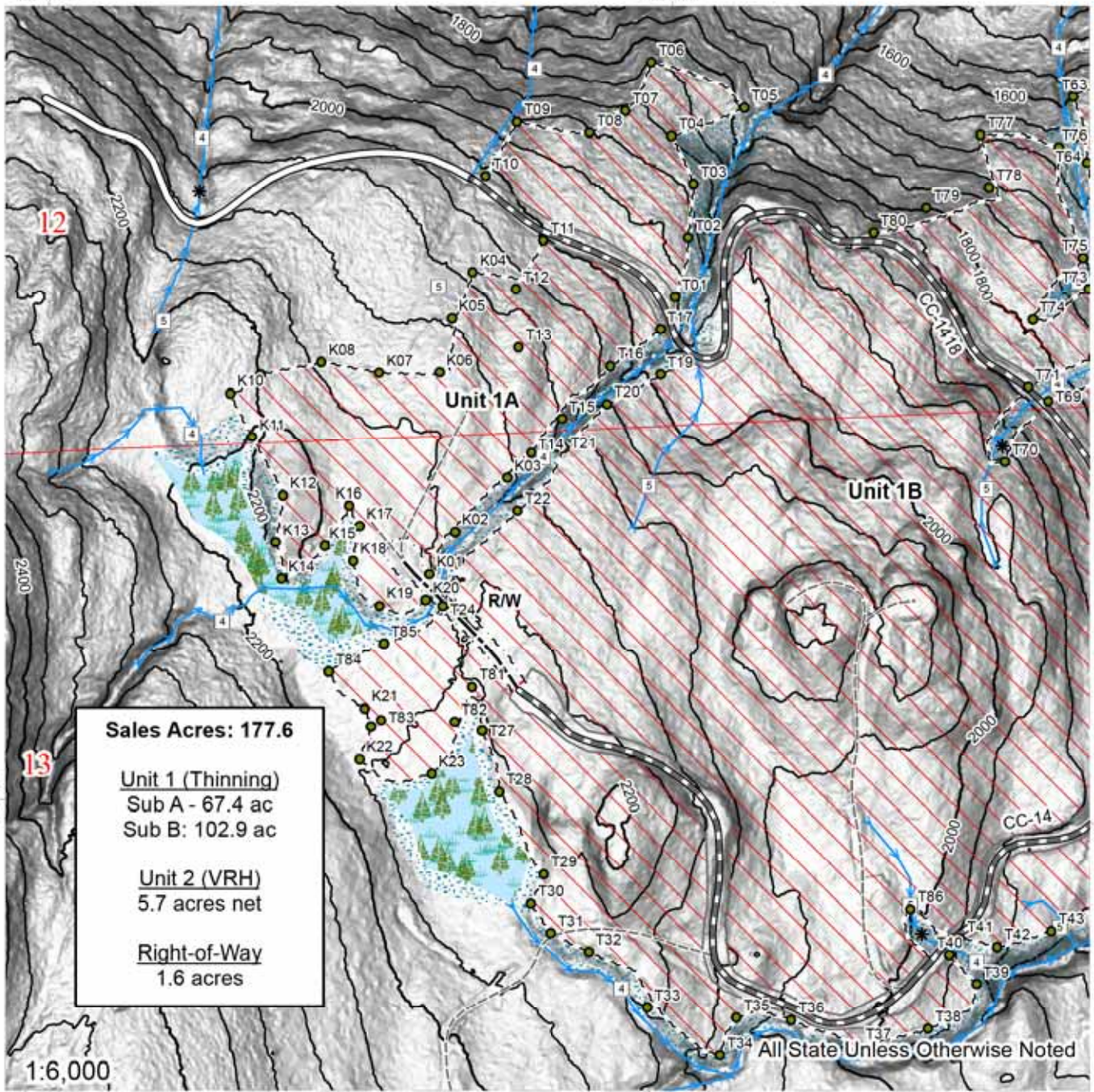
REGION: Northwest Region
COUNTY(S): Whatcom
ELEVATION RGE: 1564-2199



TRAVERSE MAP

SALE NAME: TWAYBLADE
AGREEMENT #: 30-094599
TOWNSHIP(S): T37R4E, T37R5E
TRUST(S): Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Whatcom
ELEVATION RGE: 1564-2199



Sales Acres: 177.6
Unit 1 (Thinning)
 Sub A - 67.4 ac
 Sub B: 102.9 ac

Unit 2 (VRH)
 5.7 acres net

Right-of-Way
 1.6 acres



Timber Sale Cruise Report Twayblade - NW

Sale Name: TWAYBLADE

Sale Type: MBF SCALE

Region: NORTHWEST

District: BAKER

Lead Cruiser: Matt Llobet

Twayblade is located 11.9 miles north of Sedro Woolley off HW 9. It consists of two units and includes two Riparian Management Zones. Topography is flat with a gentle gradient in most areas. Forest roads provide drive access to the entire sale.

My total net cruise volume for Twayblade is 1,640 MBF. Most of the sale contains uniformly stocked, "plantation-style" Douglas-fir and western hemlock in the small-medium diameter range. The exception to this is in unit 2, where the timber is an older age class and more variable. This area contains more gaps; and large, scattered Douglas-fir, western hemlock, and western red cedar. Most of these trees show good form. Some of the Douglas-fir contain high quality segments. Common defects seen throughout the sale are spike knots, sway, crooks, and bear damage.

For this cruise different basal area factors were selected based on stocking levels and tree sizes. My plots were generated in GIS and located in the field using Avenza Maps. Bole heights were measured to a 5" top or break point (40% of diameter at 16 feet). Trees were segmented into appropriate west side log lengths and defect was applied within each VBAR tree cruised.

Conifer log lengths were cruised in 2 foot multiples - maximizing 32-40 ft. lengths. Hardwood log lengths were cruised in 10 foot multiples - no longer than 30 feet long.

If a plot landed near or in a "Leave Tree Area" the leave trees were recorded as leave. A species and DBH was obtained. This volume is not included in the sale volume. Cruise acres are based on FMA acres including leave tree areas.

Logging and Stand Conditions:

Approximately 100% of the sale is ground base harvest. Twayblade consists of an open understory with gentle terrain. At this elevation, the sale is susceptible to heavy snow accumulation in the winter months.

Timber Sale Notice Volume (MBF)

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	14.3	5.0		1,086	9	46	806	200	25
WH	13.5			497		47	355	87	7
RC	16.1			31			28	3	
RA	11.0			26			1	21	3
ALL	13.9	5.0		1,640	9	93	1,191	311	35

Timber Sale Notice Weight (tons)

Sp	Tons by Grade					
	All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	8,673	60	306	6,349	1,743	215
WH	4,370		368	3,119	823	60
RC	260			231	28	
RA	227			10	194	22
ALL	13,530	60	674	9,710	2,788	298

Timber Sale Overall Cruise Statistics (Cut + Leave Trees)

BA (sq ft/acre)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR SE (%)	Net Vol (bf/acre)	Vol SE (%)
221.3	2.6	105.1	2.2	23,303	3.5

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
TWAYBLADE 1A	B1C: VR, 1 BAF (40) Measure/ Count Plots, Sighting Ht = 4.5 ft	58.6	58.6	35	21	0
TWAYBLADE 1B	B1C: VR, 1 BAF (40) Measure/ Count Plots, Sighting Ht = 4.5 ft	95.3	95.3	40	21	0
TWAYBLADE 2	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	5.9	5.9	9	9	0
TWAYBLADE RW	B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	1.6	1.6	4	4	0
TWAYBLADE RMZ 1A	B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	8.8	8.8	7	7	0
TWAYBLADE RMZ 1B	B1C: VR, 1 BAF (40) Measure/ Count Plots, Sighting Ht = 4.5 ft	7.6	7.6	7	3	0
All		177.8	177.8	102	65	0

Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	14.4	36	112	111	0.6	127.6	19.8
DF	LIVE	2 SAW	HQ-A	13.6	40	113	113	0.0	147.1	20.1
DF	LIVE	2 SAW	HQ-B	25.0	40	36	36	0.0	31.0	6.5
DF	LIVE	3 SAW	Domestic	9.1	33	4,608	4,533	1.6	6,349.5	805.9
DF	LIVE	4 SAW	Domestic	6.0	25	1,134	1,127	0.7	1,742.7	200.3

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	SPECIAL MILL	HQ-A	16.4	40	51	51	0.0	60.2	9.1
DF	LIVE	UTILITY	Pulp	6.2	26	138	138	0.0	215.3	24.6
RA	LIVE	3 SAW	Domestic	10.1	30	8	8	0.0	9.9	1.4
RA	LIVE	4 SAW	Domestic	7.4	26	120	117	2.5	194.2	20.8
RA	LIVE	UTILITY	Pulp	5.8	21	18	18	0.0	22.4	3.3
RC	LIVE	3 SAW	Domestic	9.2	37	166	159	4.1	231.4	28.3
RC	LIVE	4 SAW	Domestic	6.0	29	16	16	0.0	28.1	2.9
WH	LIVE	2 SAW	Domestic	14.2	35	270	264	1.9	367.9	47.0
WH	LIVE	3 SAW	Domestic	8.5	34	2,001	1,998	0.1	3,118.9	355.2
WH	LIVE	4 SAW	Domestic	5.5	25	491	491	0.0	823.5	87.4
WH	LIVE	CULL	Cull	16.1	7	8	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	6.5	27	40	40	0.0	60.0	7.1

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	Pulp	5.4	24	99	0.0	148.9	17.6
DF	5 - 7	LIVE	Domestic	6.1	27	1,765	1.1	2,740.4	313.8
DF	8 - 11	LIVE	Domestic	9.5	32	3,780	1.6	5,211.0	672.0
DF	8 - 11	LIVE	Pulp	9.5	26	39	0.0	66.4	7.0
DF	12 - 15	LIVE	Domestic	13.1	34	172	0.0	212.3	30.7
DF	12 - 15	LIVE	HQ-A	13.6	40	113	0.0	147.1	20.1
DF	16 - 19	LIVE	HQ-A	16.4	40	51	0.0	60.2	9.1
DF	16 - 19	LIVE	Domestic	17.1	35	54	1.1	56.1	9.6
DF	20+	LIVE	HQ-B	25.0	40	36	0.0	31.0	6.5
RA	5+	LIVE	Pulp	5.8	21	18	0.0	22.4	3.3
RA	5+	LIVE	Domestic	7.7	25	125	2.4	204.2	22.2
RC	5+	LIVE	Domestic	8.3	35	176	3.8	259.5	31.2
WH	5 - 7	LIVE	Pulp	5.4	28	22	0.0	42.6	4.0
WH	5 - 7	LIVE	Domestic	6.1	28	1,018	0.0	1,732.5	180.9
WH	8 - 11	LIVE	Domestic	9.6	34	1,385	0.2	2,071.2	246.2
WH	12 - 15	LIVE	Domestic	13.3	38	303	0.9	442.7	53.8
WH	16 - 19	LIVE	Cull	16.1	7	0	100.0	0.0	0.0
WH	16 - 19	LIVE	Domestic	16.6	35	49	4.5	63.9	8.7
WH	16 - 19	LIVE	Pulp	19.7	18	17	0.0	17.5	3.1

Cruise Unit Report TWAYBLADE 1A

Unit Sale Notice Volume (MBF): TWAYBLADE 1A

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	3 Saw	4 Saw	Utility
DF	13.6	5.0		413	308	89	16
WH	11.6			174	135	39	
RA	11.5			18		18	
ALL	12.6	5.0		605	443	146	16

Unit Cruise Design: TWAYBLADE 1A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	58.6	58.5	35	21	0

Unit Cruise Summary: TWAYBLADE 1A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	30	153	4.4	2
WH	16	38	1.1	0
RA	5	5	0.1	0
ALL	51	196	5.6	2

Unit Cruise Statistics (Cut + Leave Trees): TWAYBLADE 1A

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	174.9	35.6	6.0	108.1	23.1	4.2	18,897	42.4	7.3
WH	43.4	155.4	26.3	96.2	27.0	6.8	4,177	157.7	27.1
RA	5.7	385.0	65.1	54.1	13.0	5.8	309	385.2	65.3
ALL	224.0	20.9	3.5	104.4	27.4	3.8	23,383	34.5	5.2

Unit Summary: TWAYBLADE 1A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	30	ALL	13.3	61	85	7,177	7,040	1.9	67.5	65.1	17.9	412.6
DF	LIVE	LEA	52	ALL	16.3	65	84	12,088	11,857	1.9	75.7	109.7	27.2	694.8

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
RA	LIVE	CUT	5	ALL	11.5	39	48	317	309	2.5	7.9	5.7	1.7	18.1
WH	LIVE	CUT	16	ALL	11.4	48	67	2,968	2,968	0.0	43.5	30.9	9.1	173.9
WH	LIVE	LEA	10	ALL	11.1	51	72	1,209	1,209	0.0	18.7	12.6	3.8	70.8
ALL	LIVE	CUT	51	ALL	12.5	55	76	10,462	10,317	1.4	118.9	101.7	28.7	604.6
ALL	LIVE	LEA	62	ALL	15.4	62	82	13,297	13,066	1.7	94.4	122.3	30.9	765.7
ALL	ALL	ALL	113	ALL	13.9	58	78	23,759	23,383	1.6	213.3	224.0	59.6	1,370.2

Cruise Unit Report TWAYBLADE 1B

Unit Sale Notice Volume (MBF): TWAYBLADE 1B

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	2 Saw	3 Saw	4 Saw	Utility
DF	14.3	5.0		470		383	82	6
WH	14.2			223	18	167	38	
ALL	14.3	5.0		694	18	549	120	6

Unit Cruise Design: TWAYBLADE 1B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	95.3	95.3	40	21	0

Unit Cruise Summary: TWAYBLADE 1B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RA		4	0.1	0
DF	22	179	4.5	2
WH	11	37	0.9	0
ALL	33	220	5.5	2

Unit Cruise Statistics (Cut + Leave Trees): TWAYBLADE 1B

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
RA	4.0	496.1	78.4						
DF	179.0	42.0	6.6	100.7	21.6	4.6	18,033	47.3	8.1
WH	37.0	149.7	23.7	111.5	14.4	4.3	4,124	150.4	24.1
ALL	220.0	26.7	4.2	102.6	19.9	3.5	22,568	33.3	5.5

Unit Summary: TWAYBLADE 1B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	22	ALL	13.9	58	74	4,999	4,936	1.3	46.5	49.0	13.1	470.4
DF	LIVE	LEA	63	ALL	15.7	63	81	13,263	13,097	1.3	96.7	130.0	32.8	1,248.1
RA	LIVE	LEA	4	ALL	13.2	61	75				4.2	4.0	1.1	

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	11	ALL	13.5	58	75	2,341	2,341	0.0	21.1	21.0	5.7	223.1
WH	LIVE	LEA	9	ALL	12.5	56	71	1,784	1,784	0.0	18.8	16.0	4.5	170.0
ALL	LIVE	CUT	33	ALL	13.8	58	74	7,340	7,277	0.9	67.6	70.0	18.9	693.5
ALL	LIVE	LEA	76	ALL	15.2	62	79	15,047	14,880	1.1	119.7	150.0	38.4	1,418.1
ALL	ALL	ALL	109	ALL	14.7	61	77	22,387	22,157	1.0	187.3	220.0	57.3	2,111.6

Cruise Unit Report TWAYBLADE 2

Unit Sale Notice Volume (MBF): TWAYBLADE 2

Sp	DBH	Rings/In	Age	MBF Volume by Grade					
				All	Spec Mill	2 Saw	3 Saw	4 Saw	Utility
DF	18.3			79	9	44	23	3	1
WH	15.8			79		29	37	6	7
RC	16.1			31			28	3	
ALL	16.7			190	9	72	89	12	8

Unit Cruise Design: TWAYBLADE 2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft		5.9	9	9	0

Unit Cruise Summary: TWAYBLADE 2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	16	18	2.0	0
DF	14	15	1.7	0
RC	9	12	1.3	0
ALL	39	45	5.0	0

Unit Cruise Statistics (Cut + Leave Trees): TWAYBLADE 2

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	108.9	66.1	22.0	138.2	21.5	5.4	15,047	69.5	22.7
DF	90.7	73.5	24.5	158.8	33.2	8.9	14,409	80.6	26.0
RC	72.6	99.2	33.1	97.2	31.1	10.4	7,052	104.0	34.7
ALL	272.2	40.0	13.3	134.1	33.7	5.4	36,508	52.3	14.4

Unit Summary: TWAYBLADE 2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	13	ALL	18.0	77	99	12,488	12,488	0.0	44.5	78.6	18.5	73.7
DF	LIVE	POLE	1	ALL	23.0	97	124	961	961	0.0	2.1	6.0	1.3	5.7

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	LEA	0	ALL	20.0			961	961	0.0	2.8	6.0	1.4	5.7
RC	LIVE	CUT	7	ALL	15.1	52	69	4,274	4,114	3.8	34.0	42.3	10.9	24.3
RC	LIVE	POLE	2	ALL	22.3	88	113	1,221	1,175	3.8	4.5	12.1	2.6	6.9
RC	LIVE	LEA	0	ALL	14.5			1,832	1,763	3.8	15.8	18.1	4.8	10.4
WH	LIVE	CUT	16	ALL	15.8	66	87	13,842	13,375	3.4	71.1	96.8	24.3	78.9
WH	LIVE	LEA	0	ALL	17.8			1,730	1,672	3.4	7.0	12.1	2.9	9.9
ALL	LIVE	LEA	0	ALL	16.1			4,523	4,395	2.8	25.6	36.3	9.0	25.9
ALL	LIVE	POLE	3	ALL	22.5	91	116	2,182	2,136	2.1	6.6	18.1	3.8	12.6
ALL	LIVE	CUT	36	ALL	16.3	66	87	30,604	29,977	2.1	149.6	217.8	53.8	176.9
ALL	ALL	ALL	39	ALL	16.6	67	88	37,308	36,508	2.1	181.8	272.2	66.6	215.4

Cruise Unit Report TWAYBLADE RW

Unit Sale Notice Volume (MBF): TWAYBLADE RW

Sp	DBH	Rings/In	Age	MBF Volume by Grade				
				All	2 Saw	3 Saw	4 Saw	Utility
DF	14.9			11	3	6	3	
RA	9.9			7		1	3	3
WH	17.7			2		2		
ALL	12.1			21	3	9	6	3

Unit Cruise Design: TWAYBLADE RW

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	1.6	1.6	4	4	0

Unit Cruise Summary: TWAYBLADE RW

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	6	7	1.8	0
RA	6	7	1.8	0
WH	2	2	0.5	0
ALL	14	16	4.0	0

Unit Cruise Statistics (Cut + Leave Trees): TWAYBLADE RW

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	70.0	85.7	42.9	100.4	11.0	4.5	7,031	86.4	43.1
RA	70.0	28.6	14.3	65.7	20.9	8.5	4,597	35.4	16.6
WH	20.0	200.0	100.0	74.4	0.2	0.2	1,488	200.0	100.0
ALL	160.0	35.4	17.7	82.0	24.8	6.6	13,116	43.2	18.9

Unit Summary: TWAYBLADE RW

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	6	ALL	14.9	58	77	7,161	7,031	1.8	57.8	70.0	18.1	11.2
RA	LIVE	CUT	6	ALL	9.9	47	61	4,640	4,597	0.9	131.0	70.0	22.2	7.4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	2	ALL	17.7	50	60	1,488	1,488	0.0	11.7	20.0	4.8	2.4
ALL	LIVE	CUT	14	ALL	12.1	50	65	13,289	13,116	1.3	200.5	160.0	45.1	21.0
ALL	ALL	ALL	14	ALL	12.1	50	65	13,289	13,116	1.3	200.5	160.0	45.1	21.0

Cruise Unit Report TWAYBLADE RMZ 1A

Unit Sale Notice Volume (MBF): TWAYBLADE RMZ 1A

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
DF	13.9			34	25	8
WH	12.4			18	14	5
ALL	13.3			52	39	13

Unit Cruise Design: TWAYBLADE RMZ 1A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (40) Measure All, Sighting Ht = 4.5 ft	8.8	8.8	7	7	0

Unit Cruise Summary: TWAYBLADE RMZ 1A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RA		3	0.4	0
DF	6	24	3.4	0
WH	3	6	0.9	0
ALL	9	33	4.7	0

Unit Cruise Statistics (Cut + Leave Trees): TWAYBLADE RMZ 1A

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
RA	17.1	264.6	100.0						
DF	137.1	64.9	24.5	110.9	10.3	4.2	15,211	65.7	24.9
WH	34.3	141.7	53.6	121.9	6.0	3.4	4,179	141.9	53.7
ALL	188.6	29.3	11.1	113.1	9.9	3.3	21,329	30.9	11.5

Unit Summary: TWAYBLADE RMZ 1A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	6	ALL	13.9	64	84	3,803	3,803	0.0	32.5	34.3	9.2	33.5
DF	LIVE	LEA	18	ALL	14.8	66	87	11,408	11,408	0.0	86.1	102.9	26.7	100.4
RA	LIVE	LEA	1	ALL	15.1	70	87				13.8	17.1	4.4	

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	3	ALL	12.4	61	83	2,090	2,090	0.0	20.4	17.1	4.9	18.4
WH	LIVE	LEA	3	ALL	15.3	68	85	2,090	2,090	0.0	13.4	17.1	4.4	18.4
ALL	LIVE	CUT	9	ALL	13.3	63	84	5,892	5,892	0.0	52.9	51.4	14.1	51.9
ALL	LIVE	LEA	22	ALL	14.9	66	86	13,498	13,498	0.0	113.3	137.1	35.5	118.8
ALL	ALL	ALL	31	ALL	14.4	65	86	19,390	19,390	0.0	166.2	188.6	49.6	170.6

Cruise Unit Report TWAYBLADE RMZ 1B

Unit Sale Notice Volume (MBF): TWAYBLADE RMZ 1B

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	3 Saw	4 Saw	Utility
DF	14.5			79	62	15	2
ALL	14.5			79	62	15	2

Unit Cruise Design: TWAYBLADE RMZ 1B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (40) Measure/Count Plots, Sighting Ht = 4.5 ft	7.6	7.6	7	3	0

Unit Cruise Summary: TWAYBLADE RMZ 1B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH		4	0.6	0
DF	7	36	5.1	0
ALL	7	40	5.7	0





Unit Cruise Statistics (Cut + Leave Trees): TWAYBLADE RMZ 1B

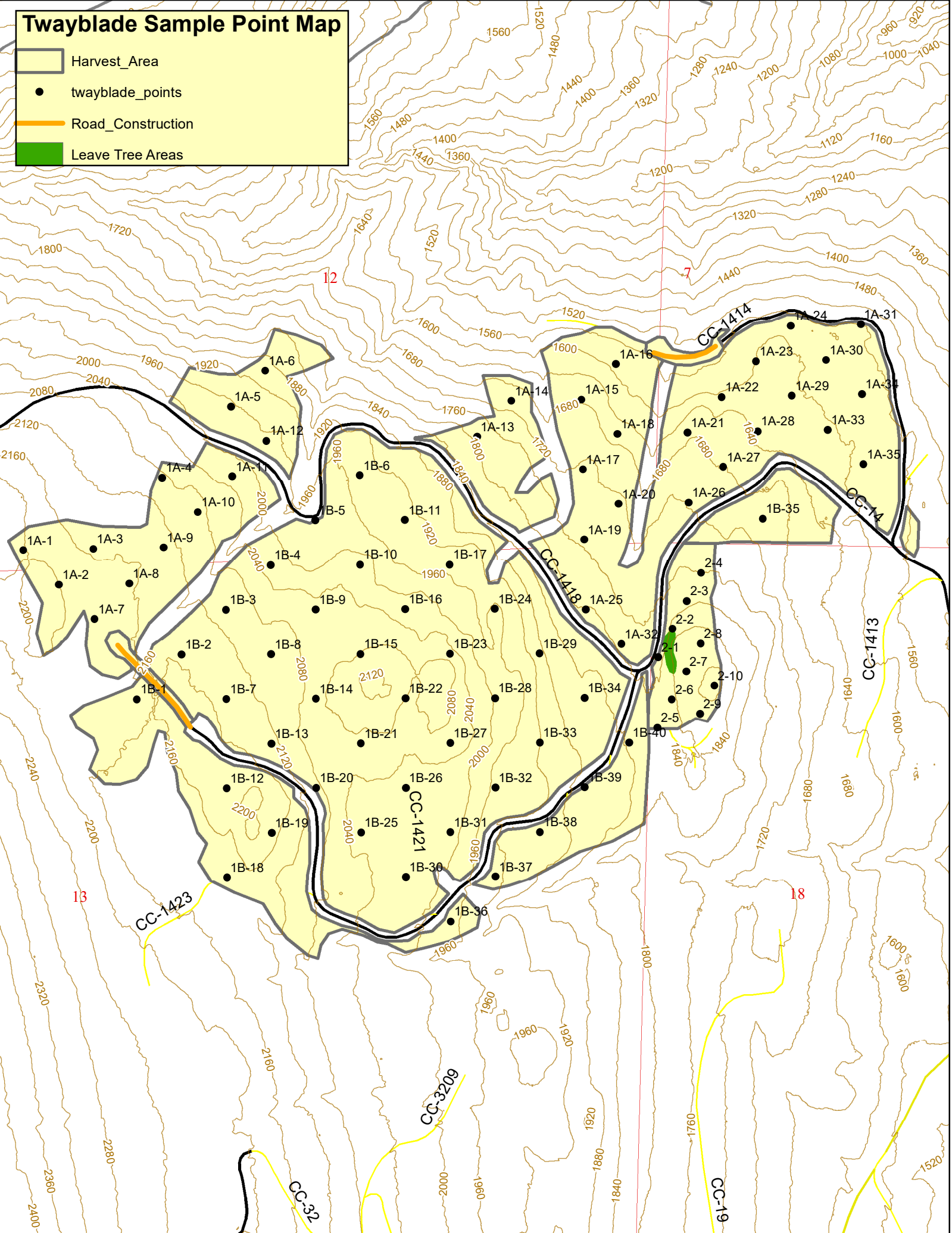
Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	22.9	264.6	100.0						
DF	205.7	30.6	11.6	114.1	12.6	4.8	23,465	33.1	12.5
ALL	228.6	13.2	5.0	114.1	12.6	4.8	26,072	18.3	6.9

Unit Summary: TWAYBLADE RMZ 1B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	7	ALL	14.9	64	84	10,499	10,429	0.7	75.5	91.4	23.7	79.3
DF	LIVE	LEA	9	ALL	15.9	66	85	13,123	13,036	0.7	82.9	114.3	28.7	99.1
WH	LIVE	LEA	1	ALL	10.0	63	78				41.9	22.9	7.2	
ALL	LIVE	LEA	10	ALL	14.2	65	82	13,123	13,036	0.7	124.8	137.1	35.9	99.1
ALL	LIVE	CUT	7	ALL	14.9	64	84	10,499	10,429	0.7	75.5	91.4	23.7	79.3
ALL	ALL	ALL	17	ALL	14.5	64	83	23,622	23,465	0.7	200.3	228.6	59.6	178.3

Twayblade Sample Point Map

-  Harvest_Area
-  twayblade_points
-  Road_Construction
-  Leave Tree Areas





Forest Practices Application/Notification
Notice of Decision

FPA/N No: 2818947

Effective Date: 4/20/2023

Expiration Date: 4/20/2026

Shut Down Zone: 656

EARR Tax Credit: [X] Eligible [] Non-eligible

Reference: Twayblade Thin VRH

Decision

- [] Notification Accepted Operations shall not begin before the effective date.
[X] Approved This Forest Practices Application is subject to the conditions listed below.
[] Disapproved This Forest Practices Application is disapproved for the reasons listed below.
[] Withdrawn Applicant has withdrawn the Forest Practices Application/Notification (FPA/N).
[] Closed All forest practices obligations are met.

FPA/N Classification

- [] Class II [X] Class III [] Class IVG [] Class IVS

Number of Years Granted on Multi-Year Request

- [] 4 years [] 5 years

Conditions on Approval/Reasons for Disapproval

Timing Limitations on Type S and F water(s):

No timing limitations apply.

Condition(s) required for approval/disapproval:

No additional conditions apply.

Issued By: Zachary Bastow

Region: Northwest Region

Title: Resource Protection Forester

Date: 4/20/2023

Copies to: [] Landowner, Timber Owner, and Operator

Issued in person: [X] LO [X] TO [X] OP By: Ada Schmidt Date: 4/20/2023

Appeal Information

You have thirty (30) days to *file* (i.e., *actually deliver*) an appeal in writing of this Decision and any related State Environmental Policy Act (SEPA) determinations to the Pollution Control Hearings Board, the Attorney General's Office, and the Department of Natural Resources' region office. See [RCW 76.09.205](#). The appeal period starts when the applicant receives this decision, which usually happens electronically on the date indicated below.

You must file your appeal at all three addresses below:

Pollution Control Hearings Board	Office of the Attorney General Natural Resources Division	Department Of Natural Resources Northwest Region
<u>Physical Address</u> 1111 Israel Road SW Suite 301 Tumwater, WA 98501 <u>Mailing address</u> Post Office Box 40903 Olympia, WA 98504-0903	<u>Physical Address</u> 1125 Washington Street, SE Olympia, WA 98504 <u>Mailing Address</u> Post Office Box 40100 Olympia, WA 98504-0100	<u>Physical Address</u> 919 North Township Street Sedro-Woolley, WA 98284 <u>Mailing Address</u> 919 North Township Street Sedro-Woolley, WA 98284

Information regarding the Pollution Control Hearings Board can be found at: <https://elaho.wa.gov/content/11>

Other Applicable Laws

Operating as described in this application/notification does not ensure compliance with the Endangered Species Act, or other federal, state, or local laws.

Transfer of Forest Practices Application/Notification (WAC 222-20-010)

Use the "Notice of Transfer of Approved Forest Practices Application/Notification" form. This form is available at region offices and on the Forest Practices website <https://www.dnr.wa.gov/programs-and-services/forest-practices/review-applications-fpars/forest-practices-forms-and>. Notify DNR of new Operators within 48 hours.

Continuing Forestland Obligations (RCW 76.09.060, RCW 76.09.070, RCW 76.09.390, and WAC 222-20-055)

Obligations include reforestation, road maintenance and abandonment plans, conversions of forestland to non-forestry use and/or harvest strategies on perennial non-fish habitat (Type Np) waters in Eastern Washington.

Before the sale or transfer of land or perpetual timber rights subject to continuing forest and obligations, the seller must notify the buyer of such an obligation on a form titled "Notice of Continuing Forest Land Obligation". The seller and buyer must both sign the "Notice of Continuing Forest Land Obligation" form and send it to the DNR Region Office for retention. This form is available at DNR region offices.

If the seller fails to notify the buyer about the continuing forestland obligation, the seller must pay the buyer's costs related to continuing forestland obligations, including all legal costs and reasonable attorneys' fees incurred by the buyer in enforcing the continuing forestland obligation against the seller.

Failure by the seller to send the required notice to DNR at the time of sale will be prima facie evidence in an action by the buyer against the seller for costs related to the continuing forestland obligation prior to sale.

DNR Declaration of Mailing

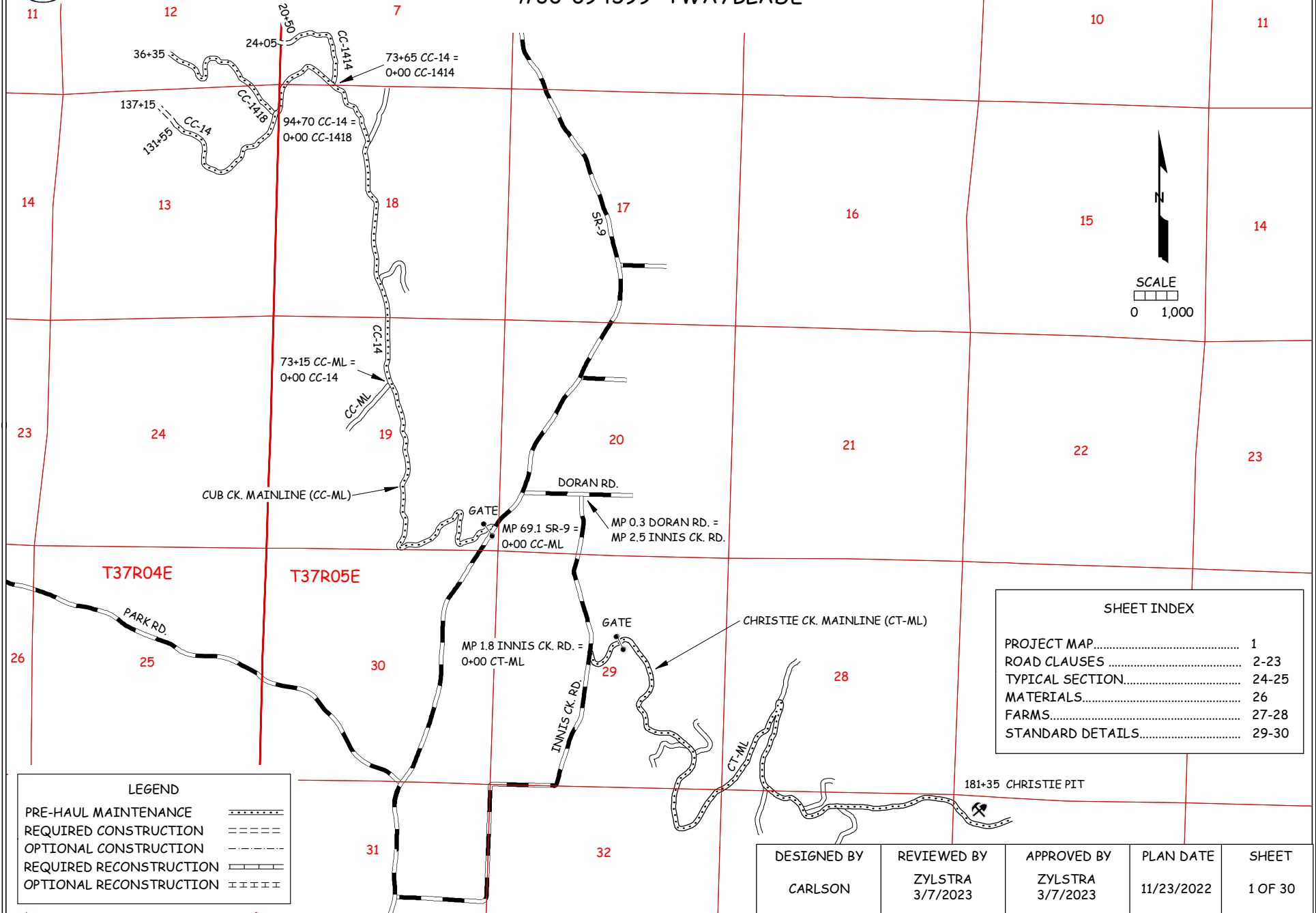
I Choose an item., caused the Notice of Decision for FPA/N No. _____ To be placed in the United States mail at **Sedro-Woolley, WA**; postage paid. I declare under penalty of perjury of the laws of the State of Washington, that the foregoing is true and correct.

_____ Sedro-Woolley, WA _____
 (Date) (City & State where signed) (Signature)



WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

ROAD PLAN AND SPECIFICATIONS #30-094599 TWAYBLADE



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TYPICAL SECTION.....	24-25
MATERIALS.....	26
FARMS.....	27-28
STANDARD DETAILS.....	29-30

DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
CARLSON	ZYLSTRA 3/7/2023	ZYLSTRA 3/7/2023	11/23/2022	1 OF 30

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

TWAYBLADE TIMBER SALE ROAD PLAN
WHATCOM COUNTY
BAKER DISTRICT
NORTHWEST REGION

AGREEMENT NO.: 30-094599

STAFF ENGINEER: CARLSON

DATE: NOVEMBER 23, 2022

SECTION 0 – SCOPE OF PROJECT

0-1 ROAD PLAN SCOPE

Clauses in this road plan apply to all road related work, including landings and rock source development, unless otherwise noted.

0-2 REQUIRED ROADS

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
CC-ML	0+00 to 73+15	Pre-haul maintenance
CC-14	0+00 to 131+55	Pre-haul maintenance
CC-14	131+55 to 137+15	Construction
CC-1414	0+00 to 20+50	Pre-haul maintenance
CC-1414	20+50 to 24+05	Construction
CC-1418	0+00 to 36+35	Pre-haul maintenance
CT-ML	0+00 to 181+35	Pre-haul maintenance

0-4 CONSTRUCTION

Construction includes, but is not limited to clearing, grubbing, excavation and embankment to sub-grade, landing, turnout, and turnaround construction, culvert installation, and application of 3-inch-minus ballast rock.

0-6 PRE-HAUL MAINTENANCE

This project includes, but is not limited to the following pre-haul maintenance requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
CC-ML	0+00 to 73+15	Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION.
CC-14	0+00 to 73+65	Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION.
CC-14	73+65 to 131+55	Cleaning culverts, ditches, headwalls, and catch basins. Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION. Application of 2-inch minus crushed rock. Culvert Installations.
CC-1414	0+00 to 20+50	Cleaning culverts, ditches, headwalls, and catch basins. Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION. Application of 2-inch minus crushed rock. Culvert Installations.
CC-1418	0+00 to 36+35	Cleaning culverts, ditches, headwalls, and catch basins. Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION. Application of 2-inch minus crushed rock. Culvert Installations.
CT-ML	0+00 to 181+35	Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION.

0-7 POST-HAUL MAINTENANCE

This project includes post-haul road maintenance listed in Clause 9-5 POST-HAUL MAINTENANCE.

0-10 ABANDONMENT

This project includes abandonment listed in Clause 9-21 ROAD ABANDONMENT.

0-12 DEVELOP ROCK SOURCE

Purchaser may develop an existing rock source. Rock source development will involve drilling, shooting, and processing rock to generate riprap, 2-inch minus crushed rock and 3-inch-minus ballast rock. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

If the Purchaser desires a change from this road plan including, but not limited to, relocation, extension, change in design, or adding roads; a revised road plan must be submitted in writing to the Contract Administrator for consideration. Before work begins, Purchaser shall obtain approval from the State for the submitted plan.

1-2 UNFORESEEN CONDITIONS

Quantities established in this road plan are minimum acceptable values. Additional quantities required by the state due to unforeseen conditions, or Purchaser's choice of construction season or techniques will be at the Purchaser's expense. Unforeseen conditions include, but are not limited to, solid subsurface rock, subsurface springs, saturated ground, and unstable soils.

1-3 ROAD DIMENSIONS

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan, unless controlled by construction stakes.

1-4 ROAD TOLERANCES

Purchaser shall perform road work within the tolerances listed below. The tolerance class for each road is listed on the TYPICAL SECTION SHEET.

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road and Subgrade Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

1-6 ORDER OF PRECEDENCE

Any conflict or inconsistency in the road plan will be resolved by giving the documents precedence in the following order:

1. Addenda.
2. Road Plan Clauses.
3. Typical Section Sheet.
4. Standard Lists.
5. Standard Details.

In case of any ambiguity or dispute over interpreting the road plan, the Contract Administrator's or designee's decision will be final.

1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS

Purchaser shall repair or replace all materials, roadway infrastructure, and road components damaged during road work or operation activities. The Contract Administrator will direct repairs and replacements. Repairs to structural materials must be made in accordance with the manufacturer's recommendation, and may not begin without written approval from the Contract Administrator.

1-9 DAMAGED METALLIC COATING

Any cut ends, or damaged galvanized or aluminized coating on existing or new bridge components, culverts, downspouts, and flumes must be cleaned and treated with a minimum of two coats of zinc rich paint or cold galvanizing compound.

1-18 REFERENCE POINT DAMAGE

Purchaser shall reset reference points (RPs) that were moved or damaged at any time during construction to their original locations. Excavation and embankment may not proceed on road segments controlled by said RPs until Purchaser resets all moved or damaged RPs.

1-21 HAUL APPROVAL

Purchaser shall not use roads under this road plan for any hauling other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1-23 ROAD WORK PHASE APPROVAL

Purchaser shall obtain written approval from the Contract Administrator upon completion of each of the following phases of road work, if applicable:

- Right-of-way
 - Falling/decking
 - Clearing/grubbing
- Subgrade Construction
 - Excavation and embankment to subgrade
 - Culvert installation
 - Ditch construction
 - Subgrade compaction
- Rock application
 - Rock compaction
 - Rock depth
- Erosion and sediment control
- Revegetation
- Abandonment

1-29 SEDIMENT RESTRICTION

Purchaser shall not allow silt-bearing runoff to enter any streams.

1-30 CLOSURE TO PREVENT DAMAGE

In accordance with Contract Clause G-220 STATE SUSPENDS OPERATION, the Contract Administrator will suspend road work or hauling right-of-way timber, forest products, or rock under the following conditions:

- Wheel track rutting exceeds 6 inches on roads.
- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

Operations must stop unless authority to continue working or hauling is granted in writing by the Contract Administrator. In the event that surface or base stability problems persist, Purchaser shall cease operations, or perform corrective maintenance or repairs, subject to specifications within this road plan. Before and during any suspension, Purchaser shall protect the work from damage or deterioration.

1-33 SNOW PLOWING RESTRICTION

Snowplowing will be allowed after the execution of a SNOW PLOWING AGREEMENT, which is available from the Contract Administrator upon request. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS

Purchaser shall immediately remove any mud, dirt, rock, or other material tracked or spilled on to county roads and state highways.

If additional damage to the surface, signs, guardrails, etc. occurs then the damage will be repaired, at the Purchaser's expense, as directed by the Contract Administrator when authorized by the county or WSDOT.

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

Purchaser shall maintain all roads used under this contract in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS for the entire term of this contract. Maintenance is required even during periods of inactivity.

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

Purchaser shall perform maintenance on roads listed in Contract Clause C-050 PURCHASER ROAD MAINTENANCE AND REPAIR in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following roads, Purchaser shall use a grader to shape the existing surface before any hauling. Purchaser shall accomplish all grading using a motor grader with a minimum of 175 horsepower.

<u>Road</u>	<u>Stations</u>
CC-ML	0+00 to 73+15 see Clause 0-6 PRE-HAUL MAINTENANCE
CC-14	0+00 to 131+55 see Clause 0-6 PRE-HAUL MAINTENANCE
CC-1414	0+00 to 20+50 see Clause 0-6 PRE-HAUL MAINTENANCE
CC-1418	0+00 to 36+35 see Clause 0-6 PRE-HAUL MAINTENANCE
CT-ML	0+00 to 181+35 see Clause 0-6 PRE-HAUL MAINTENANCE

2-6 CLEANING CULVERTS

On the following roads, Purchaser shall clean the inlets and outlets of all culverts and shall obtain written approval from the Contract Administrator before any hauling.

<u>Road</u>	<u>Stations</u>
CC-14	73+65 to 131+55
CC-1414	0+00 to 20+50
CC-1418	0+00 to 36+35

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following roads, Purchaser shall clean ditches, headwalls, and catchbasins. Work must be completed before any hauling and must be done in accordance with the TYPICAL SECTION.

<u>Road</u>	<u>Stations</u>
CC-14	73+65 to 131+55
CC-1414	0+00 to 20+50
CC-1418	0+00 to 36+35

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

3-5 CLEARING

Purchaser shall fall all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between the clearing limits specified on the TYPICAL SECTION SHEET. Clearing must be completed before starting excavation and embankment.

3-8 PROHIBITED DECKING AREAS

Purchaser shall not deck right-of-way timber in the following areas:

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 50%.
- Against standing trees.

3-10 GRUBBING

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Grubbing must be completed before starting excavation and embankment.

3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all vegetative material not eligible for removal by Contract Clause G-010 PRODUCTS SOLD AND SALE AREA or G-011 RIGHT TO REMOVE FOREST PRODUCTS AND CONTRACT AREA, that is larger than one cubic foot in volume within the clearing limits as shown on the TYPICAL SECTION SHEET.

3-21 DISPOSAL COMPLETION

Purchaser shall remove organic debris from the road surface, ditchlines, and culvert inlets and outlets. Purchaser shall complete all disposal of organic debris before the application of rock.

3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris are located within the cleared right-of-way or in natural openings as designated at areas approved in writing by the Contract Administrator.

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 50%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush can fall into the ditch or onto the road surface.
- Against standing timber.

3-24 BURYING ORGANIC DEBRIS RESTRICTED

Purchaser shall not bury organic debris unless otherwise stated in this plan.

3-25 SCATTERING ORGANIC DEBRIS

Purchaser shall scatter organic debris outside of the clearing limits in natural openings unless otherwise detailed in this road plan.

SECTION 4 – EXCAVATION

4-1 EXCAVATOR CONSTRUCTION

Purchaser shall use a track mounted hydraulic excavator for construction work, unless authorized in writing by the Contract Administrator.

4-2 PIONEERING

Pioneering may not extend past construction that will be completed during the current construction season. Pioneering may not extend more than 500 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction.
- Road pioneering operations may not undercut the final cut slope or restrict drainage.
- Culverts at live stream crossings must be installed during pioneering operations prior to embankment.

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

Purchaser shall follow these standards for road grade and alignment except as designed:

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 18 percent favorable and 12 percent adverse.
- Minimum curve radius is 50 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

4-5 CUT SLOPE RATIO

Purchaser shall construct excavation slopes no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Excavation Slope Percent</u>
Common Earth (on side slopes up to 55%)	1:1	100
Common Earth (56% to 70% side slopes)	¾:1	133
Common Earth (on slopes over 70%)	½:1	200
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

4-6 EMBANKMENT SLOPE RATIO

Purchaser shall construct embankment slopes no steeper than shown on the following table, unless construction staked or designed:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<u>Embankment Slope Percent</u>
Sandy Soils	2:1	50
Common Earth and Rounded Gravel	1½:1	67
Angular Rock	1¼:1	80

4-7 SHAPING CUT AND FILL SLOPE

Purchaser shall construct excavation and embankment slopes to a uniform line and left rough for easier revegetation.

4-8 CURVE WIDENING

The minimum widening placed on the inside of curves is:

- 6 feet for curves of 50 to 79 feet radius.
- 4 feet for curves of 80 to 100 feet radius.

4-9 EMBANKMENT WIDENING

The minimum embankment widening is:

- 2 feet for embankment heights at centerline of 2 to 6 feet.
- 4 feet for embankment heights at centerline of greater than 6 feet.

Purchaser shall apply embankment widening equally to both sides of the road to achieve the required width.

4-21 TURNOUTS

Purchaser shall construct turnouts intervisible with a maximum distance of 1,000 feet between turnouts unless otherwise shown on drawings. Locations may be adjusted to fit the final subgrade alignment and sight distances. Locations are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

4-22 TURNAROUNDS

Purchaser shall construct turnarounds as shown on the TURNAROUND DETAIL. Turnaround type and location are subject to written approval by the Contract Administrator.

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

Purchaser shall construct ditches into the subgrade as specified on the TYPICAL SECTION SHEET. Ditches must be constructed concurrently with construction of the subgrade.

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

Purchaser shall construct ditchouts as needed and as directed by the Contract Administrator. Ditchouts must be constructed in a manner that diverts ditch water onto the forest floor and must have excavation backslopes no steeper than a 1:1 ratio.

4-35 WASTE MATERIAL DEFINITION

Waste material is defined as all dirt, rock, mud, or related material that is extraneous or unsuitable for construction material. Waste material, as used in Section 4 EXCAVATION, is not organic debris.

4-36 DISPOSAL OF WASTE MATERIAL

Purchaser may sidecast waste material on side slopes up to 60% if the waste material is compacted and free of organic debris. On side slopes greater than 60%, all waste material must be end hauled or pushed to the designated embankment sites and waste areas identified in Clause 4-37 WASTE AREA LOCATION.

4-37 WASTE AREA LOCATION

Purchaser shall deposit waste material in areas identified or approved by the Contract Administrator. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

4-38 PROHIBITED WASTE DISPOSAL AREAS

Purchaser shall not deposit waste material in the following areas, except as otherwise specified in this plan:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Against standing timber.
- Outside the clearing limits.

4-55 ROAD SHAPING

Purchaser shall shape the subgrade and surface as shown on the TYPICAL SECTION SHEET. The subgrade and surface shape must ensure runoff in an even, un-concentrated manner, and must be uniform, firm, and rut-free.

4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material by routing equipment over the entire width of each lift.

4-61 SUBGRADE COMPACTION

Purchaser shall compact constructed and reconstructed subgrades by routing equipment over the entire width.

SECTION 5 – DRAINAGE

5-5 CULVERTS

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on MATERIALS LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts may be new or used (if listed in Clause 5-7) material and must meet the specifications in Clauses 10-15 through 10-24.

5-7 USED CULVERT MATERIAL

On the following roads, Purchaser may install used culverts. All other roads must have new culverts installed. Purchaser shall obtain approval from the Contract Administrator for the quality of the used culverts before installation.

<u>Road</u>	<u>Stations</u>
CC-14	131+55 to 137+15
CC-1414	20+50 to 24+05

5-12 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the MATERIALS LIST that are not installed will become the property of the state. Purchaser shall stockpile materials as directed by the Contract Administrator.

5-15 CULVERT INSTALLATION

Culvert installation must be in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL and the National Corrugated Metal Pipe Association's "Installation Manual for Corrugated Steel Drainage Structures" the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings". Corrugated Polyethylene pipe must be installed in a manner consistent with the manufacturer's recommendations.

5-17 CROSS DRAIN SKEW AND SLOPE

Cross drains, on road grades in excess of 3%, must be skewed at least 30 degrees from perpendicular to the road centerline, except where the cross drain is at the low point in the road culverts will not be skewed. Cross drain culverts must be installed at a slope steeper than the incoming ditch grade, but not less than 3% or more than 10%.

5-18 CULVERT DEPTH OF COVER

Cross drain culverts must be installed with a depth of cover of not less than 1 foot of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover recommended by the culvert manufacturer for the type and size of the pipe.

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts, Energy dissipater installation is subject to approval by the Contract Administrator.

Rock used for energy dissipaters must be light/loose riprap. Energy dissipaters must extend a minimum of 1 foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet. Rock must be set in place by machine. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed. Rock type shall meet the specifications in Clause 6-50 LIGHT LOOSE RIP RAP.

5-25 CATCH BASINS

Purchaser shall construct catch basins in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions of catch basins are 2 feet wide and 4 feet long.

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts. Rock used for headwalls must weigh at least 50 pounds. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets. Rock may not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rock is allowed.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

At stream crossing culverts, Purchaser shall place riprap in conjunction with construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the MATERIALS LIST or as directed by the Contract Administrator. Rock may not restrict the flow of water into culvert inlets or catch basins. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed.

SECTION 6 – ROCK AND SURFACING

6-2 ROCK SOURCE ON STATE LAND

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from the following source on state land at no charge to the Purchaser. Purchaser shall obtain written approval from the Contract Administrator for the use of material from any other source. If other operators are using, or desire to use the rock source, a joint operating plan must be developed. All parties shall follow this plan.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Christie Pit	Sta. 181+35 of the CT-ML road.	Riprap 2-inch minus crushed rock 3-inch minus ballast rock

6-5 ROCK FROM COMMERCIAL SOURCE

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from any commercial source at the Purchaser's expense. Rock sources are subject to written approval by the Contract Administrator before their use.

6-11 ROCK SOURCE DEVELOPMENT PLAN BY PURCHASER

Purchaser shall conduct rock source development and use at the following source, in accordance with a written ROCK SOURCE DEVELOPMENT PLAN to be prepared by the Purchaser. The plan is subject to written approval by the Contract Administrator before any rock source operation. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator.

<u>Source</u>
Christie Pit

Rock source development plans prepared by the Purchaser must show the following information:

- Rock source location.
- Rock source overview showing access roads, development areas, stockpile locations, waste areas, and floor drainage.
- Rock source profiles showing development areas, bench locations including widths, and wall faces including heights.

6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following:

- Pit walls may not be undermined or over steepened. The maximum slope of the walls must be consistent with recognized engineering standards for the type of material being excavated in accordance with the following table:

Material	Maximum Slope Ratio (Horiz. :Vert.)	Maximum Slope Percent
Sand	2:1	50
Gravel	1.5:1	67
Common Earth	1:1	100
Fractured Rock	0.5:1	200
Solid Rock	0:1	vertical

- Pit walls must be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches must be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches must be uniform and free-draining at a minimum 2% outslope gradient.
- All operations must be carried out in compliance with all regulations of the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration and Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- All vehicle access to the top of the pit faces must be blocked.

6-23 ROCK GRADATION TYPES

Purchaser shall provide rock in accordance with the types and amounts listed in the TYPICAL SECTION and MATERIALS LIST. Rock must meet the following specifications for gradation and uniform quality when placed in hauling vehicles or during manufacture and placement into a stockpile. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

6-30 2-INCH MINUS CRUSHED ROCK

% Passing 2" square sieve	100%
% Passing 1" square sieve	50 - 85%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #40 sieve	16% maximum
% Passing U.S. #200 sieve	5% maximum

The portion of aggregate retained on the No. 4 sieve may not contain more than 0.2 percent organic debris and trash. All percentages are by weight.

6-34 3-INCH MINUS BALLAST ROCK

Ballast rock must be 100% equal to, or smaller than, 3 inches in at least one dimension.

Rock may contain no more than 5 percent organic debris, dirt, and trash. All percentages are by weight.

6-50 LIGHT LOOSE RIP RAP

Rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects. Light loose rip rap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>At Least/Not More Than</u>	<u>Weight Range</u>
20% / 90%	300 lbs. to 1 ton
80% / --	50 lbs. to 1/2 ton
10% / 20%	50 lbs. max

6-51 HEAVY LOOSE RIP RAP

Rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects. Heavy loose riprap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>At Least/Not More Than</u>	<u>Weight Range</u>	<u>Size Range</u>
30% / 90%	1 ton to 3 ton	36" - 54"
70% / 90%	500 lbs. to 1 1/2 ton	24" - 42"
10% / 30%	50 lbs. max	3" - 8"

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

Measurement of specified rock depths, are defined as the compacted depths using the compaction methods required in this road plan. Estimated quantities specified in the TYPICAL SECTION are loose yards. Purchaser shall apply adequate amounts of rock to meet the specified rock depths. Specified rock depths are minimum requirements, and are not subject to reduction.

6-70 APPROVAL BEFORE ROCK APPLICATION

Purchaser shall obtain written approval from the Contract Administrator for culvert installation, ditch construction, ditch reconstruction, headwall construction, and headwall reconstruction before rock application.

6-71 ROCK APPLICATION

Purchaser shall apply rock in accordance with the specifications and quantities shown on the TYPICAL SECTION. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. Road surfaces must be compacted in accordance with the TYPICAL SECTION by routing equipment over the entire width.

6-73 ROCK FOR WIDENED PORTIONS

Purchaser shall apply rock to turnarounds, turnouts, and areas with curve widening to the same depth and specifications as the traveled way.

SECTION 8 – EROSION CONTROL

8-1 SEDIMENT CONTROL STRUCTURES

On the following road, Purchaser shall install sediment control structures as listed.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
CC-14	94+25	Construct sediment trap in far side ditchline entering Type 4 stream. See clause 11-1 CC-14 DITCH CONSTRUCTION
CC-14	135+55	Construct sediment trap in both ditchlines entering Type 4 stream.
CC-1414	22+90	Construct sediment trap in both ditchlines entering Type 4 stream.
CC-1418	25+90 to 27+40	Install silt fencing along uphill ditchline prior to entering Type 4 stream.

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a 4-inch layer of straw to all exposed soils within 50 feet of a stream or wetland. Soils must be covered before the first anticipated storm event.

8-15 REVEGETATION

Purchaser shall spread seed and fertilizer on all exposed soils within the grubbing limits resulting from road work activities. Cover all exposed soils using manual dispersal of grass seed and fertilizer. Other methods of covering must be approved in writing by the Contract Administrator.

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the required grass seed and fertilizer.

8-17 REVEGETATION TIMING

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

8-18 PROTECTION FOR SEED

Purchaser shall provide a protective cover for seed if revegetation occurs between July 1 and March 31. The protective cover may consist of dispersed straw, jute matting, or clear plastic sheets. The protective cover requirement may be waived in writing by the Contract Administrator if Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop (at least 50% coverage) of 3-inch tall grass by October 31.

8-19 ASSURANCE FOR SEEDED AREA

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed and fertilizer in areas that have failed to germinate or have been damaged through any cause. Restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed and fertilizer at no addition cost to the state.

8-25 GRASS SEED

Purchaser shall evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 50 pounds per acre of exposed soil. Grass seed must meet the following specifications:

1. Weed seed may not exceed 0.5% by weight.
2. All seed species must have a minimum 90% germination rate, unless otherwise specified.
3. Seed must be certified.
4. Seed must be furnished in standard containers showing the following information:
 - a. Common name of seed
 - b. Net weight
 - c. Percent of purity
 - d. Percentage of germination
 - e. Percentage of weed seed and inert material
5. Seed must conform to the following mixture.

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>
Creeping Red Fescue	50
Elf Perennial Rye Grass	25
Highland Colonial Bentgrass	15
White Clover	10
Inert and Other Crop	0.5

8-27 FERTILIZER

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

<u>Chemical Component</u>	<u>% by Weight</u>
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

SECTION 9 – POST-HAUL ROAD WORK

9-5 POST-HAUL MAINTENANCE

Purchaser shall perform post-haul maintenance in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

9-12 LANDING EMBANKMENT REMOVAL

Purchaser shall reduce or relocate the landing embankment. Place excavated material in a waste area approved in writing by the Contract Administrator.

9-21 ROAD ABANDONMENT

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

<u>Road</u>	<u>Stations</u>
CC-14	131+55 to 137+15
CC-1414	20+50 to 24+05

9-22 ABANDONMENT

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

SECTION 10 MATERIALS

10-15 CORRUGATED STEEL CULVERT

Metallic coated steel culverts must meet AASHTO M-36 (ASTM A-760) specifications. Culverts must be galvanized (zinc coated meeting AASHTO M-218).

10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culverts must be Type S – double walled with a corrugated exterior and smooth interior.

10-21 METAL BAND

Metal coupling and end bands must meet the AASHTO specification designated for the culvert and must have matching corrugations. Culverts 24 inches and smaller must have bands with a minimum width of 12 inches. Culverts over 24 inches must have bands with a minimum width of 24 inches.

10-22 PLASTIC BAND

Plastic coupling and end bands must meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer may be used.

10-23 RUBBER CULVERT GASKETS

Rubber gaskets must be continuous closed cell, synthetic expanded rubber gaskets conforming to the requirements of ASTM D 1056. Rubber gaskets must be used with all corrugated metal pipe coupling bands.

10-24 GAGE AND CORRUGATION

Metal culverts must conform to the following specifications for gage and corrugation as a function of diameter.

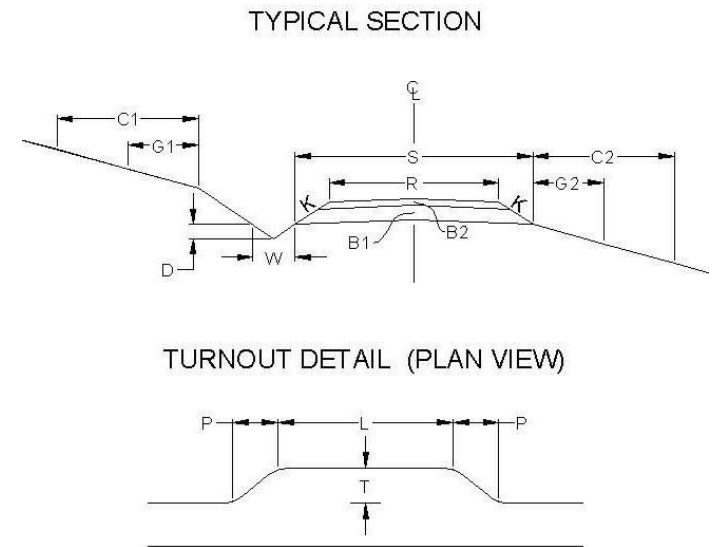
<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 48"	14 (0.079")	2 2/3" X 1/2"
54" to 96"	14 (0.079")	3" X 1"

SECTION 11 SPECIAL NOTES

11-1 CC-14 DITCH CONSTRUCTION

From Station 94+70 to the existing ditchout at station 97+70, Purchaser shall excavate left side ditch and cutslopes back to the dimensions shown in the TYPICAL SECTION. Ditch excavation shall begin after the construction of the sediment trap listed in clause 8-1. Excavated material shall be endhauled to an appropriate waste area as approved by the contract administrator

ROAD #		CC-ML	CC-14	CC-14	CC-14
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		PRE-HAUL	PRE-HAUL	PRE-HAUL	CONSTRUCTION
TOLERANCE CLASS (A/B/C)		A	A	A	A
STATION / MP TO		0+00	0+00	73+65	131+55
STATION / MP		73+15	73+65	131+55	137+15
ROAD WIDTH	R	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3
DITCH WIDTH	W	3	3	3	2
DITCH DEPTH	D	1	1	1	1
TURNOUT LENGTH	L	50	50	50	25
TURNOUT WIDTH	T	10	10	10	10
TURNOUT TAPER	P	25	25	25	25
GRUBBING	G1	--	--	--	--
	G2	--	--	--	--
CLEARING	C1	--	--	--	--
	C2	--	--	--	--
ROCK FILLSLOPE	K:1	--	--	1½	1½
❖ BALLAST DEPTH	B1	--	--	--	9
CUBIC YARDS / STATION		--	--	--	53
➤ TOTAL CY BALLAST		--	--	--	295
❖ SURFACING DEPTH	B2	--	--	4	--
CUBIC YARDS / STATION		--	--	22	--
➤ TOTAL CY SURFACING		--	--	1275	--
➤ TOTAL CUBIC YARDS		--	--	1275	295
SUBGRADE WIDTH	S	--	--	13.0	14.0
BRUSHCUT (Y/N)		N	N	N	N
BLADE, SHAPE, & DITCH (Y/N)		Y	Y	Y	Y



SYMBOL NOTES

- ❖ Specified Rock Depth is FINISHED COMPACTED DEPTH in inches.
- Specified Rock Quantity is LOOSE MEASURE (Truck Cubic Yards) needed to accomplish specified FINISHED COMPACTED DEPTH. Rock quantities include volume for turnouts, curve widening and landings.

TOTAL 2-INCH MINUS CRUSHED ROCK = 2525 CY

TOTAL 3-INCH MINUS BALLAST ROCK = 485 CY

TOTAL RIPRAP = 65 CY

ROAD #		CC-1414	CC-1414	CC-1418	CT-ML			
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED			
CONSTRUCT / RECONSTRUCT		PRE-HAUL	CONSTRUCT	PRE-HAUL	PRE-HAUL			
TOLERANCE CLASS (A/B/C)		A	A	A	A			
STATION / MP TO		0+00	20+50	0+00	0+00			
STATION / MP		20+50	24+05	36+35	181+35			
ROAD WIDTH	R	12	12	12	12			
CROWN (INCHES @ C/L)		3	3	3	3			
DITCH WIDTH	W	3	2	3	3			
DITCH DEPTH	D	1	1	1	1			
TURNOUT LENGTH	L	50	25	50	50			
TURNOUT WIDTH	T	10	10	10	10			
TURNOUT TAPER	P	25	25	25	25			
GRUBBING	G1	--	5	--	--			
	G2	--	5	--	--			
CLEARING	C1	--	10	--	--			
	C2	--	10	--	--			
ROCK FILLSLOPE	K:1	1½	1½	1½	--			
❖ BALLAST DEPTH	B1		9		--			
CUBIC YARDS / STATION			53		--			
➤ TOTAL CY BALLAST			190		--			
❖ SURFACING DEPTH	B2	4	--	4	--			
CUBIC YARDS / STATION		22	--	22	--			
➤ TOTAL CY SURFACING		450	--	800	--			
➤ TOTAL CUBIC YARDS		450	190	800	--			
SUBGRADE WIDTH	S	13.0	14.0	13.0	--			
BRUSHCUT (Y/N)		N	N	N	N			
BLADE, SHAPE, & DITCH (Y/N)		Y	N	Y	Y			

MATERIALS LIST

LOCATION		CULVERT			DWNSP T		RIPRAP			FILL TYPE	TOLERANCE	REMARKS			
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE				Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
													Diameter	Gage	Corrugation
CC-14	83+10	18	40	XX			2	3	L	NT	C				
CC-14	111+80	18	40	XX			2	3	L	NT	C				
CC-14	135+55	24	40	XX			5	10	H/L	NT	C	Type 4 Stream			
CC-1414	8+35	18	36	XX			2	3	L	NT	C				
CC-1414	17+90	18	30	XX			2	3	L	NT	C				
CC-1414	21+10	18	40	XX			2	3	L	NT	C				
CC-1414	22+90	24	40	XX			5	10	H/L	NT	C	Type 4 Stream			
CC-1418	5+40	18	40	XX			2	3	L	NT	C				
CC-1418	13+50	18	40	XX			2	3	L	NT	C				

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
 H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the construction materials. Remove slides from ditches and the roadway. Repair fill-failures, in accordance with Clause 4-6 EMBANKMENT SLOPE RATIO, with selected material or material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

Surface

- Grade and shape the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET. Inslope or outslope as directed to provide a smooth, rut-free traveled surface and maintain surface water runoff in an even, unconcentrated manner.
- Blading shall not undercut the backslope or cut into geotextile fabric on the road.
- If required by the Contract Administrator, water shall be applied as necessary to control dust and retain fine surface rock.
- Surface material shall not be bladed off the roadway. Replace surface material when lost or worn away, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

Drainage

- Prevent silt bearing road surface and ditch runoff from delivering sediment to any streams or wetlands.
- Maintain rolling dips and drivable waterbars as needed to keep them functioning as intended.
- Maintain headwalls to the road shoulder level with material that will resist erosion.
 - Maintain energy dissipaters at culvert outlets with non-erodible material or rock.
- Keep ditches, culverts, and other drainage structures clear of obstructions and functioning as intended.
- Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This shall be done even during periods of inactivity.

Preventative Maintenance

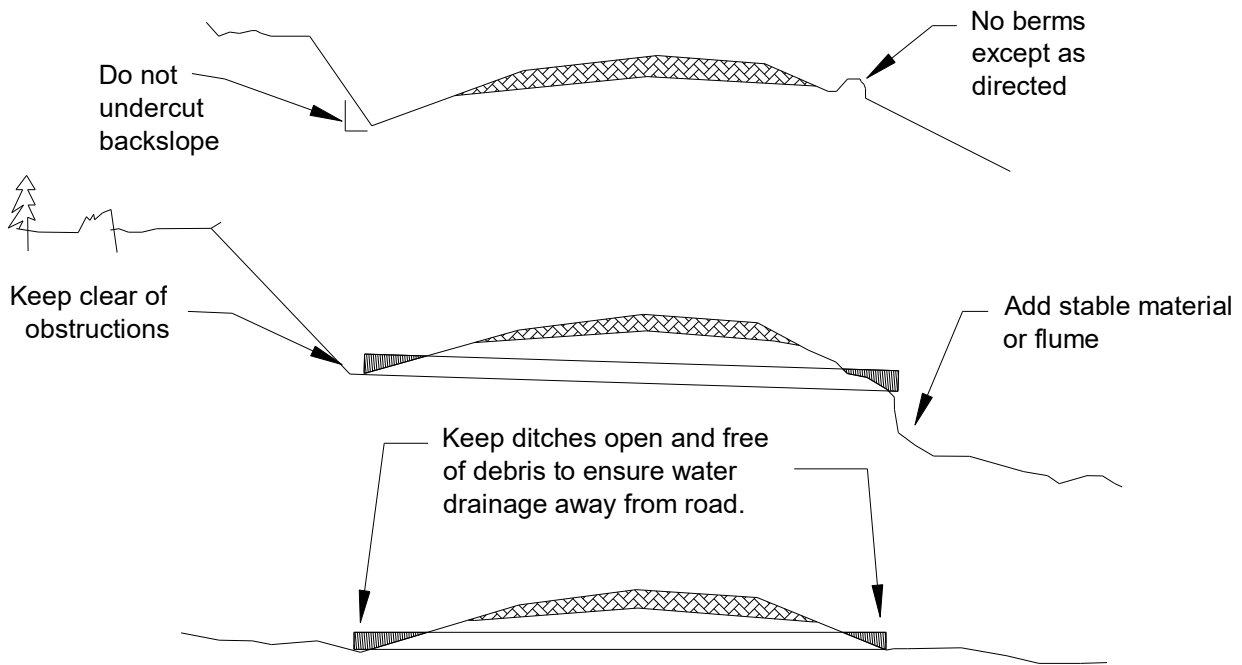
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

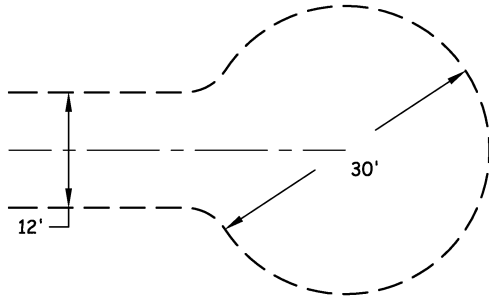
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

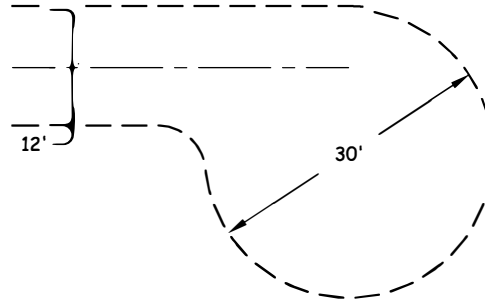
- Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.



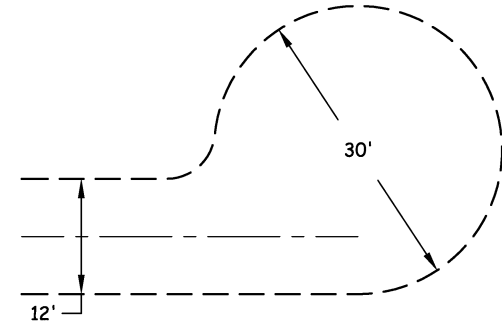
TURNAROUND DETAILS



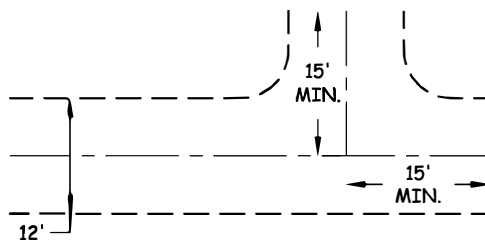
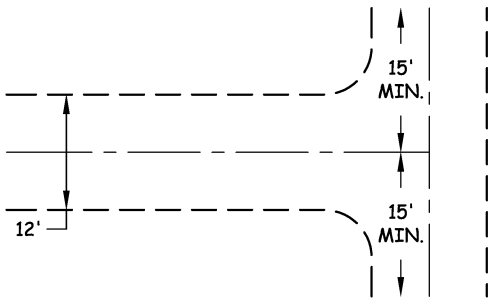
HAMMERHEAD



CUL-DE-SAC

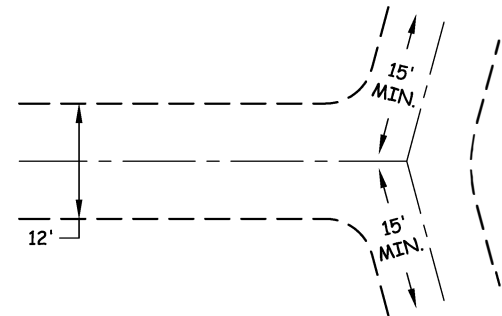


3-POINT WYE



MUST BE CONSTRUCTED WITHIN
100' OF THE END OF THE ROAD.

3-POINT SIDE



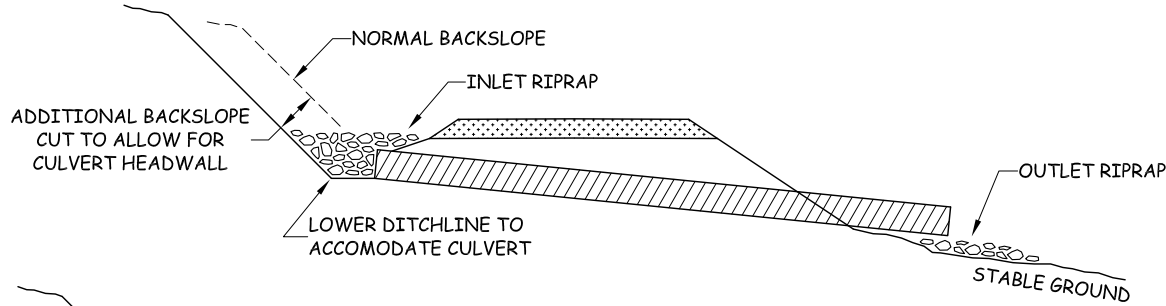
TURNAROUND TYPE AND TURNAROUND LOCATION ARE SUBJECT TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR.

ROCK SHALL BE APPLIED THROUGHOUT THE TURNAROUND TO THE SAME DEPTH AND SPECIFICATIONS AS LISTED IN THE TYPICAL SECTION.

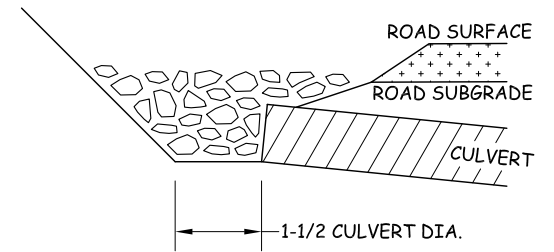
CONTRACT # 30-094599	PROJECT TWAYBLADE	SHEET 29 OF 30
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CULVERT AND DRAINAGE SPECIFICATIONS

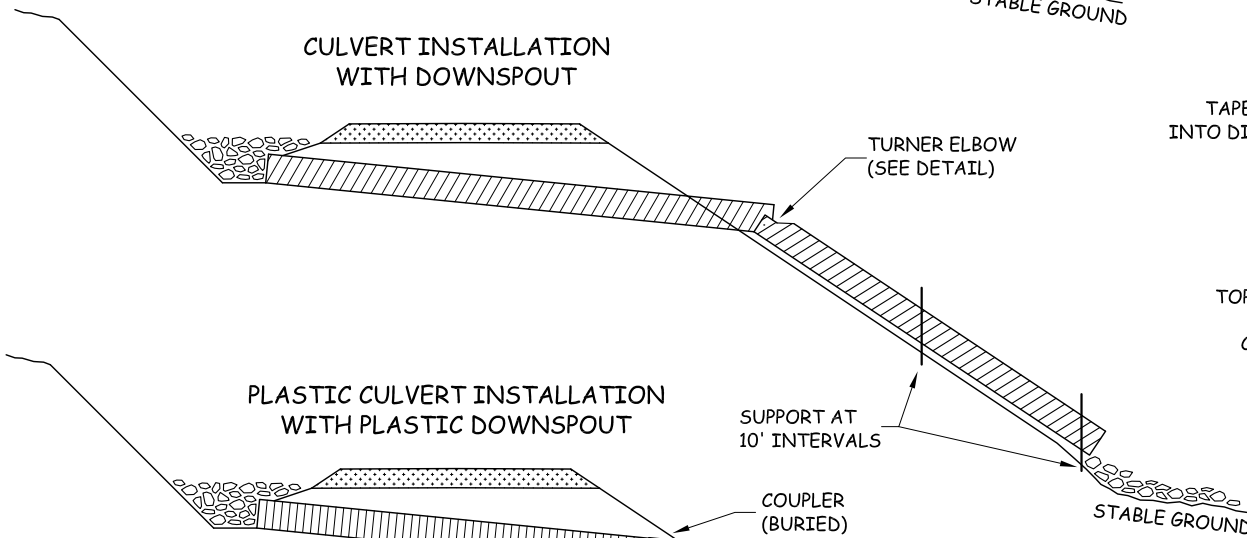
CULVERT INSTALLATION (TYPICAL)



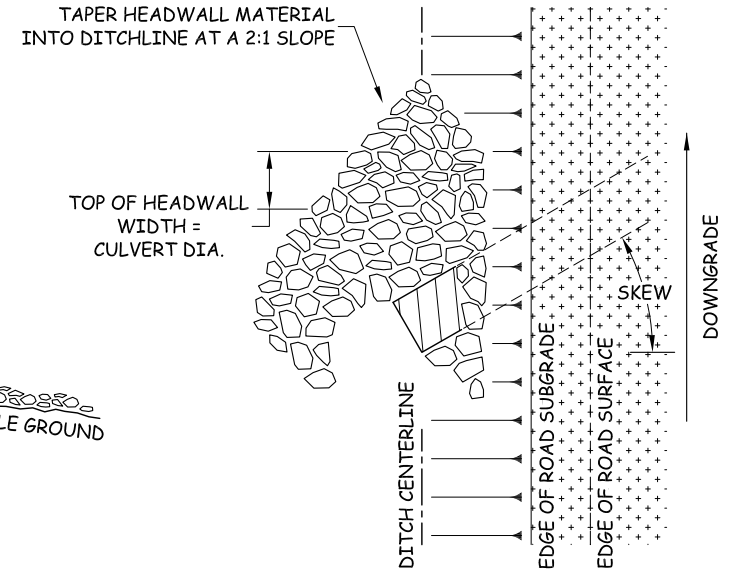
CULVERT HEADWALL - SECTION VIEW



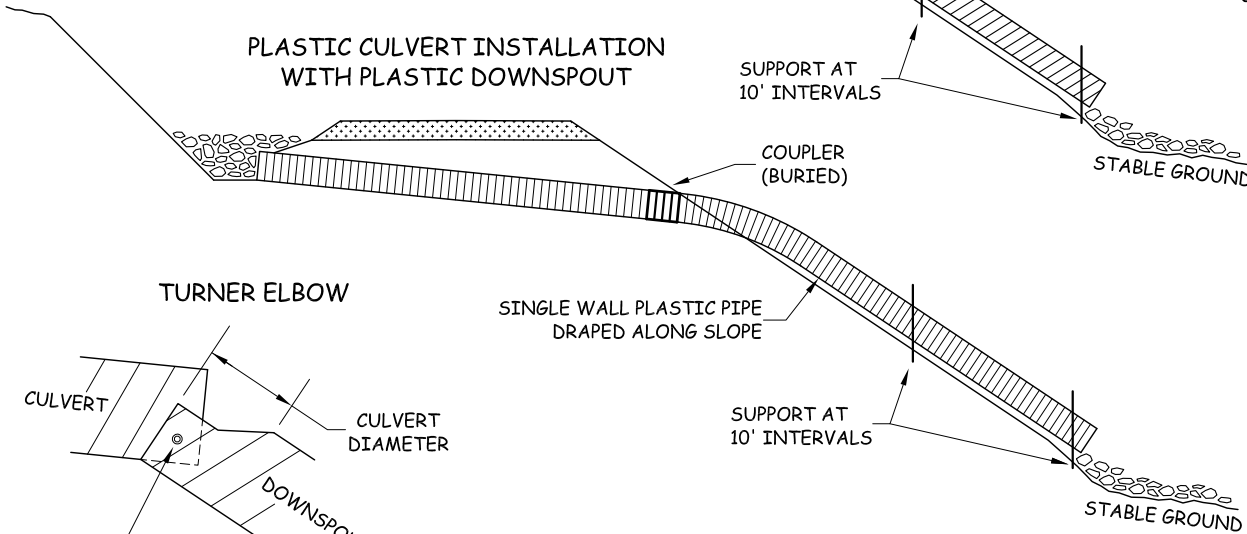
CULVERT INSTALLATION WITH DOWNSPOUT



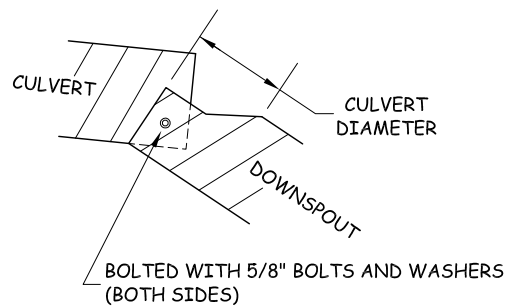
CULVERT HEADWALL - PLAN VIEW



PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



TURNER ELBOW



HEADWALL NOTE:
 HEADWALL TO BE CONSTRUCTED OF IMPERVIOUS MATERIAL THAT WILL RESIST EROSION AND ARMORED WITH RIPRAP QUANTITY SPECIFIED IN ROAD PLAN.

CONTRACT #	PROJECT	SHEET
30-094599	TWAYBLADE	30 OF 30

ROAD COST SUMMARY

TWAYBLADE Timber Sale #30-094599

CONSTRUCTION SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ROCK PRODUCTION COST	ROCK LOADING COST	ROCK HAUL COST	ROCK SPREADING COST	CONSTRUCTION COST	CULVERT COST	OTHER COST	TOTAL COST	COST/STA
CC-14	131+55 to 137+15	5.6	\$2,065	\$1,251	\$6,394	\$1,437	\$2,392	\$730	\$224	\$14,492	\$2,588
CC-1414	20+50 to 24+05	3.55	\$1,330	\$847	\$4,331	\$973	\$1,794	\$1,150	\$142	\$10,567	\$2,977
									TOTAL	\$25,059	

CONSTRUCTION COSTS include, clearing and grubbing, excavation and embankment, drilling and shooting on grade, and endhaul.

OTHER COSTS include erosion control, grass seeding and fertilizer, and miscellaneous other requirements detailed in the road plan.

PRE-HAUL MAINTENANCE SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ROCK PRODUCTION COST	ROCK LOADING COST	ROCK HAUL COST	ROCK SPREADING COST	CULVERT COST	OTHER COST	PRE-HAUL GRADING AND BRUSHING	TOTAL COST	COST/STA
CC-ML	0+00 to 73+15	73.15	\$0	\$0	\$0	\$0	\$0	\$0	\$1,385	\$1,385	\$19
CC-14	0+00 to 73+65	73.65	\$0	\$0	\$0	\$0	\$0	\$0	\$1,395	\$1,395	\$19
CC-14	73+65 to 131+55	57.90	\$12,750	\$5,184	\$26,503	\$5,955	\$839	\$4,247	\$1,097	\$56,575	\$977
CC-1414	0+00 to 20+50	20.50	\$4,500	\$1,856	\$9,488	\$2,132	\$699	\$1,196	\$388	\$20,258	\$988
CC-1418	0+00 to 36+35	36.35	\$8,000	\$3,268	\$16,706	\$3,754	\$839	\$2,692	\$688	\$35,946	\$989
CT-ML	0+00 to 181+35	181.35	\$0	\$0	\$0	\$0	\$0	\$0	\$3,435	\$3,435	\$19
									TOTAL	\$118,994	

OTHER COSTS include cleaning culverts, ditches, headwalls, catch basins, culvert installation, and miscellaneous other requirements detailed in the road plan.

ROAD COST SUMMARY

TWAYBLADE Timber Sale #30-094599

POST-HAUL MAINTENANCE SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	POST-HAUL GRADING COST	OTHER COST	TOTAL COST	COST/STA
CC-ML	0+00 to 73+15	73.15	\$1,108	\$0	\$1,108	\$15
CC-14	0+00 to 73+65	73.65	\$1,116	\$0	\$1,116	\$15
CC-14	73+65 to 131+55	57.90	\$877	\$0	\$877	\$15
CC-1414	0+00 to 20+50	20.50	\$311	\$0	\$311	\$15
CC-1418	0+00 to 36+35	36.35	\$551	\$0	\$551	\$15
CT-ML	0+00 to 181+35	181.35	\$2,748	\$0	\$2,748	\$15
			TOTAL		\$6,711	

OTHER COSTS include miscellaneous other requirements detailed in the road plan.

ABANDONMENT SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ABANDONMENT COST	OTHER COST	TOTAL COST	COST/STA
CC-14	131+55 to 137+15	5.60	\$1,420	\$0	\$1,420	\$254
CC-1414	20+50 to 24+05	3.55	\$900	\$0	\$900	\$254
			TOTAL		\$2,320	

OTHER COSTS include miscellaneous other requirements detailed in the road plan.

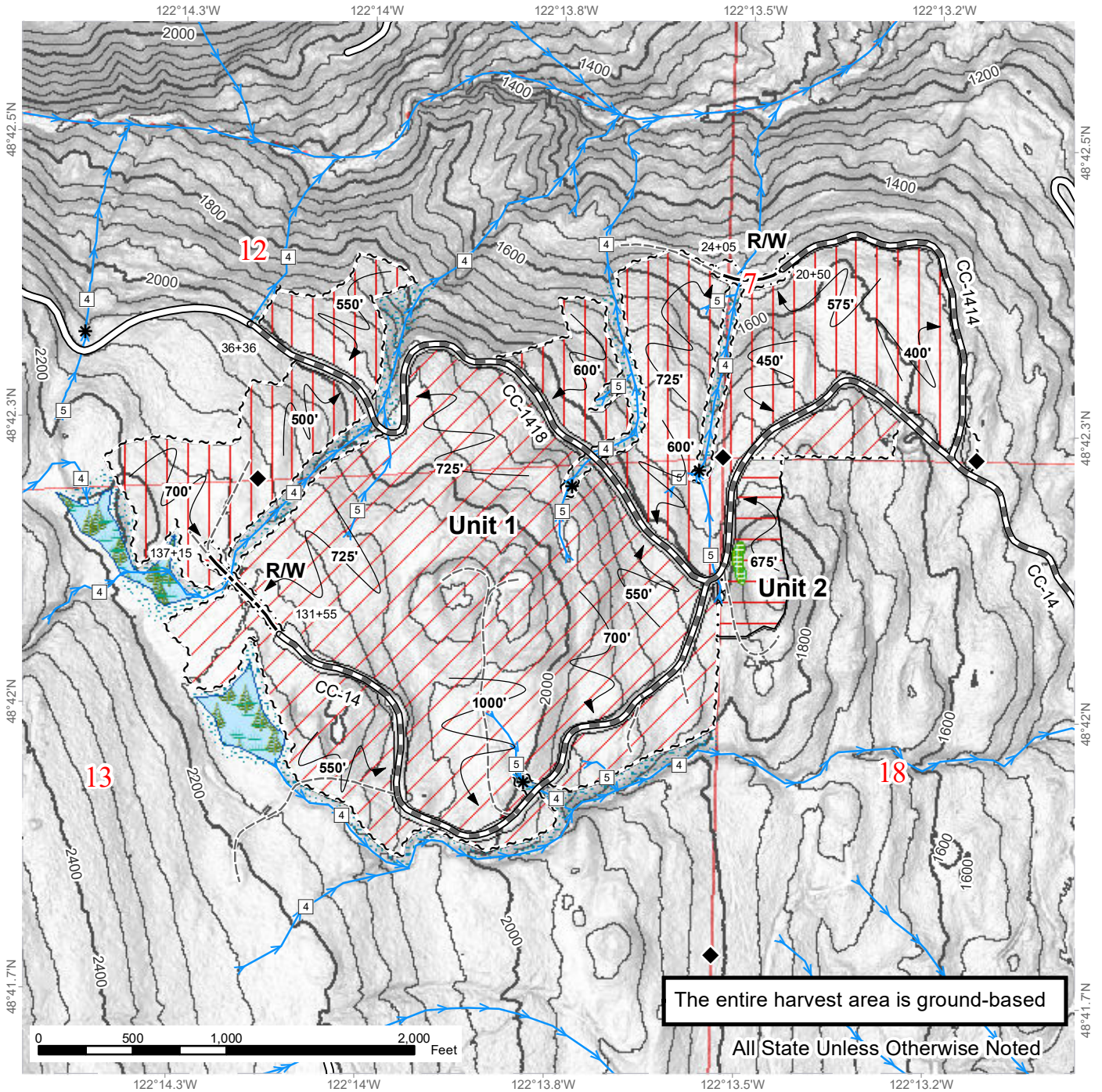
NOTE: ALL MOBILIZATION COSTS HAVE BEEN AMORTIZED IN WITH OTHER COSTS.

TOTAL ROAD COST	\$153,083	
SALE VOLUME (MBF)	1208	PRE-CRUISE ESTIMATED VOLUME
ROAD COST/MBF	\$127	

LOGGING PLAN MAP

SALE NAME: TWAYBLADE
AGREEMENT#: 30-094599
TOWNSHIP(S): T37R4E, T37R5E
TRUST(S): Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Whatcom
ELEVATION RGE: 1564-2199



Variable Retention Harvest	Sale Boundary Tags	Streams
Thin to 130 TPA	Timber Type Change	Stream Type
Thin to 100 TPA	Special Mgmt Area	Stream Type Break
Leave Tree Area	Right of Way Tags	Survey Monument
Riparian Mgt Zone	Existing Roads	
Forested Wetland	Required Pre-Haul Maintenance	
	Optional Construction	
	Old Grades/Trails	

